No.

JAPAN INTERNATIONAL COOPERATION AGENCY

THE STUDY ON THE PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN IN THE REPUBLIC OF THE PHILIPPINES

SUMMARY REPORT

PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCES

OF

AGUSAN DEL NORTE
AGUSAN DEL SUR
DAVAO DEL SUR
DAVAO ORIENTAL
SURIGAO DEL NORTE

NORTHERN SAMAR
EASTERN SAMAR
SAMAR
BILIRAN
LEYTE
SOUTHERN LEYTE

MISAMIS ORIENTAL
BUKIDNON
DAVAO DEL NORTE
SOUTH COTABATO
SARANGANI

AKLAN
ANTIQUE
CAPIZ
ILOILO
NEGROS OCCIDENTAL

AUGUST 2000

NJS CONSULTANTS CO., LTD.

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JAPAN INTERNATIONAL COOPERATION AGENCY

DEPARTMENT OF THE INTERIOR AND LOCAL GOVERNMENT
THE REPUBLIC OF THE PHILIPPINES

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SUMMARY REPORT

PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCES

OF

AGUSAN DEL NORTE	MISAMIS ORIENTAL
AGUSAN DEL SUR	BUKIDNON
DAVAO DEL SUR	DAVAO DEL NORTE
DAVAO ORIENTAL	SOUTH COTABATO
SURIGAO DEL NORTE	SARANGANI
NORTHERN SAMAR	AKLAN
EASTERN SAMAR	ANTIQUE
SAMAR	CAPIZ
BILIRAN	ILOILO
LEYTE	NEGROS OCCIDENTAL
SOUTHERN LEYTE	

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PREFACE

In response to a request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct the Study on Provincial Water Supply, Sewerage and Sanitation Sector Plans for Visayas and Mindanao and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA slected and dispatched the study team headed by Mr. Masatoshi Momose of NJS Consultants Co., Ltd. to the Philippines, 4 times between January 1998 and May 2000. In addition, JICA set up the advisory committee headed by Ms. Keiko Yamamoto, Development Specialist, Institute for International Cooperation, JICA between January 1998 and May 2000.

The team held discussions with the officials concerned of the Government of the Philippines, and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and the prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Philippines for their close cooperation extended to the Team.

August 2000

Kimio Fujita
President
Japan International Cooperation Agency

August 2000

Mr. Kimio Fujita
President
Japan International Cooperation Agency
Japan

Dear Mr. Fujita,

Letter of Transmittal

We are pleased to submit herewith the Final Report of the Study on Provincial Water Supply, Sewerage and Sanitation Sector Plan in the Republic of the Philippines.

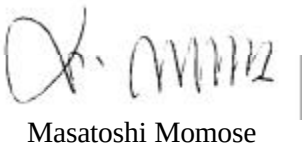
The Study was completed through the discussions with the officials of the Government of the Philippines and the field investigation during four visits from January 1998 to May 2000.

The Report was arranged as Summary Report which succinctly describes the study and recommendations for the sector develoment of provincial water supply, sewerage and sanitation for a total of twenty-one (21) provinces in Visayas and Mindanao areas. The Report covers not only the long-term and medium term development plans on water supply, sewerage and sanitation sector, but also institutional, operation and financial strengthening plan for the local governments.

In view of the urgency of water supply and sanitation improvement as well as the need for socio-economic development in the study provinces, we hope that the said plans will be realized in early stage.

We wish to take this opportunity to express our sincere gratitude to your Agency and the Ministry of Foreign Affairs. We also would like to show our appreciation to the officials of the Department of the Interior and Local Government, the JICA Philippine Office, and the Embassy of Japan in the Republic of the Philippines for their kind cooperation and assistance throughout our field survey.

Very truly yours,



Masatoshi Momose
Team Leader for the Study on
Provincial Water Supply, Sewerage
and Sanitation Sector Plan in
the Republic of the Philippines

EXECUTIVE SUMMARY

Provincial Water Supply, Sewerage and Sanitation Sector Plans (PW4SPs) for twenty-one (21) provinces in the Visayas and Mindanao area were prepared by respective Provincial Sector Planning Teams (PSPTs) with the technical assistance of Japan International Cooperation Agency. The PW4SP will be the basis for the execution of the sector development in the province.

The PW4SP covers Long-Term Development Plan (target year: 2010) and the Medium-Term Investment Program (five year investment plan) to achieve the provincial targets of water supply, sewerage and sanitation sector. The plan includes the arrangements and logistics for the implementation and identification of needs for institutional strengthening.

The primary bases of the PW4SP are national sector policies and strategies. Current sector policies and strategies are:

- Self-reliance and local community management of services;
- An integrated approach to water, sanitation and hygiene education:
- Cost recovery of capital and O & M cost; and
- An integrated water resources strategy.

(1) Study area: The provinces are Agusan del Norte, Agusan del Sur, Davao del Sur, Davao Oriental, Surigao del Norte, Misamis Oriental, Bukidnon, Davao del Norte, South Cotabato, Sarangani, Northern Samar, Eastern Samar, Samar, Biliran, Leyte, Southern Leyte, Aklan, Antique, Capiz, Iloilo and Negros Occidental. Agricultutre is the major economic activity common to these provinces. In the relevant secotr, the high incidence of water-related diseases is prevalent indicating health problems. A lower sector service coverage in the rural area compared with urban area is a general finding.

(2) Sector Services and Arrangements: The current service coverage of each sub-sector is estimated as percentages of served population/households/utilities against the total number. Problem areas by different service level are identified covering water supply and sanitation sector to come up with future arrangenments. Based on the current analyses and the provincial targets established by sub-sector, phased requirements for the sector are developed. Further, financial arrangements availing Internal Revenue Allotment are discussed showing financial shortfall and alternative counter measures to address this shortfall are defined. These study results are summarized in the attached tables. Improvements required for the institutional and monitoring activities are also major parts of the plan.

INTRODUCTION

1. Background of the Study

The Government of the Philippines (GOP) has, over the last decade, with the assistance from external donors, made considerable progress in developing the water supply and sanitation sector throughout the country. Nevertheless, infrastructure service delivery in this sector as of now is insufficient to keep pace with the demand.

As of 1995, in urban areas outside Metro manila, about 61% of the populace had access to safe water supply services, while in rural areas, about 70% was adequately served. Private sanitary toilets were available to about 66% of households in urban areas nationwide. For sewerage, only portions of the cities of Metro Manila, Cebu and Baguio have sewerage systems. About 55% of the households practiced individual refuse disposal, mostly dumping, while the remaining 45% relied on municipal refuse collection and disposal services.

The policies and strategies on the sector are generally guided by the "Updated Medium-Term Philippine Development Plan (MTPDP: 1996-1998) in 1996" and the recently published "Philippine National Development Plan (PNDP: 1999-2025)". Activities in the sector have been directly guided by the "Water Supply, Sewerage and Sanitation Master Plan of the Philippines 1988-2000" since its issuance in 1988. The National Sector Master Plan (NSMP) sets ambitious targets to reach large segments of the population and to redress the imbalances between rural and urban areas. Meanwhile, the Updated MTPDP revised the targets for water supply services based on updated conditions in 1996. The PNDP further modified the targets this year to suit current sector status.

Development in the sector had previously been directed to a high degree by central government agencies. However, the GOP has been instituting devolution and full decentralization of responsibilities for implementation of infrastructure projects to Local Government Units (LGUs), in line with the Local Government Code of 1991.

In connection with the above, the Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) for twenty one (21) provinces in Visayas and Mindanao areas were prepared by the Provincial Sector Planning Team (PSPT) with the technical assistance from Japan International Cooperation Agency (JICA). The PW4SPs will be the basis for execution of sector development with financial assistance from foreign donors and in use of LGU's budget.

2. Objectives of the Study

The main objectives of the PW4SP are to establish the Long-Term Development Plan (target year: 2010; Phase II) and the Medium-Term Investment Program (5 year investment plan; Phase I) to achieve the provincial coverage targets of water supply and sanitation sector. The plan includes the arrangements and logistics for the implementation and identification of needs for institutional strengthening. The study is also designed to strengthen the LGUs capability in the preparation of sector plan through conducts of series of workshop and hands-on training.

3. Study Areas

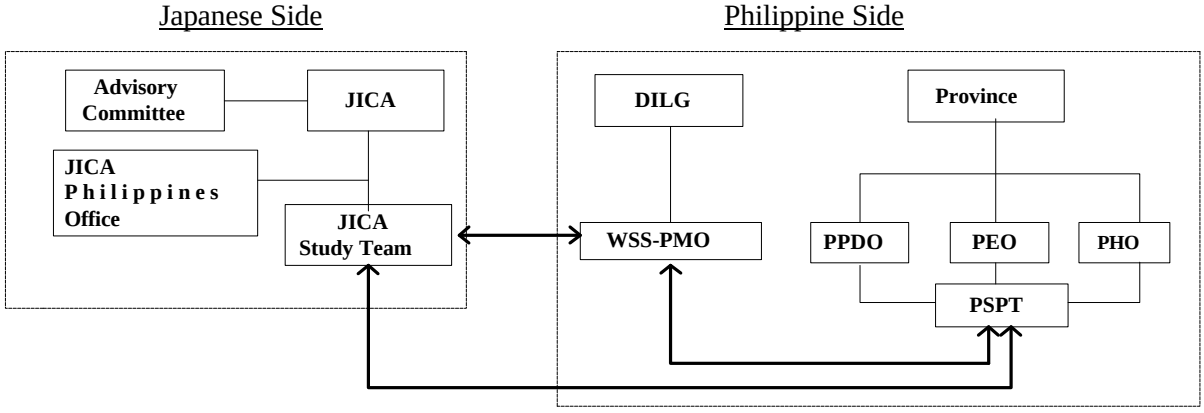
The study areas for the preparation of the PW4SP cover twenty one provinces in Visayas and Mindanao area as shown in Figure 3.1. The provinces by the scheduled batch are as follows:

Batch No. 1	Batch No. 2	Batch No. 3	Batch No. 4
1. Agusan del Norte	1. Misamis Oriental	1. Northern Samar	1. Aklan
2. Agusan del Sur	2. Bukidnon	2. Eastern Samar	2. Antique
3. Davao del Sur	3. Davao del Norte	3. Samar	3. Capiz
4. Davao Oriental	4. South Cotabato	4. Biliran	4. Iloilo
5. Surigao del Norte	5. Sarangani	5. Leyte	5. Negros Occidental
		6. Southern Leyte	

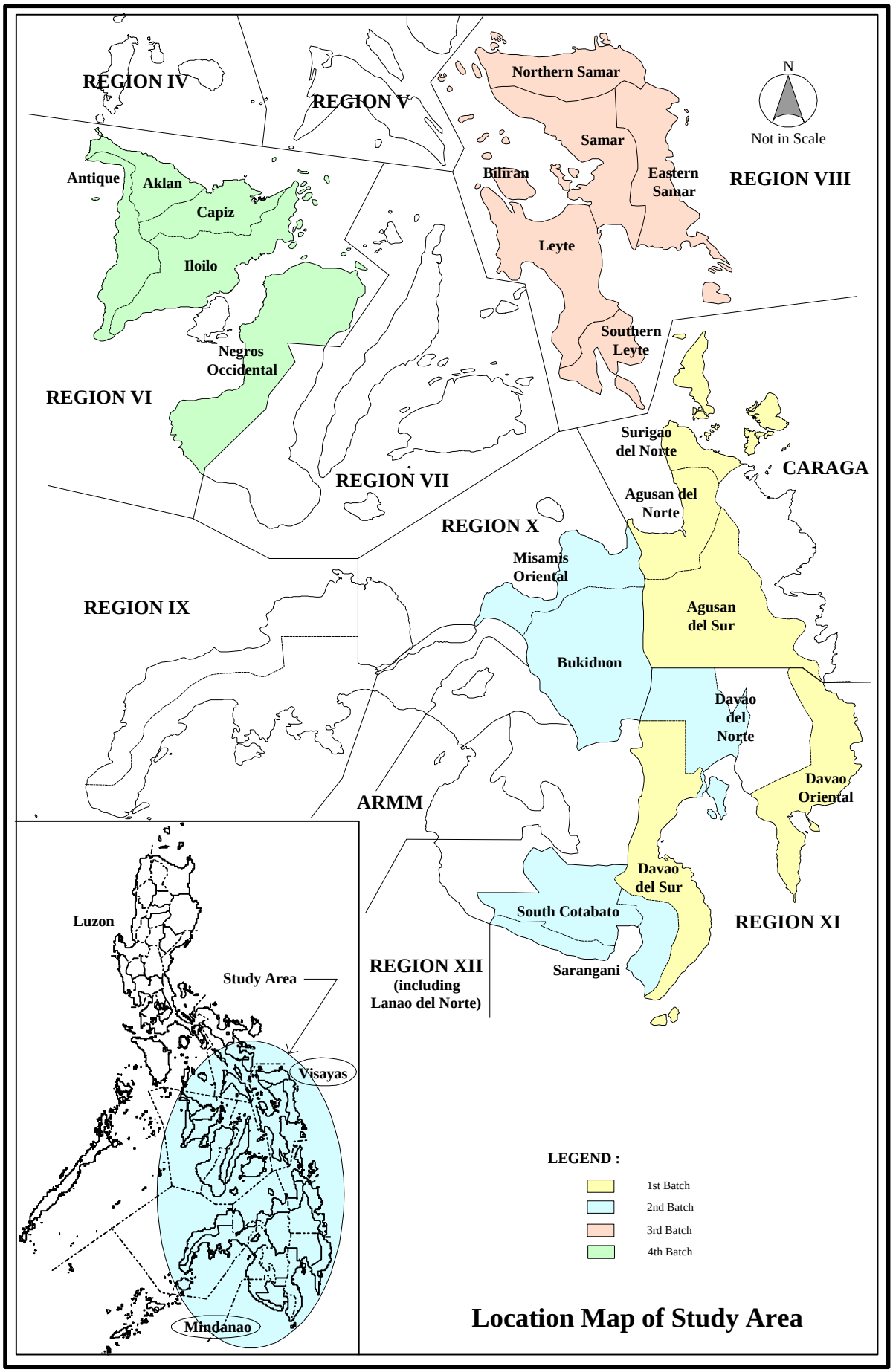
4. Study Organization

(1) General Organization

The general organization for the study is shown below.



Note:
JICA : Japan International Cooperation Agency
DILG : Department of Interior and Local Government
WSS-PMO : Water Supply and Sanitation-Program Management Office
PPDO : Provincial Planning and Development Office
PEO : Provincial Engineering Office
PHO : Provincial Health Office
PSPT : Provincial Sector Planning Team


REGION IV
REGION V
Northern Samar
Samar
Eastern Samar
Biliran
Leyte
Southern Leyte
REGION VIII
N
Not in Scale
Antique
Aklan
Capiz
Iloilo
Negros Occidental
REGION VI
REGION VII
Surigao del Norte
CARAGA
Agusan del Norte
REGION X
Misamis Oriental
REGION IX
Agusan del Sur
Bukidnon
Davao del Norte
Davao Oriental
ARMM
Davao del Sur
South Cotabato
REGION XI
Sarangani
REGION XII
(including Lanao del Norte)
Luzon
Study Area
Visayas
Mindanao
LEGEND :
1st Batch
2nd Batch
3rd Batch
4th Batch
Location Map of Study Area

(2) Japanese Organization

The Japanese Organization is represented by the Study Team under JICA headquarter and Advisory Committee.

The members of the Advisory Committee are as follows:

Ms. Keiko Yamamoto	Chaiman	Water Supply Development Specialist, JICA
Mr. Keiichi Kanaya	Member	Chief, Moiwa Water Purification Plant, Sapporo Waterworks Bureau

The staff members of the study team are as follows:

Name	Field in Charge
Mr. Masatoshi Momose	Project Management/Water Supply Planning
Mr. Nobuki Abe	Environmental Sanitation/Water Supply Planning
Mr. Nobukatsu Sakiyama	Hydrogeology (Groundwater/Surface water)
Mr. Kenji Takayanagi	Hydrogeology (Surface water/Groundwater)
Mr. Kenji Hiramatsu	Institutional
Ms. Elizabeth L. Venzola	Socio-conomic/Financial Analysis
Ms. Consuelo B. Estepa	Community Development
Mr. Emanuel Patingo	Data Management

(3) Philippine Organization

The PW4SP for each province was prepared by a Provincial Sector Planning Team (PSPT) organized by the provincial government consisting of the Provincial Planning and Development Coordinator (PPDC), planning and development officers from PPDO, and staff members from Provincial Engineer's Office (PEO) and Provincial Health Office (PHO). Local officers of the DILG also joined the Team in some provinces. The WSS-PMO, DILG is also the counterpart organization in the central government level.

The PSPT members of the twenty one provinces are as follows:

Province of Agusan del Norte	Position
1. Mr. Lauro B. Vallejos	Provincial Planning & Dev't. Coordinator
2. Ms. Trofina P. Besada	Planning Officer IV
3. Mr. Nivard S. Gonzales	Engineering Assistant
4. Mr. Jessem O. Cardona	Computer/Encoder
5. Mr. Patricio Bael	Sanitary Engineer
6. Ms. Lilian T. Bokingo	Engineer III

Province of Agusan del Sur	Position
1. Ms. Yolando Z. Urbiztondo	Provincial Planning and Dev’t. Coordinator
2. Mr. Nestor Reganon	Planning officer IV
3. Ms. Cynthia Lumanta	Project Development Officer III
4. Mr. Reynaldo Almazon	Computer Encoder
5. Mr. Joselito A Tiu	Engineer II
6. Mr. Wilson Gaspan	Engineer III
7. Ms. Alice D. Berdin	Local Government Operations Officer II

Province of Davao del Sur	Position
1. Eng'r. Lucien Abraham Taduran	Provincial Planning & Dev't. Coordinator
2. Eng'r. Leofer C. Alviola	Water Resource Engineer
3. Ms. Evangeline S. Abejero	Training Officer
4. Mr. Cesar L. Corotan	Computer Programmer
5. Mr. Cesar Curato	Sanitary Engineer
6. Eng'r. Rodrigo Emphasis	Water Supply Engineer
7. Mr. Walter Señoren	Provincial Director

Province of Davao Oriental	Position
1. Ms. Milagros B. Rabanes	Provincial Planning & Dev't. Coordinator
2. Mr. Ernesto G. Garay	Water Resource Engineer
3. Mr. Benjamin A. Burgos, Jr.	Training Officer
4. Mr. Eugenio B. Gudes	Computer Programmer
5. Mr. Mario A. Carrasco	Sanitary Engineer
6. Mr. Edgar M. Fernandez	Water Supply Engineer
7. Mr. Felix R. Ancheta	Provincial Director

Province of Surigao del Norte	Position
1. Mr. Arturo M. Cruje	Provincial Planning and Dev’t. Coordinator
2. Ms. Marilyn E. Pono	Engineer II
3. Mr. Ronal Jhon R. Matela	Project Development Assistant
4. Ms. Josie E. Cogolio	Computer Encoder
5. Mr. Carmelito C. Mantong	Sanitary Inspector
6. Ms. Eva Lorna C. Meneses	Engineer I
7. Ms. Cynthia C. Binondo	Local Government Operations Officer II

Province of Misamis Oriental	Position
1. Mr. Genie J. Gallogo	Provincial Planning and Dev’t Coordinator
2. Engr. Rey T. Tolinero	Project Dev’t Officer IV
3. Engr. Carmela A. Roa	Sanitary Engineer III
4. Engr. Benjamin Canales	Engineer III
5. Engr. Isabelo Actub	Water Supply Engineer
6. Engr. Roel Waminal	Waterworks Engineer
7. Ms. Rosita Chu	LGOO IV
8. Mr. Edwin Waga	PDO II
9. Mr. Alfredo Tumacas	PPDO Staff
10. Ms. Ruby Lyn G. Roa	S.I. III
11. Mr. Lemar G. Canios	Draftsman

Province of Bukidnon	Position
1. Dr. Antonio T. Sumbalan	Provincial Planning and Dev’t Coordinator

2. Mr. Oscar D. Balderol	Project Development Officer III
3. Mr. Leopoldo P. Egnar	Project Development Officer II
4. Engr. Fe N. Bisahan`	Project Development Officer II
5. Engr. Michael B. Suazo	Planning Officer II
6. Mr. Reuben H. Babanto	Sanitary Inspector IV
7. Engr. Nahum Q. Colocar	Local Government Operations Officer II
8. Mr. Reynaldo A. Tabequero. Jr.	Assistant Statistician
9. Mr. Emeterio S. Sumagang	Provincial Director

Province of Davao del Norte	Position
1. Rafael I. Erfe	Provincial Planning and Dev't. Coordinator
2. Anita G. Juntilla	Project Evaluation Officer IV
3. Araceli N. Cajes	Computer Operator
4. Engr. Jose Alvic P. Suaybaguio	Sanitary Engineer III
5. Basiledes P. Lagumbay	Engineering Assistant
6. Dionesio T. Namuag	Coop. Dev't Specialist II
7. Emeterio J. Josue, Jr.	Assistant PLGOO

Province of South Cotabato	Position
1. Mr. Danilo Supe	Provincial Planning & Dev't. Coordinator
2. Engr. Bernardo S. Dormitorio, Jr.	Asst. Prov'l. Planning & Dev't Coord.
3. Engr. Diadema Supremo	PDO II
4. Engr. Jose Daniel Salamat	PO I
5. Engr. Floresa Abellera	Engineer I
6. Engr. Elsa Sombrea	Engineer I
7. Engr. Elmer Supremo	Sanitary Engineer

Province of Sarangani	Position
1. Mr. Fredo P Basino	Provincial Planning and Dev't Coordinator
2. Ms. Imelda C. Senobago	Sociologist I
3. Engr. Gilmor J. Apura	CO II
4. Mr. Marcelino C. de Asis, Jr.	Draftsman II
5. Engr. Marilyn L. Cebrero	Engineer III
6. Engr. Gerald G. Faciol	Engineer Assistant
7. Dr. Antonio A. Yasana	Provincial Health Officer
8. Ms. Zorayda G. Labus	LGOO II

Province of Northern Samar	Position
1. Mr. Lorenzo S. Mahinay	Provincial Planning and Dev't. Coordinator
2. Ms. Marlene L. Parane	Planning Officer IV
3. Mr. Renato M. Berbon	Planning Officer III
4. Mr. Amancio P. Unay, Jr.	Planning Officer I
5. Ms. Ma. Gracia C. Parabules	Clerk II
6. Mr. Rogel S. Surio	Engineer IV
7. Mr. Basiliso C. Arban	Engineer IV
8. Mr. Rogelio A. Balanlayos	Chief Sanitarian
9. Mr. Felix E. Adriatico	LGOO V

Province of Eastern Samar	Position
1. Mr. Henry M. Afable	Provincial Planning and Dev't. Coordinator
2. Ms. Yolanda Cecilia A. Perez	Project Development Officer III
3. Mr. Eden Paul Ocfemia	Planning Officer I

4. Mr. Oscar Solis	Encoder
5. Mr. Gayo Globio	Asst. Provincial Engineer
6. Ms. Alicia B. Calinaya	Engineer III
7. Ms. Nida dela Cruz	LGOO V

Province of Samar	Position
1. Mr. Arthur B. Cuenco	Provincial Planning and Dev't. Coordinator
2. Mr. Abdon D. Abejo	Asst. Prov'l. Planning & Dev't Coordinator
3. Mr. Enrique R. Cobriros	Project Development Officer IV
4. Mr. Godofredo M. Raquel	Planning Officer II
5. Ms. Virginia A. Hilvano	Planning Officer II
6. Mr. Leo R. de Guzman	Asst. Waterworks Engineer
7. Mr. Ricomar T. Encenarez	Sanitary Engineer
8. Mr. Francisco B. Cagomoc	Provincial Staff

Province of Biliran	Position
1. Engr. Danilo L. Bonifacio	Provincial l Planning and Dev't Coordinator
2. Mr. Remegio S. Delfin	Planning Officer IV
3. Mr. Oscar O. Borrinaga	Computer I
4. Engr. Ventura B. Barbanida	Provincial Engineer
5. Mr. Nazario G. Tupaz	Sanitation Inspector I
6. Ms. Velma F. Estela	Provincial Accountant
7. Mr. Eliseo C. Olaya	LGOO V

Province of Leyte	Position
1. Ms. Evelia Q. Martin	Provincial Planning and Dev't Coordinator
2. Ms. Corazon M. Alvero	Project Development Officer IV
3. Mr. Aniceto Andreilee C. Fernandez	Draftsman II
4. Mr. Erwin B. Dumaguit	Draftsman III
5. Mr. Sancho B. Samson	Engineer III
6. Ms. Estrella L. Vanilla	Sanitary Inspector V
7. Mr. Alberto M. Bitangjol	LGOO II

Province of Southern Leyte	Position
1. Ms. Virginia Cruz-Lim	Provincial Planning and Dev't. Coordinator
2. Ms. Virginia M. Maitem	Project Development Officer I
3. Ms. Catalina T. Samaco	Statistician
4. Mr. Joel J. Leonor	Clerk I
5. Engr. Nelson G. Tan	Engineer II
6. Mr. Otilio B. Roa, Jr.	Engineer
7. Ms. Ma. Lutgarda Rosales-Rubio	Sanitary Engineer
8. Ms. Rizalina A. Icamen	LGOO II, DILG

Province of Aklan	Position
1. Mr. Renato Bautist	Prov'l Planning and Dev't Coordinator
2. Engr. Francisco Y. Regatalio	Prov'l Engineer Officer III
3. Engr. Julius Ceasar M. Rentillo	Engineer I
4. Mr. Reylourd S. Aragon	Prov'l Development Officer I
5. Engr. Edsel G. Teofilo	Engineer I
6. Engr. Lucio A. Santamaria	Field Sanitary Inspector
7. Mr. Patricio Villavert	Asst. Provincial Director

Province of Antique	Position
1. Engr. Henry Bernardio	Provincial Planning and Dev't Coordinator
2. Engr. Dante L. Nebit	Engineer III
3. Engr. Charity D. Tomugdan	Engineering Assistant
4. Engr. Lucy G. Nietes	Engineering Assistant
5. Engr. Andronico M. Tamon	PEO I
6. Ms. Josienne M. Casalan	Planning Assistant
7. Ms. Sharon O. Dava	LGOO V, DILG

Province of Capiz	Position
1. Engr. Constancia B. Fagtanan	Provincial Planning and Dev't Coordinator
2. Engr. Barth A. Rivera	PDO IV
3. Ms. Salim B. Biclar	PDO IV
4. Ms. Ana Liza A. Hormigos	Draftsman II
5. Mr. Danilo C. Ortiz	Data Controller II
6. Engr. Jocelyn V. Fellores	Engr. II
7. Mr. Adolfo A. Yap	RSI IV
8. Ms. Llanie D. Destacamento	LGOO II, DILG

Province of Iloilo	Position
1. Mr. Simeon L. Leal	Provincial Planning and Dev't Coordinator
2. Ms Alice M. Pajado	PDO III
3. Ms. Valme R. Lujan	PDO II
4. Mr. Rolle Depakakibo	Statistician I
5. Mr. Emmanuel Pet	PDO II
6. Engr. Evelyn G. Rivera	Engineer II
7. Ms. Elena Shirley C. Borro	SI IV
8. Ms. Marites Sotocinal	PDO II
9. Mr. Jan Anthony V. Devera	SI II
10. Ms. Marlyn S. Gayadao	LGOO V, DILG

Province of Negros Occidental	Position
1. Mr. Roque Hofilena	Provincial Planning and Dev't Coordinator
2. Ms. Celedonia P. Gencianeo	PO IV
3. Ms. Merma M. Bayona	PEO IV
4. Ms. Jane B. Espinosa	PO I
5. Ms. Diana A. Puentespina	Statistician I
6. Ms. Ma Vilma Celis	Engr. III
7. Mr. Reynaldo G. Bedaure, Jr.	Engr. III
8. Ms. Eliza C. Estrellanes	Engineering Assitant
9. Ms. Melanie T. Calaor	Sociologist II
10. Mr. Eduardo B. Basinang	LGOO V, DILG

The members of WSS-PMO, DILG are as follows:

Name	Position
1. Ms. Ellen I. Pascua	Program Manager, WSS-PMO
2. Mr. Rogelio B. Ocampo	Chief, Planning Division
3. Mr. Mario V. De Dios	Development Management Officer V
4. Ms. Fe Crisilla M. Banluta	PW4SP Project Officer
5. Ms. Contessa Navarro	Coordinator, Agusan del Norte, Misamis Oriental, Leyte and Antique

6. Ms. Shirley Roque	Coordinator, Sarangani and Iloilo
7. Ms. Crisanta Rapirap	Coordinator, Surigao del Norte, Samar and Iloilo
8. Ms. Marivic Nocum	Coordinator, Biliran and Negros Occidental
9. Ms. Susan Mangoda	Coordinator, Davao Oriental, South Cotabato, Southern Leyte and Aklan
10. Ms. Josephine Ramos	Coordinator, Davao del Sur, Bukidnon, Northern Samar and Capiz
11. Ms. Charito C. Araza	Agusan del Sur, Davao del Norte and Eastern Samar

5. Planning Approach for Future Sector Development

The primary bases of the PW4SP are national sector policies and strategies, as well as major legislation and regulations relevant to the sector. The guidelines for setting the provincial sector targets are the three national level plans, with priority given to the Updated Medium Term Philippine Development Plan (1996-1998). The GOP approved the IRR providing detailed arrangements on the devolution of WATSAN responsibilities and resources. Parallel to this are the current sector policies and strategies, to wit: i) self-reliance and local community management of services; ii) an integrated approach to water, sanitation and hygiene education; iii) cost sharing arrangement; iv) cost recovery of capital and O&M; v) private sector participation; and vi) an integrated water resources strategy.

The PW4SP will help ensure that sector investments are optimized in consideration of fund and water source availability constraints as well as planning capacity. It is envisaged that the Plan will be progressively updated as its implementation proceeds. Furthermore, future detailed studies and plans for project implementation shall be conducted in the context of the PW4SP.

The data management system was established as a tool to come up with the outputs commensurate to the objectives of the provincial plan and at the same time reflect the planning approach. It will provide a map of relative needs in the province allowing for adjustment and updating when further information becomes available. Different scenarios may be worked out by planners using the program by changing key parameters based on planning assumptions and conditions.

6. Reports

The study reports prepared are as follows:

(1) Summary Report covering the PW4SPs for twenty one (21) provinces
(2) Main Report (Volume I) for respective provinces
(3) Supporting Report (Volume II) for respective provinces
(4) Data Report (Volume III) for respective provinces

The Summary Report is designed to combine twenty-one PW4SPs. Chapters 1 and 2 in the Main Report are arranged in "INTRODUCTION" common to all concerned PW4SPs., while succeeding chapters are separately prepared by province for the convenience of respective provinces.

The Main Report presents the results of the whole study consisting of twelve (12) chapters. Chapter 1 describes the background and rationale for the sector planning of the provinces. Chapter 2 depicts the planning approach for the sector development. Chapter 3 provides the provincial profile that includes natural conditions and geographical features, socio-economic conditions, demographic trends, health status and environmental conditions. The existing sector conditions in physical, managerial and financial aspects are described in Chapters 4, 5 and 6. The possibility of water source development for water supply component is analyzed in Chapter 7. Chapters 8, 9 and 10 develop the Long Term Development Plan and Medium-Term Investment Plan both for physical and sector management requirements. Chapter 11 presents the financial arrangements based on identified sources of fund. The recommendations on monitoring of implemented projects covering procedures and responsibilities in different administrative levels are provided in Chapter 12.

Supporting Report includes alternative studies and detailed calculations, and data/information constitute Data Report by province.

Frame Values and Future Requirement of PW4SP (Batch 1 Provinces)

	Provinces			AGUSAN DEL NORTE			AGUSAN DEL SUR			DAVAO DEL SUR			DAVAO ORIENTAL			SURIGAO DEL NORTE		
Frame Values & Sector Targets	No. of Cities/Municipalities			11 municipalities			14 municipalities			15 municipalities			11 municipalities			1city and 27 municipalities		
	No. of Barangay: Urban/Rural			46	117		36	278		25	312		26	157		114	320	
	Population, 1997, 2003,2010	Urban Area		90,946	102,612	115,946	175,320	216,539	266,862	15,210	166,141	182,230	132,393	146,098	161,065	217,939	238,672	261,594
		Rural Area		187,763	213,109	242,260	379,720	473,674	592,096	545,385	594,653	647,318	294,849	326,336	360,809	238,079	262,839	290,591
		Total		**278,709**	**315,721**	**358,206**	**555,040**	**690,213**	**858,958**	**560,595**	**760,794**	**829,548**	**427,242**	**472,434**	**521,874**	**456,018**	**501,511**	**552,185**
	Sub-Sector	Area/Type		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets	
					Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II
	Water Supply	Urban Area		74%	85%	95%	67%	80%	95%	70%	80%	95%	63%	70%	95%	74%	80%	95%
		Rural Area		55%	65%	93%	47%	60%	93%	54%	65%	93%	47%	60%	93%	75%	85%	93%
	Sanitation	Household Toilet		76%	87%	95%	67%	77%	87.5%	80%	88%	95%	71%	81%	93%	69%	76%	91%
		School Toilet		48%	80%	90%	30%	60%	90.0%	39%	60%	80%	53%	75%	95%	60%	85%	90%
		Public Toilet		100%	100%	100%	100%	100%	100%	69%	100%	100%	55%	70%	100%	100%	100%	100%
	Sewerage	Urban Area		-	N.A.	50%	-	N.A.	50%	-	N.A.	50%	-	N.A.	50%	-	N.A.	50%
	Solid Waste	Urban Area		78%	90%	N.A.	40%	60%	N.A.	36%	50%	N.A.	64%	75%	N.A.	81%	90%	N.A.
Future Requirements	Sub-Sector	Area/Type	Unit	Additional Service Coverage														
				Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II
	Water Supply	Urban Area	Persons	**20,134**		**80,210**	**55,900**		**177,058**	**29,307**		**73,769**	**20,236**		**105,985**	**36,310**		**150,480**
		Rural Area	Persons	**39,469**		**83,387**	**127,491**		**266,444**	**108,764**		**203,810**	**69,870**		**133,564**	**60,198**		**43,782**
	Sanitation	HH Toilet	No. of HH	**16,624**		**35,505**	**37,705**		**89,718**	**25,663**		**64,307**	**17,845**		**49,154**	**16,782**		**56,036**
		School Toilet	No. of Students	**25,697**		**26,347**	**87,000**		**85,050**	**44,656**		**52,435**	**33,013**		**39,710**	**28,997**		**13,422**
		Public Toilet	No. of Utilities	**33**		**40**	**29**		**10**	**22**		**8**	**26**		**75**	**21**		**9**
	Sewerage	Urban Area	Persons	**N.A.**		**44,393**	**N.A.**		**121,760**	**N.A.**		**58,549**	**N.A.**		**64,282**	**N.A.**		**121,760**
	Solid Waste	Urban Area	No. of HH	**7,723**		**N.A.**	**11,969**		**N.A.**	**6,757**		**N.A.**	**4,832**		**N.A.**	**14,690**		**N.A.**
Cost Requirements	Item	Components	Area/Type	Investment Cost Required by Phase (Unit: 1,000 Pesos)														
				Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II
	Construction/ Rehabilitation	Water Supply		**119,981**		**365,383**	**396,885**		**1,088,996**	**254,779**		**596,252**	**168,649**		**464,040**	**198,956**		**569,580**
			Urban Area	79,185		267,076	195,386		561,804	119,268		267,482	85,100		353,952	144,396		526,132
			Rural Area	40,796		98,307	201,499		527,192	135,511		328,770	83,549		110,088	54,560		43,448
		Sanitation		**67,172**		**424,745**	**173,179**		**916,296**	**125,330**		**610,227**	**108,359**		**642,457**	**40,079**		**584,394**
			HH Toilet	1,561		3,715	1,043		9,658	2,537		7,229	1,081		5,618	836		3,799
			School Toilet	54,100		83,081	161,975		255,750	114,858		172,538	97,917		141,595	31,896		14,765
			Public Toilet	11,352		13,763	9,977		3,440	7,569		2,752	8,944		25,809	7,226		3,097
			Well Disinfection	159		117	184		350	366		301	417		175	121		78
			Urban Sewerage	N.A.		324,069	N.A.		647,098	N.A.		427,407	N.A.		469,260	N.A.		562,655
		Sub-Total		**187,153**		**790,128**	**570,064**		**2,005,292**	**380,109**		**1,206,479**	**277,008**		**1,106,497**	**239,035**		**1,153,974**
	Procurement of vehicle/Equipment			995		26,782	1,025		26,782	1,036		26,782	995		26,782	1,165		26,782
	Water Quality Testing Laboratory			446		-	2,032		-	446		-	2,032			2,032		-
	Sector Management	Engineering Studies		24,132		60,115	73,970		175,476	49,068		100,448	35,848		82,234	30,973		76,398
		Community Dev. & Training		15,125		41,618	50,676		121,483	34,531		69,541	25,402		56,931	15,574		52,891
		Sub-Total		**39,257**		**101,733**	**124,646**		**296,959**	**83,599**		**169,989**	**61,250**		**139,165**	**46,547**		**129,289**
	Total Direct Cost			**227,851**		**918,643**	**697,767**		**2,329,033**	**465,190**		**1,403,250**	**341,285**		**1,272,444**	**288,779**		**1,310,045**
	Contingencies			**104,480**		**91,864**	**318,134**		**232,903**	**214,250**		**140,325**	**152,985**		**127,244**	**131,467**		**131,004**
	Total Investment Cost			**332,331**		**1,010,507**	**1,015,901**		**2,561,936**	**679,440**		**1,543,575**	**494,270**		**1,399,688**	**420,246**		**1,441,049**

(Note) Pase I: 1999-2003, Phase II: 2004-2010

Frame Values and Future Requirement of PW4SP (Batch 2 Provinces)

	Provinces			MISAMIS ORIENTAL			BUKIDNON			DAVAO DEL NORTE			SOUTH COTABATO			SARANGANI		
Frame Values & Sector Targets	No. of Cities/Municipalities			1 city and 24 municipalities			1 city and 21 municipalities			2 cities and 8 municipalities			11 municipalities			7 municipalities		
	No. of Barangay: Urban/Rural			90	332		82	382		20	204		52	146		17	123	
	Population, 1997, 2003,2010	Urban Area		222,621	259,419	311,401	292,948	335,977	464,012	219,600	248,051	349,795	245,146	277,842	368,410	114,750	133,072	168,914
		Rural Area		391,788	443,155	508,390	689,383	784,878	825,792	501,914	566,685	591,750	412,047	500,503	532,647	271,437	316,889	349,727
		Total		**614,409**	**702,574**	**819,791**	**982,331**	**1,120,855**	**1,289,804**	**721,514**	**814,736**	**941,545**	**657,193**	**778,345**	**901,057**	**386,187**	**449,961**	**518,641**
	Sub-Sector	Area/Type		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets	
					Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II
	Water Supply	Urban Area		87%	87%	95%	74%	80%	95%	59%	60%	95%	63%	65%	95%	70%	72%	95%
		Rural Area		72%	75%	93%	80%	85%	93%	44%	45%	93%	56%	58%	93%	52%	55%	93%
	Sanitation	Household Toilet		66%	79%	93%	67%	81%	95%	73%	87%	94%	67%	79%	93%	49%	67%	84%
		School Toilet		66%	80%	90%	34%	60%	90%	41%	70%	90%	64%	80%	90%	46%	60%	90%
		Public Toilet		100%	100%	100%	97%	100%	100%	100%	100%	100%	97%	100%	100%	100%	100%	100%
	Sewerage	Urban Area		-	N.A.	50%	-	N.A.	50%	-	N.A.	50%	-	N.A.	50%	-	N.A.	50%
	Solid Waste	Urban Area		53%	90%	N.A.	75%	90%	N.A.	66%	90%	N.A.	21%	90%	N.A.	38%	60%	N.A.
Future Requirements	Sub-Sector	Area/Type	Unit	Additional Service Coverage														
				Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II	
	Water Supply	Urban Area	Persons	**34,177**	**147,152**		**53,763**	**301,317**		**29,501**	**227,922**		**31,703**	**227,620**		**16,194**	**135,077**	
		Rural Area	Persons	**57,481**	**135,139**		**137,085**	**115,281**		**65,149**	**264,407**		**64,274**	**240,378**		**48,905**	**140,942**	
	Sanitation	HH Toilet	No. of HH	**32,522**	**83,800**		**72,354**	**136,558**		**45,360**	**82,930**		**42,623**	**90,286**		**24,062**	**51,029**	
		School Toilet	No. of Students	**38,332**	**42,776**		**74,654**	**120,404**		**61,966**	**62,416**		**51,914**	**47,243**		**26,191**	**52,301**	
		Public Toilet	No. of Utilities	**75**	**75**		**3**	**-**		**26**	**18**		**10**	**14**		**43**	**53**	
	Sewerage	Urban Area	Persons	**N.A.**	**107,955**		**N.A.**	**215,359**		**N.A.**	**174,899**		**N.A.**	**161,339**		**N.A.**	**84,458**	
	Solid Waste	Urban Area	No. of HH	**24,706**	**N.A.**		**21,513**	**N.A.**		**10,617**	**N.A.**		**34,069**	**N.A.**		**4,931**	**N.A.**	
Cost Requirements	Item	Components	Area/Type	Investment Cost Required by Phase (Unit: 1,000 Pesos)														
				Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II	
	Construction/ Rehabilitation	Water Supply		**318,600**	**957,756**		**309,725**	**1,041,892**		**226,958**	**1,182,356**		**188,624**	**1,009,595**		**114,146**	**545,142**	
			Urban Area	136,391	496,068		188,513	976,213		106,311	735,495		112,112	721,876		58,049	421,832	
			Rural Area	182,209	461,688		121,212	65,679		120,647	446,861		76,512	287,719		56,097	123,310	
		Sanitation		**80,375**	**999,517**		**132,275**	**1,923,803**		**112,530**	**1,514,026**		**80,676**	**1,380,637**		**58,409**	**782,489**	
			HH Toilet	2,840	7,275		29,752	56,610		17,600	33,936		4,225	8,344		7,346	22,275	
			School Toilet	51,531	178,165		101,143	294,931		85,245	196,804		70,444	189,404		35,907	125,263	
			Public Toilet	25,808	25,808		1,032	-		8,947	6,194		3,441	4,817		14,796	18,237	
			Well Disinfection	196	197		348	141		738	329		2,566	297		360	171	
			Urban Sewerage	N.A.	788,072		N.A.	1,572,121		N.A.	1,276,763		N.A.	1,177,775		N.A.	616,543	
		Sub-Total		**398,975**	**1,957,273**		**442,000**	**2,965,695**		**339,488**	**2,696,382**		**269,300**	**2,390,232**		**172,555**	**1,327,631**	
	Procurement of vehicle/Equipment			1,165	26,782		1,105	26,782		985	26,782		995	26,782		955	26,782	
	Water Quality Testing Laboratory			2,032	-		2,032	-		2,032	-		2,032	-		2,032	-	
	Sector Management	Engineering Studies		51,492	151,167		53,765	175,392		41,795	181,278		34,251	156,547		21,502	89,794	
		Community Dev. & Training		35,238	104,654		32,462	121,425		28,970	125,500		21,411	108,379		14,558	62,165	
		Sub-Total		**86,730**	**255,821**		**86,227**	**296,817**		**70,765**	**306,778**		**55,662**	**264,926**		**36,060**	**151,959**	
	Total Direct Cost			**488,902**	**2,239,876**		**531,364**	**3,289,294**		**413,270**	**3,029,942**		**327,989**	**2,681,940**		**211,602**	**1,506,372**	
	Contingencies			**227,206**	**223,988**		**235,737**	**328,929**		**191,719**	**302,994**		**148,707**	**268,194**		**95,623**	**150,637**	
	Total Investment Cost			**716,108**	**2,463,864**		**767,101**	**3,618,223**		**604,989**	**3,332,936**		**476,696**	**2,950,134**		**307,225**	**1,657,009**	

(Note) Pase I: 1999-2003, Phase II: 2004-2010

Frame Values and Future Requirement of PW4SP (Batch 3 Provinces)

	Provinces			NORTHERN SAMAR			EASTERN SAMAR			SAMAR			BILIRAN			LEYTE			SOUTHERN LEYTE		
Frame Values & Sector Targets	No. of Cities/Municipalities			24 municipalties			23 municipalities			1 city and 25 municipalities			8 municipalities			2 cities and 41 municipalities			19 municipalities		
	No. of Barangay: Urban/Rural			101	468		183	414		163	789		20	112		333	200		60	441	
	Population, 1998, 2004,2010	Urban Area		134,163	149,006	162,565	128,455	143,909	151,801	235,444	311,583	329,965	40,965	51,922	55,198	461,474	537,199	619,440	86,323	105,792	104,892
		Rural Area		343,119	376,571	410,343	244,663	251,788	266,024	372,140	334,095	353,047	95,886	94,639	100,879	989,460	1,096,789	1,201,297	229,814	207,357	205,329
		Total		**477,282**	**525,577**	**572,908**	**373,118**	**395,697**	**417,825**	**607,584**	**645,678**	**683,012**	**136,851**	**146,561**	**156,077**	**1,450,934**	**1,633,988**	**1,820,737**	**316,137**	**313,149**	**310,221**
	Sub-Sector	Area/Type		Base Year Service	Provincial Sector Targets		Base Year Service	Provincial Sector Targets		Base Year Service	Provincial Sector Targets		Base Year Service	Provincial Sector Targets		Base Year Service	Provincial Sector Targets		Base Year Service	Provincial Sector Targets	
					Phase I	Phase II	Coverage	Phase I	Phase II		Phase I	Phase II	Coverage	Phase I	Phase II		Phase I	Phase II		Phase I	Phase II
	Water Supply	Urban Area		65%	65%	95%	68%	69%	95%	76%	76%	95%	76%	76%	95%	82%	82%	95%	77%	77%	95%
		Rural Area		60%	60%	93%	52%	59%	93%	59%	62%	93%	73%	76%	93%	59%	59%	93%	71%	83%	93%
	Sanitation	Household Toilet		59%	67%	91%	61%	63%	94%	35%	60%	80%	59%	71%	85%	69%	78%	91%	82%	95%	95%
		School Toilet		34%	50%	90%	56%	85%	90%	45%	70%	90%	35%	60%	90%	58%	75%	90%	84%	90%	95%
		Public Toilet		86%	100%	100%	100%	100%	100%	100%	100%	100%	83%	100%	100%	99%	100%	100%	100%	100%	100%
	Sewerage	Urban Area		-	N.A.	50%	-	N.A.	50%	-	N.A.	50%	-	N.A.	50%	-	N.A.	50%	-	N.A.	50%
	Solid Waste	Urban Area		56%	65%	N.A.	73%	75%	N.A.	N.D.	50%	N.A	38%	50%	N.A.	89%	90%	N.A.	56%	60%	N.A.
Future Requirements	Sub-Sector	Area/Type	Unit	Additional Service Coverage																	
				Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II	
	Water Supply	Urban Area	Persons	**9,317**	**141,645**		**12,446**	**117,322**		**57,200**	**165,446**		**8,177**	**21,566**		**62,357**	**272,406**		**15,331**	**48,453**	
		Rural Area	Persons	**21,664**	**145,637**		**22,230**	**98,333**		**12,016**	**114,729**		**6,840**	**19,328**		**65,585**	**470,106**		**24,300**	**25,753**	
	Sanitation	HH Toilet	No. of HH	**13,643**	**64,305**		**20,594**	**41,883**		**33,662**	**61,507**		**6,413**	**13,431**		**75,285**	**166,779**		**8,096**	**19,257**	
		School Toilet	No. of Students	**25,497**	**63,239**		**29,624**	**13,212**		**46,184**	**41,677**		**10,442**	**12,847**		**76,848**	**102,512**		**6,131**	**5,224**	
		Public Toilet	No. of Utilities	**6**	**12**		7	-		**1**	-		**17**	**5**		**3**	-		7	**2**	
	Sewerage	Urban Area	Persons	**N.A**	**41,075**		**N.A.**	**24,129**		**N.A.**	**132,530**		**N.A.**	**14,542**		**N.A.**	**229,472**		**N.A.**	**26,847**	
	Solid Waste	Urban Area	No. of HH	**8,905**	**N.A.**		**7,705**	**N.A.**		**30,170**	**N.A.**		**3,237**	**N.A.**		**22,637**	**N.A.**		**3,529**	**N.A.**	
Cost Requirements	Item	Components	Area/Type	Investment Cost Required by Phase (Unit: 1,000 Pesos)																	
				Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II	
	Construction/ Rehabilitation	Water Supply		**134,372**	**1,023,914**		**61,698**	**720,316**		**288,307**	**986,230**		**37,614**	**148,468**		**426,706**	**2,278,370**		**62,350**	**405,794**	
			Urban Area	46,585	553,674		61,698	461,001		240,649	623,235		37,614	90,403		258,488	1,039,564		62,350	305,002	
			Rural Area	87,787	470,240		-	259,315		47,658	362,995		-	58,065		168,218	1,238,806		-	100,792	
		Sanitation		**32,839**	**440,959**		**37,244**	**257,870**		**58,199**	**1,091,125**		**14,261**	**140,969**		**102,926**	**2,008,855**		**5,993**	**254,138**	
			HH Toilet	2,717	10,185		2,641	5,938		5,406	6,059		382	1,423		11,979	23,556		1,094	631	
			School Toilet	27,554	126,324		34,325	75,655		52,305	117,451		9,808	31,523		88,731	309,582		4,670	56,741	
			Public Toilet	2,210	4,421		-	-		368	-		4,052	1,842		1,145	-		-	737	
			Well Disinfection	358	181		278	135		120	146		19	24		1,071	571		229	46	
			Urban Sewerage	N.A.	299,848		-	176,142		N.A.	967,469		N.A.	106,157		N.A.	1,675,146		N.A.	195,983	
		Sub-Total		**167,211**	**1,464,873**		**98,942**	**978,186**		**346,506**	**2,077,355**		**51,875**	**289,437**		**529,632**	**4,287,225**		**68,343**	**659,932**	
	Procurement of vehicle/Equipment			1,125	26,782		1,115	26,782		1,145	26,782		965	26,782		1,305	26,782		1,075	26,782	
	Water Quality Testing Laboratory			1,434	-		-	-		3,755	-		478	-		1,434	-		-	-	
	Sector Management	Engineering Studies		21,378	150,190		12,544	103,503		44,458	143,598		6,707	23,673		67,350	336,982		8,765	60,232	
		Community Dev. & Training		15,504	103,978		5,970	71,656		19,259	99,414		2,792	16,389		38,721	233,295		2,431	41,699	
		Sub-Total		**36,882**	**254,168**		**18,514**	**175,159**		**63,717**	**243,012**		**9,499**	**40,062**		**106,071**	**570,277**		**11,196**	**101,931**	
	Total Direct Cost			**206,652**	**1,745,823**		**118,571**	**1,180,127**		**415,123**	**2,347,149**		**62,817**	**356,281**		**638,442**	**4,884,284**		**80,614**	**788,645**	
	Contingencies			**96,490**	**174,582**		**55,978**	**118,013**		**195,815**	**234,715**		**29,589**	**35,628**		**292,302**	**488,456**		**38,389**	**78,644**	
	Total Investment Cost			**303,142**	**1,920,405**		**174,549**	**1,298,140**		**610,938**	**2,581,864**		**92,406**	**391,909**		**930,744**	**5,372,740**		**119,003**	**867,289**	

(Note) Pase I: 2000-2004 , Phase II: 2005-2010

Frame Values and Future Requirement of PW4SP (Batch 4 Provinces)

	Provinces			AKLAN			ANTIQUE			CAPIZ			ILOILO			NEGROS OCCIDENTAL		
Frame Values & Sector Targets	No. of Cities/Municipalities			17 municipalities			18 municipalties			1 city and 16 municipalities			1 city and 42 municipalities			9 cities and 22 municipalities		
	No. of Barangay: Urban/Rural			36	291		69	521		51	422		266	1455		195	405	
	Population, 1998, 2005,2010	Urban Area		107,389	126,658	143,645	118,491	132,542	144,813	127,609	148,096	188,394	310,998	350,408	378,243	755,683	837,274	917,783
		Rural Area		324,970	361,183	390,079	336,561	380,213	409,985	530,367	594,217	613,349	1,178,558	1,320,646	1,419,596	1,372,087	1,511,977	1,573,724
		Total		**432,359**	**487,841**	**533,724**	**455,052**	**512,755**	**554,798**	**657,976**	**742,313**	**801,743**	**1,489,556**	**1,671,054**	**1,797,839**	**2,127,770**	**2,349,251**	**2,491,507**
	Sub-Sector	Area/Type		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets		Base Year Service Coverage	Provincial Sector Targets	
					Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II		Phase I	Phase II
	Water Supply	Urban Area		75%	76%	95%	80%	80%	95%	75%	75%	95%	69%	70%	95%	81%	85%	95%
		Rural Area		59%	60%	93%	68%	68%	93%	54%	54%	93%	62%	65%	93%	73%	78%	93%
	Sanitation	Household Toilet		70%	81%	91%	73%	86%	91%	78%	83%	93%	67%	79%	93%	75%	80%	91%
		School Toilet		57%	70%	90%	54%	80%	90%	23%	40%	90%	47%	70%	90%	39%	60%	90%
		Public Toilet		98%	100%	100%	71%	90%	100%	92%	100%	100%	97%	100%	100%	92%	100%	100%
	Sewerage	Urban Area		-	N.A	50%	-	N.A.	50%	-	N.A	50%	-	N.A	50%	-	N.A.	50%
	Solid Waste	Urban Area		54%	80%	N.A.	60%	80%	N.A.	100%	100%	N.A.	98%	100%	N.A.	70%	80%	N.A.
Future Requirements	Sub-Sector	Area/Type	Unit	Additional Service Coverage														
				Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II
	Water Supply	Urban Area	Persons	**15,564**		**83,592**	**11,219**		**87,602**	**15,151**		**117,307**	**31,467**		**263,920**	**99,537**		**589,524**
		Rural Area	Persons	**25,397**		**146,063**	**30,240**		**123,238**	**35,312**		**249,538**	**127,272**		**461,804**	**182,846**		**289,440**
	Sanitation	HH Toilet	No. of HH	**17,441**		**45,265**	**21,437**		**42,656**	**20,083**		**70,566**	**61,707**		**180,101**	**54,551**		**238,712**
		School Toilet	No. of Students	**19,990**		**34,066**	**38,985**		**21,637**	**35,531**		**110,266**	**111,438**		**120,121**	**138,700**		**214,541**
		Public Toilet	No. of Utilities	**37**		**36**	**32**		**12**	**42**		**19**	**158**		**210**	**62**		**47**
	Sewerage	Urban Area	Persons	**N.A**		**48,838**	**N.A.**		**37,078**	**N.A.**		**51,444**	**N.A.**		**108,599**	**N.A.**		**453,137**
	Solid Waste	Urban Area	No. of HH	**10,983**		**N.A**	**9,880**		**N.A**	**4,342**		**N.A**	**29,227**		**N.A**	**45,695**		**N.A.**
Cost Requirements	Item	Components	Area/Type	Investment Cost Required by Phase (Unit: 1,000 Pesos)														
				Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II	Phase I		Phase II
	Construction/ Rehabilitation	**Water Supply**		**115,289**		**659,716**	**47,982**		**788,565**	**129,331**		**1,652,661**	**406,227**		**2,270,150**	**841,436**		**2,974,728**
			Urban Area	64,431		330,286	47,982		352,992	74,067		471,028	133,090		1,037,914	411,273		2,082,416
			Rural Area	50,858		329,430	-		435,573	55,264		1,181,633	273,137		1,232,236	430,163		892,312
		Sanitation		**38,798**		**478,066**	**58,616**		**389,230**	**57,659**		**587,654**	**196,180**		**1,282,049**	**193,497**		**3,850,341**
			HH Toilet	2,842		8,413	2,830		5,945	2,510		11,372	8,152		30,057	7,997		31,877
			School Toilet	21,482		99,939	44,132		108,111	39,462		193,572	127,725		382,707	161,582		493,153
			Public Toilet	13,379		13,018	10,486		4,339	15,187		6,870	57,133		75,936	22,419		16,995
			Well Disinfection	1,095		179	1,168		166	500		299	3,170		576	1,499		416
			Urban Sewerage	N.A		356,517	N.A.		270,669	N.A.		375,541	N.A.		792,773	N.A.		3,307,900
		Sub-Total		**154,087**		**1,137,782**	**106,598**		**1,177,795**	**186,990**		**2,240,315**	**602,407**		**3,552,199**	**1,034,933**		**6,825,069**
	Procurement of vehicle/Equipment			1,055		26,782	1,065		26,782	1,055		26,782	1,315		26,782	1,195		26,782
	Water Quality Testing Laboratory			478		-	478		-	478		-	956		-	1,434		-
	Sector Management	Engineering Studies		19,582		100,694	13,409		117,153	23,956		241,026	77,007		354,832	133,390		453,337
		Community Dev. & Training		12,219		69,711	7,994		81,146	15,412		166,864	58,952		245,653	86,038		313,849
		Sub-Total		**31,801**		**170,405**	**21,403**		**198,299**	**39,368**		**407,890**	**135,959**		**600,485**	**219,428**		**767,186**
	Total Direct Cost			**187,421**		**1,334,969**	**129,544**		**1,402,876**	**227,891**		**2,674,987**	**740,637**		**4,179,466**	**1,256,990**		**7,619,037**
	Contingencies			**102,338**		**133,497**	**73,173**		**140,284**	**124,141**		**267,499**	**412,733**		**417,946**	**707,516**		**761,904**
	Total Investment Cost			**289,759**		**1,468,466**	**202,717**		**1,543,160**	**352,032**		**2,942,486**	**1,153,370**		**4,597,412**	**1,964,506**		**8,380,941**

(Note) Pase I: 2001-2005, Phase II: 2006-2010

(3) Conclusions: The PW4SP is provincial long- and medium-term sector development plan in line with national sector development plan (Updated Medium Term Development Plan and Sector Master Plan). The Plan was prepared by respective PSPTs with special emphasis on the improvement/strengthening of LGUs in terms of capacity building, financial management and community development for the implementation of sector projects under the government's decentralization.

Targets of service coverage for the relevant sector in Phase I development were established in consideration of present service percentage and experience in financial arrangements in use of IRA, under the suggestions and recommendations rendered by the JICA Study Team. Accordingly, physical requirements for Phase I seem to be realistic to meet current capacity of LGUs. The prioritization of concerned municipalities/cities, suggested in the Plan, will be common basis of future individual projects to be undertaken by different authorities/financial sources.

The PW4SP will be authorized at the Sangguniang Panlalawigan as the base plan of the Province together with the promotion of the ownership of the Plan by the PSPT. Under the above arrangements and development, implementation of the medium-term development plan by LGUs will be realized by staged strengthening of their capacity buildings and financial managements. The DILG prepared a packaged program for JBIC-assisted project (Level I water supply and sanitation project for limited class municipalities) that will be managed through cost sharing between National Government and LGUs. The DILG started required actions to get concurrence from NEDA and DFA.

(4) Recommendations: Due to one of major purposes of this Study, "the assistance and technology transfer to the PSPT by the JICA Study Team", the PSPT presented development policy and methodology in the Plan in full consideration of Team's recommendations. Thus, countermeasures required urgently and/or re-confirmed are enumerated as follows:

1) Sector Management and Institutional Strengthening

- LGUs must clearly define their roles in the investment, operation, and maintenance of water service utilities and re-establish leadership in the implementation of WATSAN projects.
- Establishment of the PWSU in the Province and MSLT in the municipalities, as the permanent sector organizations, ensuring manpower and budgetary arrangements
- Water charges, estimated to recover costs both for capital and O&M of facilities, seem to be reasonable in comparison with average household income in any water supply service levels. However, "willingness to pay" by users is a big problem without proper idea on variable drinking water. Accordingly, the change of people's idea is a pre-requisite promoting people's participation from planning stage. Level I water supply project shall not be commenced without commitment by beneficiaries on the project (willingness to pay and to participate in).

- Organization of association shall be ensured for O&M of the facilities. Community participation, especially, a greater participation of women is required. In this regard, CD and gender specialists shall be trained and designated.

2) Technical Requirements

- Survey/Investigation/Feasibility Study/Detailed Design shall be conducted for individual projects based on the PW4SP.
- Spring development shall be given priority in water source development. In case of deep well development needed, geo-electric survey, pumping test at test wells, etc. shall be done, before construction work starts, in the area where well data are limited and development difficulty is projected.
- Consideration to material type of well casing and riser pipe in the area with high iron concentration.
- Periodic water quality examination must be practiced covering all provincial area to ensure water quality for drinking purpose. Water quality examination equipment shall be provided to the place for this purpose, such as at the existing hospital.
- Preparation of Barangay Map to know sector conditions as the minimum needs before project implementation. People's participation is a requisite for this work.
- Adjustment between LGUs and DECS is necessary to decide the type of school toilet, classroom toilet/toilet building, entailing cost sharing between them.

3) Financial Arrangements (Government Agencies and Private Sector Utilization)

- About 3-4%/year of IRA and local tax shall be ensured for sector development.
- Sufficient budget shall be allotted to sanitation sector, since target service coverage is set on a higher level.
- Private sector shall be utilized to reduce LGUs' financial burden and to ensure sustainability of the projects. Introduction of WD in urban area will also help reduce LGUs' budgetary requirements
- With reference to the implementation of ODA assisted WATSAN projects, LGUs shall start required procedure to use IRA properly.

4) Training Needs

- Increase of training opportunity for LGU staff members supported by DILG
- CD and gender specialist shall be fostered utilizing NGOs.
- Conduct of required training to WATSAN association members

5) Creation of Monitoring System and its Operation

- PWSU and MSLT proposed in the PW4SP shall undertake sector monitoring and establish database.
- Involvement of beneficiaries in the monitoring activity
- Interrelationship between national and local government agencies concerned shall be clarified.

6) Promotion of Required Procedure for the Authorization of PW4SP and its Updating

- Common use of PW4SP among national and local government agencies
- Early completion of authorization process for PW4SP by LGUs
- Collaboration work by province and municipalities, especially, for the preparation of ODA assisted project
- Data collection in consideration of gender and accumulation of water source data
- Updating sector related data collecting those from Barangay level and reflecting completed projects. Sector plan shall be updated using such data and information.

1. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF AGUSAN DEL NORTE

1.1 Provincial Profile

Agusan del Norte is one of the 4 provinces in Caraga Region. It is composed of 11 municipalities and the city of Butuan, the provincial capital. There are 163 barangays, of which 39 are urban and 124 rural. The province is classified as 4th class. At the municipal level, 4 municipalities belong to 5th class and the rest has higher classification. The population of the province was 267,411 in 1995 with an annual growth rate of 2.33% between 1990 and 1995.

Physical Features

Climate in the province is characterized by an absence of dry season with a very pronounced maximum rain period. The province is located south of the typhoon belt, which is considered as less visited by typhoon. The topography of the province is generally characterized by the wide alluvial plains formed by Agusan River and its tributaries, and high mountain ranges in the northern and eastern side. Agusan River, the 3rd largest in the country, is the principal natural drainage system in the area and empties into Butuan Bay after passing through the provinces of Compostela Valley and Agusan del Sur. Another important inland water body is Lake Mainit located at the northeast part of the province. About 74% of the total land area of the province constitutes forestland, while 25% are agricultural and built-up areas.

Socio-economic Aspects

Agriculture and forestry are the major economic activities in the province. The average annual family income in 1994 was ₱ 43,958 which was well below the national average of ₱ 83,161. Moreover, about 65% of the total number of families lived within and below the established poverty threshold income of ₱ 43,659 in Region X (the province was formerly a part of Region X).

All municipalities have electric supply services with 80% household coverage. Telecommunication is also available to all municipalities. Land transportation can be obtained by means of jeepneys and buses. There are only 12 banking institutions and 25 industrial/commercial and tourism-related establishments. With regard to social services, there are 164 schools, 11 hospitals, and 108 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Urban-rural classification of barangays was modified to reflect actual conditions of the area and using this classification, rural population accounts for 67%, while the remaining 33% is urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid, viral hepatitis, diarrhea, intestinal parasitism, scabies, conjunctivities, malaria and dengue fever.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 26% of the total households in the province relied on the municipal refuse collection services.

1.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 2 Level III systems operated by WDs, but only 1 system is in the PW4SP study area, the Nasipit Water District in the municipality of Nasipit. The WD utilizes 2 deep wells and a spring as water sources and supplies water for 16 hrs/day. Collection efficiency of water charges is quite high at 95%, but unaccounted-for-water amounts to a high 36% of the production.

Fifty three (53) Level II systems, mostly using springs, are operating in all the municipalities covering 10 urban and 51 rural barangays. However, in some of these systems, expansion of distribution line and installation of additional faucets are usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity. These Level II systems impose flat rate water charge or supply water free of charge. This practice has negative implications on the

financial savings to cope with future repair and depreciation. Cost recovery is a prerequisite in sector management.

The 2,609 operational Level I facilities in the province consist of shallow, deep and dug wells, springs, and rainwater collectors. Of these facilities, 1,249 are considered as safe sources. Among the unsafe sources are 710 shallow wells and 650 open dug wells. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 61% and 39%, respectively. Nonetheless, non-functioning public Level I facilities account for 36% and 30% of the total number of deep and shallow wells, respectively. The share of developed springs in public facilities is 6%. The BWSA or users are responsible on O&M, however it is almost negligible.

About 61% or 170,000 of the present population (279,000 comprising 33% in urban area and 67% in rural area) are adequately served. Under area classification, 75% of urban population and 54% of rural population have access to safe water sources/facilities. Of the served population, only 11% or 18,000 persons are served by Level III systems. About 42% or 72,000 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage with sanitary toilets in the province is 76% or 38,000 of the total households, which is higher than the national coverage of 66%. These toilets consist of 2% flush type, 86% pour-flush type and 12% VIP/sanitary pit latrine. In municipalities that have higher water service coverage, higher sanitation coverage occurs and adversely, in lower water supply coverage, lower sanitation coverage also occurs. Service coverage in urban area is 70%, while in rural area, the coverage is 79%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of.

The province has a total of 720 toilets installed at 144 schools. Only 45% of the students is adequately served by sanitary toilets. The present average ratio of 85 students per sanitary toilet is well below the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 22 public utilities; public markets, bus/jeepney terminals,

and parks or plazas. All these public utilities are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary.

1.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the role, relationship and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects, however, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of the NEDA Board Resolution No.4 (1994). With the purpose of ensuring common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. Those of implementing water supply projects, DPWH used to undertake, are now transferred to the LGUs. The functions of the IPHO under the DOH have been devolved to the LGUs. Thus, DILG now undertakes the overall coordination function for the implementation of the WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is primarily responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees and task forces have been organized to address co-ordination issues.

The current major institutional issues are those of management of the transition process and of re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, LGUs' capacity for the sector project is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementers themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There

is a need to establish a system, which is perceived as having a direct link to performance, similar to project-based monitoring.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects. CD/CO work was implemented using the process employed by past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity has been very few and far between.

Gender Consideration

The Philippine Government recognizes gender responsiveness as a catalyst of growth and development and adopts the "Philippine Plan for Gender Responsive Development (1995-2025). The Plan aims to pave the way for full participation of women and men in planning and implementation of technology for infrastructure projects, including the WATSAN sector. All government agencies were directed to revise and review regulations and procedures to remove any gender bias and to incorporate gender concepts in their projects. The DILG implements gender responsive WATSAN projects. Sector projects in the past, especially for rural water supply and sanitation that were funded by ADB, UNDP and World Bank had emphasized women's participation in the association or O&M activities.

In the province, the concept of gender and development is still relatively new and government policies have not yet trickled down the LGU officials and beneficiaries. As such, gender disaggregated information/data that will give a clearer perspective to guide sector planners in designing gender-sensitive projects are lacking, among others, type of participation, practices, and health. In this regard, a province-wide survey and group interviews were undertaken to assess gender sensitivity of barangay officials and constituents in the roles of both men and women as well as their modes of participation in sector projects.

The findings are enumerated below: In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility - There is no designated gender as to who is responsible for fetching water. The responsibility lies on whoever is available.

- operation and maintenance activities - Most community members could not determine who is responsible for the O&M of water supply facilities. But they expressed willingness to contribute for the O&M of future projects.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer.
- consultation and project participation - Most of the men and women were not consulted during project planning and implementation.
- training - Both men and women have access to training and are interested to learn new skills. Health education training programs, however, are usually attended by females.

1.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGU in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1994-1998, IRA of the province represented about 80% of the total income. Among other income sources, profit from economic enterprises is considered, although the province subsidized them in 1997. On the other hand, actual expenditures for the said period were 87% of total revenue, which were broken down into personnel (68%), capital outlay (1.8%), and operating and maintenance expenses (17%).

The funds for the sector development were part of the capital outlay of the province. During the period 1994-1997, the province had a net loss from operations. There were no loans incurred for capital outlays. For the year of 1998, the province also projects a loss of about ₱16.6 million. Debt servicing capacity is computed to be ₱45.1 million for the year 1998.

The investment for water supply sector amounted to about ₱88.1 million during the period 1995-1998, while that for sanitation sector was only ₱0.2 million. Of the investments, Level III amounted to about ₱53.18 million, while Level I and II were much smaller with combined percentage of about 40%.

On the other hand, the total planned investments in the relevant sector were ₱88.4 million for the said period. However, actual expenditures derived from the 20 % DF was only ₱3.6 million or 3.9% of the required investment. The shortage in funding was managed through the investments from line agencies and other sources.

The sector projects in previous years were implemented by the DPWH and the province was financially assisted by foreign donors. The province is currently processing financial arrangements for Lake Mainit Integrated Area Development, through the MDF.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the cost is shouldered by the RWSA through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. The capital cost required for Level III is usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5% to 12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply systems and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. The average monthly fee for Level I in the active associations is ₱10 household/month, while that for Level II is ₱50. For Level III systems, the O&M costs are basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. Two (2) WDs are currently operational in the province, one of which has current loan arrears with LWUA.

The percentage of water fee to median monthly household income is 3-5% for Level III, 1.4% for Level II, and less than 1% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

1.5 Water Source Development

The study on water source development covers all the municipalities in the province. It gives an emphasis on groundwater sources rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into three (3) main groups based on the ages of the rock formations: Miocene and Older Rocks, Pliocene to Pleistocene Rocks and Recent Deposits. Miocene and Older rock units cover about 50% of the total provincial area and are largely distributed on the northeastern and west portions of the province. Rocks classified as Pliocene to Pleistocene, which underlie about 20% of the total land area of the province, are fairly widely distributed southeast and east of Lake Mainit, and southeast of Butuan City. The Recent deposits make up about 30% of the province and are widespread in the central and north central plains of Butuan City, Santiago, Cabadbaran, Magallanes, Remedios.T.Romualdez (R.T.R.), Buenavista and Las Nieves.

For planning purpose in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. Shallow well area is present in the limited areas along the seashore of Buenavista and along the coastal line located west of Lake Mainit. Deep well area covers about 30% of Agusan del Norte, while the remaining 70% is classified as difficult area. The groundwater in the province is generally potable except for saline water identified in the areas along the seashore in the western side of Butuan City and the coastal area on the northwestern side of the province. High iron concentration was reported in Tubay, Magallanes, R.T.R. and Las Nieves. The mountainous areas, where springs are the most possible water sources for development, mostly occupy difficult area.

Based on the inventory of water sources prepared through the study, the province has 83 developed springs currently serving the province, which issue from high mountain areas in the northern northeastern and western areas of the province. A total of 18 untapped springs were reported in the municipalities of Kitcharao, Tubay, Cabadbaran, R.T.R., Buenavista, Nasipit, and Las Nieves.

According to the existing well inventory, the depth of potential aquifers occurs between 6 to 190 mbgl in the Recent alluviums and the Pliocene-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yields of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, especially with reference to Level III systems. Groundwater source availability as second priority was presented with standard specifications of wells by municipality, including parameters such as well depth, static water level and specific capacity.

For the furtherance in collecting accurate information to design the concrete specifications of the planned wells, the following recommendations are made. Prior to the detailed design or pre-construction stages, additional detailed groundwater investigation shall be conducted entailing electric resistivity survey and/or the construction of test wells in the municipalities of Santiago, R.T.R., Magallanes, and Las Nieves. Of these municipalities, Santiago and Magallanes areas are planned to carry out electric resistivity survey in the urban and rural areas, and a test boring in the urban areas. While, other areas are proposed to execute the survey and test borings in the urban areas.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation in the following items: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

1.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established in consideration of about 10% increase from the base year both in urban and rural area as shown in Table 1.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II

Table 1.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*74*	*85*	*95*
	Rural Area	*55*	*65*	*93*
Sanitation	*Urban HH Toilet*	*70*	*90*	*95*
	Rural HH Toilet	*79*	*85*	*95*
	School Toilet	*48*	*80*	*90*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*78*	*90*	*Not applicable*

facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 1.6.2.

Table 1.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*20,100*	*80,200*
	Rural Area	*Persons*	*39,500*	*83,400*
Sanitation	*Urban HH Toilet*	*No. of Households*	*6,500*	*11,200*
	Rural HH Toilet	*No. of Households*	*10,100*	*24,300*
	School Toilet	*No. of Students*	*25,700*	*26,300*
	Public Toilet	*No. of Utilities*	*33*	*40*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*44,400*
Solid Waste	*Urban Area*	*No. of Households*	*7,723*	*Not applicable*

The necessary water supply facilities for Phase I include 11 deep wells/springs for 4,000 house connections in urban area, and 18 Level II systems with spring sources and 354 Level I wells/springs for rural area. For Phase II, 16 deep wells/springs for additional 20,000

connections and 1,396 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 85% of Level I facilities will be implemented by the LGUs and 10% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. A set of water quality test instruments/equipment will be necessary to upgrade the existing provincial laboratory.

For urban water supply, 1 Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system/s, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, only 1 municipality (Nasipit) out of the 11 municipalities in the PW4SP study area has Level III system. A project proposal was submitted to NEDA for Lake Mainit Integrated Area Development (LMIAD) for possible OECF loan from Japan. The project entails water supply component for the municipalities of Jabonga, Kicharao, Santiago and Tubay.

Possibility and necessity to merge service area of some neighboring municipalities to one urban water supply system were also studied from the view points of water source constraints, economical development, etc. Since the municipalities taken up in this PW4SP are generally scattered throughout the province, an individual system was recommended by municipality. However, some municipalities situated at coastal area such as Magallanes, are exposed to the risk of salt-water intrusion in future groundwater development. Further study on system merging shall be made for these municipalities with reference to water source arrangements.

Preference is made to utilize spring sources owing to less O&M activities and cost compared to deep well with electric motor pump. Application of deep wells for water source is regarded as the second priority in principle. Surface water, on the other hand, is not adopted at this moment, in view of large capital investment needs and complexity of surface water treatment.

Moreover, Phase I sanitation will require 6,000 household toilets, 79 public school toilets and 33 public toilets for urban area. In rural area, 10,000 household toilets and 169 public school toilets are necessary. Solid waste disposal will need 10 refuse collection trucks. For Phase II, urban area will require 11,000 household toilets, 124 public school toilets and 40 public toilets. In rural area a total of 24,000 household toilets and 253 public school toilets are necessary.

1.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who shares in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with the priority on sustainability.
- Project selection and prioritization on commitment of the beneficiaries, willingness to pay, the current water and sanitation and health conditions, potential for growth and costs
- Appropriate technology to local conditions and resources. Economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach to the provision of potable water supply, sanitation and hygiene education.
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas.
- Self cost recovery and rational cost sharing (Subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector.
- Broader concerns for the environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that, in the medium-term, national and external funds will, although diminishing, continue to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Office (PWSO) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Office. In the long term, the Office may be promoted to the same level as PPDO. The PWSO will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSO.

For institutional arrangement, the formation of BWSA for Level I and RWSA for Level II and III is a prerequisite. The community, especially the women sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education program. To provide the members with the necessary skills, training programs are to be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that LGUs shall provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the PWSO and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province. The Unit should look into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the prospective Municipal Liaison Task Force (some municipalities have project-based TF) to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) shall establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized on a long term basis and implemented on the national, provincial and municipal levels. This will help promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits that will be derived by the project users.

The DILG shall retain central role as the national government agency that will promote and develop the capacities of the LGUs in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program. Another national agency, the LWUA, shall continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance.

On the manner of participation in sector development, it is important for the LGUs to make the decision together with the users on the appropriate service level (Level I/II/III water supply) it can afford to implement. To achieve this, the LGU must encourage active community participation and involvement through the following: i) sharing relevant information on the project with the users; ii) consulting with users on all phases of project development; iii) giving ample room to the beneficiaries to make project-related decisions; and iv) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, users shall participate in the following (some communities in the province have been tried): i) the participation through a firm involvement and commitment of the community at different implementation stages; expressed participation of all parties through MOAs is a requisite; ii) the sharing of capital costs between project proponent and the users entailing the provision of land, right-of-way, free labor and/or materials by community members; and iii) O&M practices as required by service level.

For Levels I and II water supply, the PWSO should play a major role in promoting and utilizing the modified "Community Development Process" developed by the UNDP-assisted project.

Gender Consideration

The sustainability of WATSAN services depends on responding to the demands of men and women in the community. The LGUs must recognize the requirements and give vital emphasis on the role of gender sensitive participation, especially with reference to maintenance and financing of WATSAN systems. They should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainer’s Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

1.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, upgrading of existing laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 1.8.1.

Table 1.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*79,185*	*267,076*
	Rural Area	*40,796*	*98,307*
	Sanitation		
	Household Toilet	*1,561*	*3,715*
	School Toilet	*54,101*	*83,081*
	Public Toilet	*11,352*	*13,763*
	Disinfection of Well	*159*	*117*
	Urban Sewerage	*-*	*324,069*
	Sub-Total	***187,154***	***790,128***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*110*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***995***	***26,782***
Water quality Laboratory		*446*	*0*
Sector Management	*Engineering Studies*	*24,132*	*60,114*
	Institutional Development	*15,125*	*41,618*
	Sub-Total	***39,257***	***101,732***
Total Direct Cost		***227,852***	***918,642***
Contingencies	*Physical Contingency*	*22,783*	*91,864*
	Price Contingency	*60,427*	*N.A*
	Value-Added Tax (VAT)	*21,270*	*N.A*
Total Investment Cost		***332,333***	***1,010,506***
Total Investment Cost (excluding Price Contingency)		***271,878***	***1,010,506***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱272 million (in 1997 price level). A total of ₱187 million is required as the construction/rehabilitation cost, of which urban and rural water supply shares are 42% and 22%, respectively. While, the remaining 34% is required for urban and rural sanitation. With reference to urban water supply, some cost

required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: one set/unit each of well drilling equipment, well rehabilitation equipment, service truck with crane and support vehicle; and 15 units of refuse collection truck. The total procurement cost is estimated at approximately ₱59 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱8 to ₱14 million/year during Phase I period. vehicle

1.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱100.7 million (provincial IRA is 44.8% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the larger allotment (36.4%) and allotments to other sub-sectors both for urban and rural areas are between 20 and 25%.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 37% of the requirements as a provincial average. Hence, there is a big shortfall of ₱171.2 million in funding. It will become ₱212 million in consideration of price escalation

with annual rate of 7%. In the municipal achievement percentage in finance, Jabonga (77.0%) is the highest among municipalities followed by Santiago (71%). Others are in the range between 20% and 60% to the requirements.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds; ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. The service coverage for urban water supply and rural sanitation in 2003 would not sustain even the present level in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Tubay and Buenavista, while Cabadbaran is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province, the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. There are 2 eligible municipalities in the province for Level I water supply, while 10 municipalities in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost was estimated at ₱46.5million in 1997 year price level.

Two (2) alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, the GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱21.8 million in the current price level) and available

IRA of LGUs (₱38.3 million), the projected IRA available meets the cost to be shared by the LGUs. Under this case, the IRA to be used by the LGU is 57% of available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the project, even if estimated IRA available meets the required cost to be shared by the LGUs. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. Under this case, the IRA to be used by the LGU is about 20% of available IRA estimated. GOP will possibly finance up to ₱34.8 million or 75% of the total project cost in the portion of loan. About ₱19.7 million or 42.5% of the total project cost shall be granted to the LGUs, aside from GOP counterpart fund. The remaining ₱15.1 million or 32.5% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF.

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While recurrent cost shall be paid by the users to sustain the systems. Users need to pay water charge of up to 2% of their monthly income (₱73/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱67/HH/month in 2003, less than 2% of the monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱251/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), only households with median monthly income will be able to pay the amount (low income households will afford to pay for less than 10 m^3/HH/month).

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

1.10 Monitoring for Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. It includes information collection, tracing the flow of raw data from the field to the central level information analysis and data feedback. With the sector monitoring, planners should be able to take fresh objective view of the way it implements current

strategies. A sector monitoring system should reinforce the linkage between water, sanitation and health; be reliable and involve the beneficiaries; be accepted by all sectors; be practical; and be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purpose is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded from national and local governments. At the provincial level, monitoring will include projects implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province consisting of NGOs and representatives from the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and updated sector investment program.

2. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF AGUSAN DEL SUR

2.1 Provincial Profile

Agusan del Sur is one of the 4 provinces in Caraga Region. The capital town of Prosperidad, is about 75km south of Butuan City. It is composed of 14 municipalities with 314 barangays broken down into 25 urban and 289 rural. The province is classified as 1st class. At the municipal level, only 1 municipality belongs to 5th class, the rest has higher classification. The population of the province was 514,736 in 1995 with an annual growth rate of 3.85% between 1990 and 1995.

Physical Features

There are 2 types of climate being experienced in the province: Type II in the eastern part and Type IV in the western part. The average annual rainfall was registered at 3,320mm. The topography of the province is generally characterized by the wide alluvial plains formed by Agusan River and its tributaries and high mountain ranges in the western side. Agusan River, the 3rd largest in the country, is the principal natural drainage system in the area. About 65% of the total land area of the province constitutes forestland, while 23% are agricultural and built-up areas.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 46,264 which was well below the national average of ₱ 83,161. Moreover, about 70% of the total number of families lived within and below the established poverty threshold income of ₱ 43,659 in Region X (the province was formerly a part of Region X).

All municipalities have electric supply service with 39% household coverage. Telecommunication is available to 42% of the municipalities. Land transportation is available by means of jeepneys and buses. There are only 44 banking institutions and 52 industrial/commercial and tourism-related establishments. With regard to social services, there are 457 schools, 12 hospitals, and 125 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Urban-rural

classification of barangays was modified to reflect actual conditions of the area and using this classification, rural population accounts for 68%, while the remaining 32% is urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid, viral hepatitis, diarrhea, intestinal parasitism, skin disease, malaria, dengue fever and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 13% of the total households in the province relied on the municipal refuse collection services.

2.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 16 Level III systems in 9 municipalities, namely; Bayugan, Bunawan, Esperanza, Prosperidad, Rosario, San Francisco, Santa Josefa, Sibagat and Trento. A total of 12 systems utilize springs and the remaining 4 are deep wells. Most of these systems adopt the combined system with communal faucet (Level II service). Common issues encountered are insufficient water pressure resulting to limited connections and rationing, inadequate capacity of distribution pipes due to inappropriate planning and designing, and no regular disinfection. Collection efficiency of water charges is quite high at bigger waterworks, but at small waterworks, even the analysis on charge collection is not practiced due to weak management practice.

Fifty seven (57) Level II systems, mostly using springs, are operating in all the municipalities covering 11 urban and 48 rural barangays. However, in some of these systems, expansion of distribution line and installation of additional faucets are usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity. Only 60% of the Level II systems

impose a flat rate water charge and the rest supplies water free of charge. This practice has negative implications on the financial savings to cope with future repair and depreciation. Cost recovery is a prerequisite in sector management.

The 4,022 operational Level I facilities in the province consist of shallow, deep and dug wells, springs, and rain water collectors. Of these facilities, 1,819 are considered as safe sources. Among the unsafe sources are 240 shallow wells and 1,872 open dug wells. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 65% and 35%, respectively. Nonetheless, non-functioning public Level I facilities account for 42% and 39% of the total number of deep and shallow wells, respectively. The share of developed springs in public facilities is 21%. The BWSA or beneficiaries are responsible on O&M, however it is almost negligible.

About 53% or 295,000 of the present population (555,000 comprising 32% in urban area and 68% in rural area) are adequately served. Under area classification, 67% of urban population and 47% of rural population have access to safe water sources/facilities. Of the served population, only 11% or 33,000 persons are served by Level III systems. About 71% or 210,000 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage with sanitary toilets in the province is 61% or 63,000 of the total households, which is slightly lower than the national coverage of 66%. These toilets consist of 8% flush type and 92% pour-flush type. In municipalities that have higher water service coverage, higher sanitation coverage occurs and adversely, in lower water supply coverage, lower sanitation coverage also occurs. Service coverage in urban area is 73%, while in rural area, the coverage is 56%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of.

The province has a total of 1,591 toilets installed at 444 schools. Only 30% of the students is adequately served by sanitary toilets. The present average ratio of 133 students per sanitary toilet is well below the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 32 public utilities; public markets, bus/jeepney terminals,

and parks or plazas. All these public utilities are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary.

2.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the role, relationship and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects, however, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of the NEDA Board Resolution No.4 (1994). With the purpose of ensuring common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. Those of implementing water supply projects, DPWH used to undertake, are now transferred to the LGUs. The functions of the then IPHO under the DOH have been devolved to the LGUs. Thus, DILG now undertakes the overall coordination function for the implementation of the WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is primarily responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees and task forces have been organized to address co-ordination issues.

The current major institutional issues are those of management of the transition process and of re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, LGUs' capacity for the sector project is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementers themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There

is a need to establish a system, which is perceived as having a direct link to performance, similar to project-based monitoring.

Community Development

The province of Agusan del Sur has had recent experience in implementing participatory community development in sector projects through the "Institution Building for Decentralized Implementation of Community Managed Water and Sanitation Project" in 1996-1997. The project paved the way for the creation of a WATSAN Center to plan and execute sector projects and put into a workable framework with the processes in organizing communities. However, the WATSAN Center is not yet fully operational, and there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs. This situation creates a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, there is an urgent need to replicate the training programs given to some provincial and municipal planning officers until all the municipalities/barangays are covered.

Gender Consideration

The Philippine Government recognizes gender responsiveness as a catalyst of growth and development and adopts the "Philippine Plan for Gender Responsive Development (1995-2025). The Plan aims to pave the way for full participation of women and men in planning and implementation of technology for infrastructure projects, including the WATSAN sector. All government agencies were directed to revise and review regulations and procedures to remove any gender bias and to incorporate gender concepts in their projects. The DILG implements gender responsive WATSAN projects. Sector projects in the past, especially for rural water supply and sanitation that were funded by ADB, UNDP and World Bank had emphasized women's participation in the association or O&M activities.

In the province, the concept of gender and development is still relatively new and government policies have not yet trickled down the LGU officials and beneficiaries. As such, gender disaggregated information/data that will give a clearer perspective to guide sector planners in designing gender-sensitive projects are lacking, among others, type of participation, practices, and health. In this regard, a province-wide survey and group interviews were undertaken to assess gender sensitivity of barangay officials and constituents in the roles of both men and women as well as their modes of participation in sector projects.

The findings are enumerated below. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility - There is no designated gender as to who is responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities - Most community members could not determine who is responsible for the O&M of water supply facilities. But they expressed willingness to contribute for the O&M of future projects.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer.
- consultation and project participation - Most of the men and women were not consulted during project planning and implementation.
- training - Both men and women have access to training and are interested to learn new skills. Health education training programs, however, are usually attended by females.

2.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1997, IRA of the province represented about 90% of the total income. Other sources of income are profit from operation of its economic enterprises and rental income from the lease of equipment that was procured by the province through a loan from the LBP. On the other hand, actual expenditures for the same period were 88% of the total revenue, which were mainly broken down into personnel (42%), capital outlay (24.8%), and operation and maintenance expenses (21%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱53.50 million for the year 1998, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1994-1996, the total funds available for the capital outlay represented only 50% of the planned capital outlay requirements. In 1997, the 20% DF was sufficient to finance the capital outlay requirements, while for 1998, the allocation is projected to cover only 51.5% of the total capital expenditures as previously experienced. Due to the low availability of funds, the relevant sector accounts between 2 to 5% of DF or about 1% of IRA.

Sector investments during the period 1995-1998 amounted to about ₱148.9 million, 75% of which was funded by the province. Of the investments, Level III amounted to about ₱114.4

million, while Level I and II water supply were much smaller with combined percentage of only 23%.

The sector projects in previous years were implemented by the DPWH and the DILG. In the recently completed UNDP-WATSAN project, which involved some physical development, cost-sharing arrangement was made among the following: UNDP (24%), DPWH (18%), municipal government (11%), province (41%) and BWSA/the barangay/DSWD contributed in kind.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱10 to ₱20 /household /month, while those for Level II are ₱55 to ₱60. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. Three (3) WDs and 11 waterworks are currently operational in the province, 2 WDs of which have current loan arrears with LWUA.

The percentage of water fee to median monthly household income is about 3% for Level III, 1.5% for Level II and less than 1% for Level I. Thus, the current water rates in all service

levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

2.5 Water Source Development

The study on water source development covers all the municipalities of the province. It gives an emphasis on groundwater sources rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into three (3) main groups based on the ages of the rock formations: Miocene and Older Rocks, Pliocene to Pleistocene Rocks, and Recent Deposits. The Miocene and Older rock units cover about 53% of the total provincial area and are largely distributed on the western, northern, and eastern sides of the province. Rocks classified as Pliocene to Pleistocene, which underlie about 34% of the total land area of Agusan del Sur, are widely distributed on the western and eastern sides of both banks of the Agusan River that flows through the province. The Recent Deposits formed by the Agusan River and its tributaries make up about 13% of the province and are widespread in the southern part of the province.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. Deep well area covers about 50% of Agusan del Sur, while difficult area falls on the remaining area. The groundwater in most areas of the province has water quality problems both in shallow and deep aquifers. Water has high iron content and often contains methane gas, and in some places, even salt. To remove the iron in the water, DPWH-DEO installed iron removal facilities at some sites, some of which are being used at present. Difficult areas are mostly occupied by the mountainous areas. Springs in these areas are the most possible water sources for development.

Based on the inventory of water sources prepared through the study, the province has 266 developed springs currently serving the province, which emerge from high mountain areas in northern and eastern parts, and from low hilly areas in central part. A total of 65 untapped springs are reported in the municipalities of Sibagat, Bayugan, Prosperidad, San Francisco, Talacogon, Rosario, Trento, Esperanza, San Luis and Veruela.

According to existing well inventory, the depth of potential aquifers occurs between 5 to 115 mbgl in the Recent alluvium and the Pliocene-Pleistocene rocks. The development of deep

wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, especially with reference to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing electric resistivity survey and the construction of test wells, prior to the detailed design or pre-construction stages. The municipalities that fall on the requirements are San Francisco, Rosario and San Luis. While, only electric resistivity survey may be carried out in the areas of Loreto and La Paz.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation in the following items: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

2.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established in consideration of about 10% increase from base year both in urban and rural area as shown in Table 2.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information.

Table 2.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*67*	*80*	*95*
	Rural Area	*47*	*60*	*90*
Sanitation	*Urban HH Toilet*	*73*	*80*	*93*
	Rural HH Toilet	*64*	*75*	*85*
	School Toilet	*30*	*60*	*90*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*40*	*60*	*Not applicable*

Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 2.6.2.

The necessary water supply facilities for Phase I include 15 deep wells/springs for 10,000 house connections in urban area, and 65 Level II systems with spring sources and 827 Level I

Table 2.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*55,900*	*177,058*
	Rural Area	*Persons*	*127,491*	*266,444*
Sanitation	*Urban HH Toilet*	*No. of Households*	*10,536*	*29,957*
	Rural HH Toilet	*No. of Households*	*27,169*	*59,761*
	School Toilet	*No. of Students*	*87,000*	*85,050*
	Public Toilet	*No. of Utilities*	*29*	*10*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*121,760*
Solid Waste	*Urban Area*	*No. of Households*	*11,969*	*Not applicable*

wells/springs for rural area. For Phase II, 30 deep wells/springs for additional 44,000 connections and 4,400 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 80% of Level I facilities will be implemented by the LGUs and 20% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. A new laboratory building will be constructed to augment the existing provincial laboratory. Two (2) sets of water quality test instruments/equipment will be necessary; one (1) set to upgrade the existing laboratory, and the other set, for the new laboratory.

For urban water supply, 1 Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, 7 out of fourteen 14 municipalities, namely; Bayugan, La Paz, Loreto, San Luis, Talacogon, Trento and Veruela have no Level III system in the respective urban areas. At present, there is no particular plan/on-going project for the development of Level III/WD.

Possibility and necessity to merge service area of some neighboring municipalities to one urban water supply system were also studied from the view points of water source constraints, economical development, etc. Since the municipalities taken up in this PW4SP are scattered throughout the province, an individual system was recommended by municipality.

Preference is made to utilize spring sources owing to less O&M activities and cost compared to deep well with electric motor pump. Application of deep wells for water source is regarded

as the second priority in principle. Surface water is, on the other hand, not adopted at this moment, in view of large capital investment needs and complexity of surface water treatment.

Moreover, Phase I sanitation will require 11,000 household toilets, 235 public school toilets and 29 public toilets for urban area. In rural area, 27,000 household toilets and 503 public school toilets are necessary. Solid waste disposal will need 10 refuse collection trucks. For Phase II, urban area will require 30,000 household toilets, 453 public school toilets and 10 public toilets. In rural area a total of 60,000 household toilets and 709 public school toilets are necessary.

2.7 Sector Management for Medium-Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who shares in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with the priority on sustainability.
- Project selection and prioritization on commitment of the beneficiaries, willingness to pay, the current water and sanitation and health conditions, potential for growth and costs
- Appropriate technology to local conditions and resources. Economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach to the provision of potable water supply, sanitation and hygiene education.
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas.
- Self cost recovery and rational cost sharing (Subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector.
- Broader concerns for the environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that, in the medium-term, national and external funds will, although diminishing, continue to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Office (PWSO) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Office. In the long term, the Office may be promoted to the same level as PPDO. The PWSO will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSO.

For institutional arrangement, the formation of BWSA for Level I and RWSA for Level II and III is a prerequisite. The community, especially the women sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education program. To provide the members with the necessary skills, training programs are to be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that LGUs shall provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the WATSAN Center and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province. The Unit should look into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the prospective Municipal WATSAN Liaison Task Force (some municipalities have project-based TF) to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) shall establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized on a long term basis and implemented on the national, provincial and municipal levels. This will help promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits that will be derived by the project users.

The DILG shall retain central role as the national government agency that will promote and develop the capacities of the LGUs in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program. Another national agency, the LWUA, shall continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance.

On the manner of participation in sector development, it is important for the LGUs to make the decision together with the users on the appropriate service level (Level I/II/III water supply) it can afford to implement. To achieve this, the LGU must encourage active community participation and involvement through the following: i) sharing relevant information on the project with the users; ii) consulting with users on all phases of project development; iii) giving ample room to the beneficiaries to make project-related decisions; and iv) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, users shall participate in the following (some communities in the province have been tried): i) the participation through a firm involvement and commitment of the community at different implementation stages; expressed participation of all parties through MOAs is a requisite; ii) the sharing of capital costs between project proponent and the users entailing the provision of land, right-of-way, free labor and/or materials by community members; and iii) O&M practices as required by service level.

For Levels I and II water supply, the WATSAN Center/Unit should continue to utilize, with some modifications, the "Community Development Process" developed by the UNDP-assisted project.

Gender Consideration

The sustainability of WATSAN services depends on responding to the demands of men and women in the community. The LGUs must recognize the requirements and give vital emphasis on the role of gender sensitive participation, especially with reference to

maintenance and financing of WATSAN systems. They should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainer's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

2.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 2.8.1.

Table 2.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*195,386*	*561,804*
	Rural Area	*201,499*	*527,192*
	Sanitation		
	Household Toilet	*1,043*	*9,658*
	School Toilet	*161,701*	*255,257*
	Public Toilet	*9,977*	*3,440*
	Disinfection of Well	*184*	*350*
	Urban Sewerage	*-*	*647,330*
	Sub-Total	***569,790***	***2,005,031***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*140*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,025***	***26,782***
Water quality Laboratory		*2,032*	*0*
Sector Management	*Engineering Studies*	*73,935*	*175,412*
	Institutional Development	*50,643*	*121,439*
	Sub-Total	***124,578***	***296,851***
Total Direct Cost		***697,425***	***2,328,664***
Contingencies	*Physical Contingency*	*69,775*	*232,903*
	Price Contingency	*183,652*	*N.A*
	Value-Added Tax (VAT)	*64,707*	*N.A*
Total Investment Cost		***1,015,899***	***2,561,936***
Total Investment Cost (excluding Price Contingency)		***832,227***	***2,561,936***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱832 million (in 1997 price level). A total of ₱570 million is required as the construction/rehabilitation cost in Phase I, of which urban water supply and rural water supply share 34% and 35%, respectively. While, the remaining 31% is required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 10 sets/units each of well drilling equipment and service truck with crane; 2 sets/units each of well rehabilitation equipment and support vehicle; and 10 units of refuse collection truck. The total procurement cost is estimated at approximately ₱290 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱15 to ₱31 million/year during Phase I period.

2.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱178.1 million (provincial IRA is 42.5% of the total IRA). In the overall IRA allocation to the sub-sectors, rural water supply has the largest allotment of 35.2%, followed by urban water supply (32.3%). While, the share of rural sanitation is 20%, which is higher than that of urban sanitation.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 21.4% of the requirements as a provincial average. Hence, there is a big shortfall of ₱654.1 million in funding. It will become ₱809.6 million in consideration of price escalation with annual rate of 7%. In the municipal achievement percentage in finance, Loreto (39.3%) is the highest among municipalities, followed by San Luis (34%). Others are in the range between 10% and 30% to the requirements.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2003 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are La Paz and Veruela, while Rosario is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. There is only one eligible municipality (Santa Josefa) in terms of 5th and 6th class municipality for Level I water supply in the province, while there are 5 municipalities to meet the condition in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost was estimated at ₱81.3 million in 1997 year price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱38.2 million in the current price level) and available IRA of LGUs (₱19.8 million), it was identified that ₱18.4 million are in short achieving only 52% of the proposed requirements. As an option to solve this financial shortage, the provincial government may re-arrange IRA allocation; about 80% of replenishment from the remaining provincial IRA allotted to rural water supply sub-sector after reducing allotted amount to the eligible municipality. Another option suggested is to utilize all provincial sector IRA (₱49.7million) without limiting to the available IRA for rural water supply sub-sector, as the possible financial source, to supplement municipal IRA allotted to the eligible municipality. In this case about 55% of the provincial sector IRA is required.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. Under this case, the IRA to be used by the LGU is about 80% of available IRA. GOP will possibly finance up to ₱61.0 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, 46.5% of the total project cost shall be granted to the LGUs, aside from GOP counterpart fund. The remaining 28.5% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF.

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱77/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱67/HH/month in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱231/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), only households with median monthly income will be able to pay the amount (low income households can afford to pay for less than 10 m^3/HH/month).

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer

repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

2.10 Monitoring for Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. It includes information collection, tracing the flow of raw data from the field to the central level information analysis and data feedback. With the sector monitoring, planners should be able to take fresh objective view of the way it implements current strategies. A sector monitoring system should reinforce the linkage between water, sanitation and health; be reliable and involve the beneficiaries; be accepted by all sectors; be practical; and be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purpose is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded from national and local governments. At the provincial level, monitoring will include projects implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province consisting of NGOs and representatives from the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and updated sector investment program.

3. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF DAVAO DEL SUR

3.1 Provincial Profile

Davao del Sur is one of the 5 provinces in Region XI, the Southern Mindanao Region. The capital town of Digos is about 62km south of Davao City. It is composed of 15 municipalities with 337 barangays broken down into 22 urban and 315 rural. The province is classified as 2nd class. At the municipal level, 9 municipalities belong to 5th and 6th classes. The rest has higher classification. The population of the province was 677,069 in 1995 with an annual growth rate of 2.58% between 1990 and 1995.

Physical Features

The province has Type IV climate, which is typified by unpronounced dry and wet seasons. The average annual rainfall was registered at 2,597mm. The topography of the province is generally characterized by hilly to mountainous and relatively wide alluvial plain areas. Mt. Apo, a dormant volcano and the highest mountain of the country, has an elevation of 2,954 meters. The principal rivers are Padada, Digos, Sibulan and Hagonoy. These natural drainage systems generally flow eastward and empty into Davao Gulf. About 59% of the total land area of the province constitute forestland, while 40.5% are agricultural and built-up areas.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 46,474 which was well below the national average of ₱ 83,161. Moreover, about 68% of the total number of families lived within and below the established poverty threshold income of ₱ 41,579 in Region XI.

About 87% of the municipalities have electric supply service with 43% household coverage. Telecommunication is available to only 33% of the municipalities. Land transportation is available by means of jeepneys and buses. There are only 24 banking institutions and 6,076 industrial/commercial and tourism-related establishments. With regard to social services, there are 441 schools, 72 hospitals, and 184 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Urban-rural classification of barangays by the NSO reflects actual conditions of the area and using this classification, rural population accounts for 78%, while the remaining 22% is urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid, dysentery, diarrhea, skin disease, malaria, dengue fever and filariasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 8% of the total households in the province relied on the municipal refuse collection services.

3.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 16 Level III systems in 12 municipalities, namely; Bansalan, Digos, Hagonoy, Kiblawan, Magsaysay, Malalag, Malita, Matanao, Padada, Santa Cruz, Santa Maria and Sulop. A total of 12 systems utilize deepwells, and the remaining 4 are springs and combination of wells and springs. Most of these systems adopt the combined system with communal faucet (Level II service). Common issues encountered are insufficient water pressure resulting to limited connections and rationing, inadequate capacity of distribution pipes due to inappropriate planning and designing, and no regular disinfection. Collection efficiency of water charges is quite high at bigger waterworks, but at small waterworks, even the analysis on charge collection is not practiced due to weak management practice.

Thirty four (34) Level II systems, mostly using springs, are operating in 12 municipalities covering 3 urban and 46 rural barangays. In some of these systems, expansion of distribution line and installation of additional faucets are usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity. Also, inappropriate care of spring box and pipeline leads to various problems. About 80% of the Level II systems impose a flat rate water charge and the rest supplies water free of charge. This practice has negative implications on the financial

savings to cope with future repair and depreciation. Cost recovery is a prerequisite in sector management.

The 5,238 operational Level I facilities in the province consist of shallow, deep and dug wells, springs, and rain water collectors. Of these facilities, 3,394 are considered as safe sources. Among the unsafe sources are 1,008 shallow wells and 816 open dug wells. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 89% and 11%, respectively. Nonetheless, non-functioning public Level I facilities account for 28% and 29% of the total number of deep and shallow wells, respectively. The share of developed springs in public facilities is 15%. The BWSA or beneficiaries are responsible on O&M, however it is almost negligible.

About 57% or 396,800 of the present population (695,600 comprising 22% in urban area and 78% in rural area) are adequately served. Under area classification, 70% of urban population and 54% of rural population have access to safe water sources/facilities. Of the served population, only 23% or 89,400 persons are served by Level III systems. About 70% or 277,700 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage with sanitary toilets in the province is 80% or 110,100 of the total households, which is very much higher than the national coverage of 66%. These toilets consist of 4% flush type, 80% pour-flush type and 16% VIP/sanitary pit latrine. In municipalities that have higher water service coverage, higher sanitation coverage occurs and adversely, in lower water supply coverage, lower sanitation coverage also occurs. Service coverage in urban area is 67%, while in rural area, the coverage is 84%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of.

The province has a total of 3,054 toilets installed at 430 schools. Only 42% of the students is adequately served by sanitary toilets. The present average ratio of 54 students per sanitary toilet is below the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 26 public utilities; public markets, bus/jeepney terminals, and

parks or plazas. About 69% of these public utilities are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary.

3.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the role, relationship and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects, however, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of the NEDA Board Resolution No.4 (1994). With the purpose of ensuring common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. Those of implementing water supply projects, DPWH used to undertake, are now transferred to the LGUs. The functions of the then IPHO under the DOH have been devolved to the LGUs. Thus, DILG now undertakes the overall coordination function for the implementation of the WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is primarily responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees and task forces have been organized to address co-ordination issues.

The current major institutional issues are those of management of the transition process and of re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, LGUs' capacity for the sector project is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementors themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There

is a need to establish a system, which is perceived as having a direct link to performance, similar to project-based monitoring.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects. CD/CO work was implemented using the process employed by past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity has been very few and far between.

Gender Consideration

The Philippine Government recognizes gender responsiveness as a catalyst of growth and development and adopts the "Philippine Plan for Gender Responsive Development (1995-2025). The Plan aims to pave the way for full participation of women and men in planning and implementation of technology for infrastructure projects, including the WATSAN sector. All government agencies were directed to revise and review regulations and procedures to remove any gender bias and to incorporate gender concepts in their projects. The DILG implements gender responsive WATSAN projects. Sector projects in the past, especially for rural water supply and sanitation that were funded by ADB, UNDP and World Bank had emphasized women's participation in the association or O&M activities.

In the province, the concept of gender and development is still relatively new and government policies have not yet trickled down the LGU officials and beneficiaries. As such, gender disaggregated information/data that will give a clearer perspective to guide sector planners in designing gender-sensitive projects are lacking, among others, type of participation, practices, and health. In this regard, a province-wide survey and group interviews were undertaken to assess gender sensitivity of barangay officials and constituents in the roles of both men and women as well as their modes of participation in sector projects.

The findings are enumerated below. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility - There is no designated gender as to who is responsible for fetching water. The responsibility lies on whoever is available.

- operation and maintenance activities - Most community members could not determine who is responsible for the O&M of water supply facilities. But they expressed willingness to contribute for the O&M of future projects.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer.
- consultation and project participation - Most of the men and women were not consulted during project planning and implementation.
- training - Both men and women have access to training and are interested to learn new skills. Health education training programs, however, are usually attended by females.

3.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGU in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1994-1997, IRA of the province represented 91% of the total income. On the other hand, actual expenditures during the said period mainly comprised those for personnel and MOOE (more than 90%), and the capital outlay.

The funds for the sector development are part of the budget for the capital outlay of the province. In 1997, the province had a surplus of ₱20.75 million. There were no borrowings or debts incurred by the province but it received grants of ₱ 4.8 million. In 1998, the province expects to generate a total income of ₱261.5 million.

The province has been a beneficiary of CIDA through the Local Government Support Program. In addition, the province has obtained a loan from the Land Bank of the Philippines for a road building equipment. Debt servicing capacity calculated based on BLGF formula is ₱48.15 million for the year 1998, which is the maximum loanable amount through the MDF.

Sector investments during the period 1995-1998 amounted to about ₱35.6 million, of which the province funded ₱13.5 million or 38% (78.5% or ₱10.6 million being financed from the 20% DF). The allocation to the sector represented only 8.5% of the DF or 1.7% of IRA. The share of Level I, II and III to WATSAN sector investments were 36%, 6% and 38%, respectively. While, sanitation sector shared 20%.

The sector projects in previous years were implemented by the DPWH and the province. In all of the projects, the provincial government provided counterpart funds of about 38% to the

project cost. Before the devaluation, the province was a beneficiary of the UNICEF and JICA health project.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSA through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. The capital cost for Level III is usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply systems and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply system is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. The monthly fees for Level I charged by a few active BWSAs range from ₱10-50 per household, while those for Level II are ₱60 as an average. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. Five (5) WDs are currently operational in the province, three of which have current loan arrears with LWUA. Their collection efficiency is high, which is above 80% of billed water.

The percentage of water fee to median monthly household income is about 3-4% for Level III, 1.5% for Level II, and about 1% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

3.5 Water Source Development

The study on water source development covers all the municipalities in the province. It gives an emphasis on groundwater sources rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into four (4) main groups based on the ages of the rock formations: Miocene and Older Rocks, Pliocene to Pleistocene Rocks, Pliocene to Recent Igneous Rocks, and Recent Deposits. The Miocene and Older rock units cover about 51% of the total provincial area and are distributed on the southern, central, and western mountainous portions of the province. Rocks classified as Pliocene to Pleistocene, which underlie about 16% of the total land area of the province, are limited in the mountain foot of Mt. Apo, and to central-western side of the province. The Pliocene to Recent igneous rocks cover about 10% of the total provincial area and are distributed on the northern part of the province (the mountainside and top of Mt. Apo). The Recent Deposits make up of about 23% of the province and occur in the flood plains of the Padada and the Digos and the Mal Rivers, which include Digos, Hagonoy, Padada, Matanao, Sulop, and Malalag.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. No sole shallow well area is defined in the province. About 40% of the province are considered as deep well area, found mostly in the northern central sections. The remaining 60% are classified as difficult area. The groundwater in the province is generally potable. However, high iron concentration has been identified in some places of Hagonoy, Magsaysay, Malalag and Sulop. In Balut Island and the areas of Padada, Sta. Cruz, Sta. Maria, Malita and Jose Abad Santos, salt-water intrusion problem was reported.

Based on the inventory of water sources prepared through the study, the province has 436 developed springs currently serving the province, which issue from high mountain areas. The province is mostly covered by mountainous areas. A total of 29 untapped springs are reported in the municipalities of Sta. Cruz, Bansalan, Matanao, Malalag, Kiblawan, Sta. Maria, Don Marcelino, Jose Abad Santos and Sarangani.

According to existing well inventory, the depth of potential aquifers occurs between 20 to 190 mbgl in the Recent alluviums and the Pliocene-Pleistocene rocks. The development of deep wells is advantageous than shallow wells considering safe quality and invariable yields of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, groundwater source availability was presented with standard specifications of wells by municipality, including parameters such as well depth, static water level and specific capacity.

Considering the furtherance in collecting accurate information to design the concrete specifications of the planned wells, the following recommendations are made. Prior to the detailed design or pre-construction stages, additional detailed groundwater investigation shall be conducted entailing electric resistivity survey and/or the construction of test wells in the municipalities of Kiblawan and Sulop. Of the two municipalities, the Kiblawan area is planned to carry out electric resistivity survey both in urban and rural areas and a test well in the urban area. While, the Sulop area is proposed to conduct the survey and a test boring in the urban area.

The untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation in the following items: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

3.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established in consideration of about 10% increase from the base year both in urban and rural area as shown in Table 3.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water

Table 3.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*70*	*80*	*95*
	Rural Area	*54*	*65*	*93*
Sanitation	*Urban HH Toilet*	*67*	*80*	*93*
	Rural HH Toilet	*84*	*90*	*95*
	School Toilet	*39*	*60*	*80*
	Public Toilet	*69*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*36*	*50*	*Not applicable*

supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 3.6.2.

Table 3.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*29,307*	*73,769*
	Rural Area	*Persons*	*108,764*	*203,810*
Sanitation	*Urban HH Toilet*	*No. of Households*	*7,403*	*15,920*
	Rural HH Toilet	*No. of Households*	*18,260*	*48,387*
	School Toilet	*No. of Students*	*44,656*	*52,435*
	Public Toilet	*No. of Utilities*	*22*	*8*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*58,549*
Solid Waste	*Urban Area*	*No. of Households*	*6,757*	*Not applicable*

The necessary water supply facilities for Phase I include 11 deep wells/springs for 5,800 house connections in urban area, and 28 Level II systems with spring sources and 1,227 Level I wells/springs for rural area. For Phase II, 19 deep wells/springs for additional 18,500 connections and 3,400 Level I wells/springs are required for urban and rural water supplies,

respectively. It is assumed that 85% of Level I facilities will be implemented by LGUs and 15% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. A set of water quality test instruments/equipment will be necessary to upgrade the existing provincial laboratory.

For urban water supply, 1 Level III system is, in principle, considered for urban area of every municipality. In municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system/s, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, only 3 municipalities out of 15 municipalities, namely; Don Marcelino, Jose Abad Santos and Sarangani, do not have Level III system. At present, there is an on-going pre-feasibility study for the Malalag Bay Alliance Water Supply (MBAWS) Project under the assistance from CIDA. The pre-F/S covers a total of 10 municipalities including Digos, Bansalan, Hagonoy, Kiblawan, Magsaysay, Malalag, Matanao, Padada, Santa Maria and Sulop.

Possibility and necessity to merge service area of some neighboring municipalities to one urban water supply system were also studied from the view points of water source constraints, economical development, etc. In the MBAWS Project, an inter-municipal water supply network has been envisaged. Merging of municipalities aside from the MBAWS Project shall be further studied in some coastal municipalities.

Preference is made to utilize spring sources owing to less O&M activities and cost compared to deep well with electric motor pump. Application of deep wells for water source is regarded as the second priority in principle. Surface water is, on the other hand, not adopted at this moment, in view of large capital investment needs and complexity of surface water treatment.

Moreover, Phase I sanitation will require 7,400 household toilets, 115 public school toilets and 22 public toilets for urban area. In rural area, 18,300 household toilets and 404 public school toilets are necessary. Solid waste disposal will need 11 refuse collection trucks. For Phase II, urban area will require 15,900 household toilets, 176 public school toilets and 8 public toilets. In rural area a total of 48,4000 household toilets and 608 public school toilets are necessary.

3.7 Sector Management for Medium-Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who shares in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with the priority on sustainability.
- Project selection and prioritization on commitment of the beneficiaries, willingness to pay, the current water and sanitation and health conditions, potential for growth and costs
- Appropriate technology to local conditions and resources. Economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach to the provision of potable water supply, sanitation and hygiene education.
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas.
- Self cost recovery and rational cost sharing (Subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector.
- Broader concerns for the environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that, in the medium-term, national and external funds will, although diminishing, continue to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Office (PWSO) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Office. In the long term, the Office may be promoted to the same level as PPDO. The PWSO will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSO.

For institutional arrangement, the formation of BWSA for Level I and RWSA for Level II and III is a prerequisite. The community, especially the women sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education program. To provide the members with the necessary skills, training programs are to be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that LGUs shall provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the PWSO and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province. The Unit should look into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the prospective Municipal Liaison Task Force (some municipalities have project-based TF) to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) shall establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized on a long term basis and implemented on the national, provincial and municipal levels. This will help promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits that will be derived by the project users.

The DILG shall retain central role as the national government agency that will promote and develop the capacities of the LGUs in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program. Another national agency, the LWUA, shall continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance.

On the manner of participation in sector development, it is important for the LGUs to make the decision together with the users on the appropriate service level (Level I/II/III water supply) it can afford to implement. To achieve this, the LGU must encourage active community participation and involvement through the following: i) sharing relevant information on the project with the users; ii) consulting with users on all phases of project development; iii) giving ample room to the beneficiaries to make project-related decisions; and iv) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, users shall participate in the following (some communities in the province have been tried): i) the participation through a firm involvement and commitment of the community at different implementation stages; expressed participation of all parties through MOAs is a requisite; ii) the sharing of capital costs between project proponent and the users entailing the provision of land, right-of-way, free labor and/or materials by community members; and iii) O&M practices as required by service level.

For Levels I and II water supply, the PWSO should play a major role in promoting and utilizing the modified "Community Development Process" developed by the UNDP-assisted project.

Gender Consideration

The sustainability of WATSAN services depends on responding to the demands of men and women in the community. The LGUs must recognize the requirements and give vital emphasis on the role of gender sensitive participation, especially with reference to maintenance and financing of WATSAN systems. They should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainer’s Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

3.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, upgrading of existing laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 3.8.1.

Table 3.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*119,268*	*267,482*
	Rural Area	*135,511*	*328,770*
	Sanitation		
	Household Toilet	*2,537*	*7,229*
	School Toilet	*114,858*	*172,538*
	Public Toilet	*7,569*	*2,752*
	Disinfection of Well	*366*	*301*
	Urban Sewerage	*-*	*427,407*
	Sub-Total	***380,109***	***1,206,479***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*150*	*0*
	Water Quality Testing Kits	*16*	*0*
	Sub-Total	***1,036***	***26,782***
Water quality Laboratory		*446*	*0*
Sector Management	*Engineering Studies*	*49,068*	*100,448*
	Institutional Development	*34,531*	*69,541*
	Sub-Total	***83,599***	***169,989***
Total Direct Cost		***465,190***	***1,403,250***
Contingencies	*Physical Contingency*	*46,517*	*1,410,325*
	Price Contingency	*124,669*	*N.A*
	Value-Added Tax (VAT)	*43,064*	*N.A*
Total Investment Cost		***679,440***	***1,543,575***
Total Investment Cost (excluding Price Contingency)		***554,742***	***1,543,575***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱555 million (in 1997 price level). A total of ₱380 million is required as the construction/rehabilitation cost in Phase I, of which urban water supply and rural water supply share 31% and 36%, respectively. While, remaining 33% is required for urban and rural sanitation. With reference to urban water

supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: each 5 sets/units of well drilling equipment and service truck with crane; each 1 set/unit of well rehabilitation equipment and support vehicle; and 11 units of refuse collection truck. The total procurement cost is estimated at approximately ₱157 million. Out of requirements, however, only each one set/unit of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱23 to ₱33 million/year during Phase I period.

3.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱160.5 million (provincial IRA is 38.3% of the total IRA). With regard to overall IRA allocation to the sub-sectors, urban water supply, rural water supply, and rural sanitation are on the same level with about 30% each of the total IRA, while urban sanitation is about 1/3 of the amount allotted to the other sub-sector.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can

fund only 28.9% of the requirements as a provincial average. Hence, there is a big shortfall of ₱394.2 million in funding. It will become ₱490 million in consideration of price escalation with annual rate of 7%. In the municipal achievement percentage in finance, Hagonoy (57.4%) and Magsaysay (54.9%) are the highest among municipalities. Others are in the range between 20% and 45% to the requirements.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds; ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. The service coverage in 2003 for urban water supply and rural sanitation would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Don Marcelino, Jose Abad Santos (Trinidad), Sarangani and Sulop, while Bansalan is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. There are 7 eligible municipalities in the province for Level I water supply, while 13 municipalities in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost was estimated at ₱190.7 million in 1997 year price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the

LGUs (47%) and beneficiaries (3%). As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱89.6 million in the current price level) and available IRA of LGUs (₱67.2 million), it was identified that ₱22.4 million are in short achieving 75% of the proposed requirements. Even if all provincial sector IRA (₱42.2 million) were utilized without limiting to the available IRA for rural water supply sub-sector, as the possible financial source, to supplement municipal IRA allotted to the eligible municipalities, ₱8.4 million is still in short achieving 90% of the proposed requirements. As an option to solve this financial shortage, the eligible municipal governments may re-arrange IRA allocation among sub-sectors. In this connection, about 50% of municipal IRA allotted to urban water supply sub-sector could be used by respective municipalities concerned. However, the final decision on the arrangement will be subject to further discussions entailing other alternatives and agreement between the province and municipalities.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the project. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. Under this case, the IRA to be used by the LGU is about 50% of available IRA. GOP will possibly finance up to ₱143.1 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan application, ₱90.1 million or 47.2% of the total project cost shall be granted to the LGUs, aside from GOP counterpart fund. The remaining ₱53.0 million or 27.8% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF.

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱78/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱67/HH/mohth in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱244/HH/month in 2003). From the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), only households with median monthly income will be able to pay the amount (low income households will afford to pay for less than 10 m^3/HH/month).

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer

repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

3.10 Monitoring for Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. It includes information collection, tracing the flow of raw data from the field to the central level information analysis and data feedback. With the sector monitoring, planners should be able to take fresh objective view of the way it implements current strategies. A sector monitoring system should reinforce the linkage between water, sanitation and health; be reliable and involve the beneficiaries; be accepted by all sectors; be practical; and be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purpose is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded from national and local governments. At the provincial level, monitoring will include projects implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province consisting of NGOs and LGU representatives.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and updated sector investment program.

4. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF DAVAO ORIENTAL

4.1 Provincial Profile

Davao Oriental is one of the 6 provinces in Region XI, the Southern Mindanao Region. The capital town of Mati is about 165km from Davao City, the regional center. It is composed of 11 municipalities with 183 barangays, of which 26 are urban and 157 rural. The province is classified as 2nd class. At the municipal level, the municipalities are either 1st to 4th class. There are no 5th and 6th class municipalities. The population of the province was 413,472 in 1995 with an annual growth rate of 0.87% between 1990 and 1995.

Physical Features

There are 2 types of climate being experienced in the province: Type II in the northern part, which is characterized by an absence of dry season with very pronounced maximum rain period and Type IV, in the southern part, characterized by an evenly distributed rainfall throughout the year. The province is considered as less visited by typhoons. The topography of the province is mostly mountainous with high elevations and steep slopes. Comparatively wide alluvial areas are in Lupon and in Mati. Principal river systems are Cateel, Manurigao, Caraga, Casauman, Bitanagan and Sumlog. Gold mining activities if left uncontrolled are potential sources of surface water pollution. About 63% of the total land area of the province constitutes forestland, while 29% are agricultural and built-up areas. The remaining forest cover must be conserved to serve as watershed rather than as source of timber.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The mean annual family income in 1994 was ₱ 41,796 which was well below the national average of ₱ 83,161. Moreover, about 62% of the total number of families lived within and below the established poverty threshold income of ₱ 41,579 in Region XI.

All municipalities have electric supply services with 68% household coverage. Telecommunication is also available to all municipalities. Transportation can be obtained by means of jeepneys and buses on land and on sea, by motorboats. There are only 17 banking institutions, 428 industrial/commercial establishments and 63 tourism-related facilities. With regard to social services, there are 361 schools, 10 hospitals, and 161 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Urban-rural classification of barangays was modified to reflect actual conditions of the area and using this classification, rural population accounts for 69%, while the remaining 31% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid, skin disease, diarrhea, dysentery, filariasis, malaria and dengue fever.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 20% of the total households in the province relied on the municipal refuse collection services.

4.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 20 Level III systems in 8municipalities. These systems are operated under different kinds of ownership: WDs (4 systems); provincial waterworks (1), municipal waterworks (2) and barangay waterworks (13). A total of 11 systems utilize springs and the remaining 9 are deep wells. Common issues encountered are inadequate capacity of distribution pipes due to inappropriate planning and designing, high unaccounted-for-water, no regular disinfection, poor water quality (high turbidity and possible contamination of heavy metals due to mining activities). Collection efficiency of water charges is quite high at bigger waterworks, but at small waterworks, even the analysis on charge collection is not practiced due to weak management practice.

Seventy two (72) Level II systems, mostly using springs, are operating in all municipalities covering 8 urban and 64 rural barangays. However, in some of these systems, expansion of distribution line and installation of additional faucets are usually undertaken without

appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity and supply interruption. These Level II systems impose flat rate water charge or supply water free of charge. This practice has negative implications on the financial savings to cope with future repair and depreciation. Cost recovery is a prerequisite in sector management.

The 6,404 operational Level I facilities in the province consist of shallow, deep and dug wells, springs, and rainwater collectors. Of these facilities, 4,256 are considered as safe sources. Among the unsafe sources are 1,430 shallow wells and 632 open dug wells. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 38% and 62%, respectively. Nonetheless, non-functioning public Level I facilities account for 41% and 29% of the total number of deep and shallow wells, respectively. The share of developed springs in public facilities is 26%. The BWSA or users are responsible on O&M, however it is almost negligible.

About 52% or 223,300 of the present population (427,200 comprising 31% in urban area and 69% in rural area) are adequately served. Under area classification, 63% of urban population and 47% of rural population have access to safe water sources/facilities. Of the served population, only 15% or 33,300 persons are served by Level III systems. About 58% or 129,700 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage with sanitary toilets in the province is 68% or 55,000 of the total households, which is a little bit higher than the national coverage of 66%. These toilets consist of 8% flush type and 92% pour-flush type (the province has just recently introduced the construction of VIP-type). In municipalities that have higher water service coverage, higher sanitation coverage occurs and adversely, in lower water supply coverage, lower sanitation coverage also occurs. Service coverage in urban area is 51%, while in rural area, the coverage is 75%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of.

The province has a total of 2,058 toilets installed at 347 schools. Only 66% of the students is adequately served by sanitary toilets. The present average ratio of 66 students per sanitary toilet is well below the service level standard of 40 students per sanitary facility. Some of

these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 42 public utilities; public markets, bus/jeepney terminals, and parks or plazas. About 55% of these are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary.

4.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the role, relationship and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects, however, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of the NEDA Board Resolution No.4 (1994). With the purpose of ensuring common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. Those of implementing water supply projects, DPWH used to undertake, are now transferred to the LGUs. The functions of the then IPHO under the DOH have been devolved to the LGUs. Thus, DILG now undertakes the overall coordination function for the implementation of the WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is primarily responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees and task forces have been organized to address co-ordination issues.

The current major institutional issues are those of management of the transition process and of re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, LGUs' capacity for the sector project is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementers themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There

is a need to establish a system, which is perceived as having a direct link to performance, similar to project-based monitoring.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects. CD/CO work was implemented using the process employed by past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity has been very few and far between.

Gender Consideration

The Philippine Government recognizes gender responsiveness as a catalyst of growth and development and adopts the "Philippine Plan for Gender Responsive Development (1995-2025). The Plan aims to pave the way for full participation of women and men in planning and implementation of technology for infrastructure projects, including the WATSAN sector. All government agencies were directed to revise and review regulations and procedures to remove any gender bias and to incorporate gender concepts in their projects. The DILG implements gender responsive WATSAN projects. Sector projects in the past, especially for rural water supply and sanitation that were funded by ADB, UNDP and World Bank had emphasized women's participation in the association or O&M activities.

In the province, the concept of gender and development is still relatively new and government policies have not yet trickled down the LGU officials and beneficiaries. As such, gender disaggregated information/data that will give a clearer perspective to guide sector planners in designing gender-sensitive projects are lacking, among others, type of participation, practices, and health. In this regard, a province-wide survey and group interviews were undertaken to assess gender sensitivity of barangay officials and constituents in the roles of both men and women as well as their modes of participation in sector projects.

The findings are enumerated below. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility - There is no designated gender as to who is responsible for fetching water. The responsibility lies on whoever is available.

- operation and maintenance activities - Most community members could not determine who is responsible for the O&M of water supply facilities. But they expressed willingness to contribute for the O&M of future projects.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer.
- consultation and project participation - Most of the men and women were not consulted during project planning and implementation.
- training - Both men and women have access to training and are interested to learn new skills. Health education training programs, however, are usually attended by females.

4.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGU in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1994-1998, IRA of the province represented 95% of the total income. It has no economic enterprises to derive additional local income. On the other hand, actual expenditures during the said period mainly comprised personnel (59%), operation and maintenance expenses (38%), and capital outlay (3%). In 1997, the province had a net loss of ₱2.22 million from receipts of P206.36 million and expenditures of ₱190.5 million. In the year of 1998, a net loss of only ₱5,000 is projected after deducting capital outlay of ₱9.8 million. Its debt servicing capacity is computed to be ₱43.82 million for the year 1998, which is maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from the 20% DF of the IRA. During the period 1995-1998, the total funds available for the capital outlay were relatively sufficient to cover planned capital outlay requirements. However, the allocation to the relevant sector was minimal at 5.8% of the DF or about 1% of IRA.

Sector investments during the period 1995-1998 amounted to about ₱81.2 million, 9% of which was funded by the province. The investment for Level I water supply was the largest with ₱40 million or about 50% of the total investment, while those for Level II and III shared 25% and 21%, respectively.

The sector projects in previous years were implemented by the DPWH and the DILG. In the past, the province received assistance through the Barangay Water Supply Projects funded under UNICEF and ODA (part of General Appropriations Act–national budget). Level I water supply facilities were also provided through OECF loan.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the cost is shouldered by the RWSA through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. The capital cost for Level III is usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available.

In 1998, a cost sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply systems and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. The monthly fees for Level I in the active association range from ₱20 to ₱30 per household, while those for Level II are ₱80 in average. For Level III systems, O&M cost is basically covered by user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. Four (4) WDs are currently operational and have current loan arrears with LWUA. In addition, there are sixteen (16) waterworks in operation.

The percentage of water fee to median monthly household income is about 2-3% for Level III, 2.3% for Level II, and less than 1% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

4.5 Water Source Development

The study on water source development covers all the municipalities in the province. It gives an emphasis on groundwater sources rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into three (3) main groups based on the ages of the rock formations: Miocene and Older rocks, Pliocene to Pleistocene Rocks and Recent Deposits. The Miocene and Older Rock units cover about 79% of the total provincial area and are largely distributed in the mountainous area on the west and southwest

sides of the province. Rocks classified as Pliocene to Pleistocene, which underlie about 11% of the total land area of Davao Oriental, are partly distributed in the marginal areas between the Older rock units and Recent deposits. The sediments cover the largest peninsula extending to south of Lupon, east of Mati, and the west of Baganga. The Recent Deposits make up about 10% of the province and are distributed in a limited area along the seashore.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. The shallow well area is located in the southern part of Lupon and the southern rim of the peninsula in the town of Mati. Deep well area covers about 13% of the province, while 83% of the provincial domain is classified as difficult areas. The groundwater in the province is generally potable except in some areas with high iron content and salt-water intrusion. High iron concentration was reported in the coastal areas of Baganga, Dapunan and Cateel. Salt water intrusion occurs in many areas such as: i) a large peninsula located south of Lupon; ii) the western area along the coastal line of Mati; iii) a peninsula extending south of Mati; and iv) the eastern coastal areas from Boston to Baculin, of San Luis area, and from San Antonio to Jovellary. Difficult areas covered by Miocene and Older Rocks generally have alluvial sediments in the narrow areas along the streams. In such places, groundwater development by means of shallow and deep wells may be often possible, though the development potential is very limited. In addition, the mountainous areas mostly occupy difficult areas and springs in these areas are the most possible water sources for development.

Based on the inventory of water sources prepared through the study, the province has 480 developed springs currently serving the province, which issue from high mountain areas. Most areas in the province are mountainous with slopes directly rising from the seashore. A total of 49 untapped springs are reported in the municipalities of Lupon, San Isidro, Gov. Generoso, Mati, Cateel and Boston.

According to existing well inventory, the depth of potential aquifers occurs between 23 to 100 mbgl in the Recent alluviums and the Pliocene-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yields of deeper aquifers.

For preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, especially with reference to Level III systems. Groundwater source availability as second priority was presented with standard

specifications of wells by municipality, including parameters such as well depth, static water level and specific capacity.

For the furtherance in collecting accurate information to design the concrete specifications of the planned wells, the following recommendations are made. Prior to the detailed design or pre-construction stages, additional detailed groundwater investigation shall be conducted entailing electric resistivity survey and/or the construction of test wells in the municipalities of Banaybanay, Lupon, San Isidro, Tarragona, and Boston. Of these municipalities, Boston area is planned to carry out electric resistivity survey in the urban and rural areas and the construction of a test well in the urban area. While, other areas are proposed to conduct the survey and test wells in the urban areas.

The untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation in the following items: i) locations and type of spring sources, ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

4.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Development priority in water supply sector during Phase I period is given to upgrade service coverage in rural area, while the urban area is considered to moderately improve the present service level as shown in Table 4.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Table 4.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*63*	*70*	*95*
	Rural Area	*47*	*60*	*93*
Sanitation	*Urban HH Toilet*	*60*	*70*	*93*
	Rural HH Toilet	*75*	*85*	*93*
	School Toilet	*53*	*75*	*95*
	Public Toilet	*55*	*70*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*64*	*75*	*Not applicable*

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 4.6.2.

Table 4.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*20,200*	*106,000*
	Rural Area	*Persons*	*69,900*	*133,600*
Sanitation	*Urban HH Toilet*	*No. of Households*	*5,300*	*17,900*
	Rural HH Toilet	*No. of Households*	*12,500*	*31,200*
	School Toilet	*No. of Students*	*33,000*	*39,700*
	Public Toilet	*No. of Utilities*	*26*	*75*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*64,300*
Solid Waste	*Urban Area*	*No. of Households*	*4,800*	*Not applicable*

The necessary water supply facilities for Phase I include 9 deep wells/spring sources for 3,800 house connections in urban area, and 49 Level II systems with spring sources and 561 Level I wells/springs for rural area. For Phase II, 20 deep wells/spring sources for additional 26,500 connections and 2,200 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 70% of Level I facilities will be implemented by the LGUs and 30% of these public facilities will be allocated to spring development. Rehabilitation requirements are considered to be 10% of the total number of deep wells to be constructed under PW4SP. A new laboratory building will be constructed to augment the existing provincial laboratory. Two (2) sets of water quality test instruments/equipment will be necessary; one set to upgrade the existing laboratory, and the other set, for the new laboratory.

For urban water supply, 1 Level III system is, in principle, considered for urban area of every municipality. In municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, 4 of the 11 municipalities do not have Level III system, namely; Banaybanay, Boston, Cateel and Tarragona. At present, there is no particular plan/on-going project for the development of Level III/WD.

Possibility and necessity to merge service area of some neighboring municipalities to one urban water supply system were also studied from the view points of water source constraints, economical development, etc. Since the municipalities taken up in this PW4SP are generally scattered throughout the province, an individual system was recommended by municipality. However, merging of municipalities in water supply development shall be further studied for some coastal municipalities.

Preference is made to utilize spring sources owing to less O&M activities and cost compared to deep well with electric motor pump. Application of deep wells for water source is regarded as the second priority in principle. Surface water is, on the other hand, not adopted at this moment, in view of large capital investment needs and complexity of surface water treatment.

Moreover, Phase I sanitation will require 5,300 household toilets, 138 public school toilets and 26 public toilets for urban area. In rural area, 12,500 household toilets and 307 public school toilets are necessary. Solid waste disposal will need 10 refuse collection trucks. For Phase II, urban area will require 17,900 household toilets, 199 public school toilets and 75

public toilets. In rural area a total of 31,000 household toilets and 446 public school toilets are necessary.

4.7 Sector Management for Medium-Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who shares in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with the priority on sustainability.
- Project selection and prioritization on commitment of the beneficiaries, willingness to pay, the current water and sanitation and health conditions, potential for growth and costs
- Appropriate technology to local conditions and resources. Economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach to the provision of potable water supply, sanitation and hygiene education.
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas.
- Self cost recovery and rational cost sharing (Subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector.
- Broader concerns for the environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that, in the medium-term, national and external funds will, although diminishing, continue to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Office (PWSO) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Office. In the long term, the Office may be promoted to the same level as PPDO. The PWSO will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSO.

For institutional arrangement, the formation of BWSA for Level I and RWSA for Level II and III is a prerequisite. The community, especially the women sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education program. To provide the members with the necessary skills, training programs are to be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that LGUs shall provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the PWSO and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province. The Unit should look into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the prospective Municipal Liaison Task Force (some municipalities have project-based TF) to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) shall establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized on a long term basis and implemented on the national, provincial and municipal levels. This will help promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits that will be derived by the project users.

The DILG shall retain central role as the national government agency that will promote and develop the capacities of the LGUs in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program. Another national agency, the LWUA, shall continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance.

On the manner of participation in sector development, it is important for the LGUs to make the decision together with the users on the appropriate service level (Level I/II/III water supply) it can afford to implement. To achieve this, the LGU must encourage active community participation and involvement through the following: i) sharing relevant information on the project with the users; ii) consulting with users on all phases of project development; iii) giving ample room to the beneficiaries to make project-related decisions; and iv) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, users shall participate in the following (some communities in the province have been tried): i) the participation through a firm involvement and commitment of the community at different implementation stages; expressed participation of all parties through MOAs is a requisite; ii) the sharing of capital costs between project proponent and the users entailing the provision of land, right-of-way, free labor and/or materials by community members; and iii) O&M practices as required by service level.

For Levels I and II water supply, PWSO should play a major role in promoting and utilizing the modified "Community Development Process" developed by the UNDP-assisted project.

Gender Consideration

The sustainability of WATSAN services depends on responding to the demands of men and women in the community. The LGUs must recognize the requirements and give vital emphasis on the role of gender sensitive participation, especially with reference to maintenance and financing of WATSAN systems. They should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainer’s Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

4.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 4.8.1.

Table 4.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*85,100*	*353,952*
	Rural Area	*83,549*	*110,088*
	Sanitation		
	Household Toilet	*1,081*	*5,618*
	School Toilet	*97,917*	*141,595*
	Public Toilet	*8,944*	*25,809*
	Disinfection of Well	*417*	*175*
	Urban Sewerage	-	*469,260*
	Sub-Total	***277,008***	***1,106,497***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*110*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***995***	***26,782***
Water Quality Laboratory		***2,032***	***0***
Sector Management	*Engineering Studies*	*35,848*	*82,234*
	Institutional Development	*25,402*	*56,931*
	Sub-Total	***61,250***	***139,165***
Total Direct Cost		***341,285***	***1,272,444***
Contingencies	*Physical Contingency*	*34,125*	*127,244*
	Price Contingency	*87,248*	*N.A*
	Value-Added Tax (VAT)	*31,585*	*N.A*
Total Investment Cost		***494,243***	***1,399,689***
Total Investment Cost (excluding Price Contingency)		***406,964***	***1,399,689***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱407 million (in 1997 price level). A total of ₱277 million is required as the construction/rehabilitation cost in Phase I, of which urban water supply and rural water supply share 31% and 30%, respectively. While, remaining 39% is required for urban and rural sanitation. With reference to urban water

supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: each 1 set/unit of well drilling equipment, service truck with crane, well rehabilitation equipment and support vehicle; and 11 units of refuse collection truck. The total procurement cost is estimated at approximately ₱50 million. Out of requirements, however, only each one set/unit of well rehabilitation equipment, support

vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱13 to ₱20 million/year during Phase I period.

4.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱134.7 million (provincial IRA is 42.6% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply, rural water supply, and rural sanitation are on the same level with about 30% each of the total IRA, while urban sanitation is about half of the amount allotted to the other sub-sector.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can

fund only 33% of the requirements as a provincial average. Hence, there is a big shortfall of ₱272.3 million in funding. It will become ₱333.7 million in consideration of price escalation with annual rate of 7%. In the municipal achievement percentage in finance, Banaybanay (67%) is the highest among municipalities, followed by Lupon (57%). Others are in the range between 20% and 40% to the requirements.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds; ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. The service coverage for urban water supply in the year 2003 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Tarragona and Baganga, while Banaybanay is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

There is no eligible municipality for Level I water supply in the province in terms of 5th and 6th class municipality, while there are 8 municipalities to meet the condition in sanitation sub-sector. Project components including public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. The required services will cover technical and institutional/community development aspects of the project. The overall project cost was estimated at ₱38.8 million in 1997 year price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, the GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter-part fund. The remaining 50% shall be shared by the

LGUs (47%) and beneficiaries (3%). As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱18.2 million in the current price level) and available IRA of LGUs (₱25.6 million), the projected IRA available meets the cost to be shared by the LGUs. Under this case, the IRA to be used by the LGU is 70% of available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the project, even if estimated IRA available meets the required cost to be shared by the LGU. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. Under this case, the IRA to be used by the LGU is about 20% of available IRA. GOP will possibly finance up to ₱29.1 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱16.1 million or 41.5% of the total project cost shall be granted to the LGUs, aside from 8.5% GOP counterpart fund. The remaining ₱13.0 million or 33.5% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF.

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱70/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱66.50/HH/month in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱251/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), only households with median monthly income will be able to pay the amount (low income households will afford to pay for less than 10 m^3/HH/month).

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

4.10 Monitoring for Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. It includes information collection, tracing the flow of raw data from the field

to the central level information analysis and data feedback. With the sector monitoring, planners should be able to take fresh objective view of the way it implements current strategies. A sector monitoring system should reinforce the linkage between water, sanitation and health; be reliable and involve the beneficiaries; be accepted by all sectors; be practical; and be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purpose is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded from national and local governments. At the provincial level, monitoring will include projects implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province consisting of NGOs and representatives from the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and updated sector investment program.

5. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF SURIGAO DEL NORTE

5.1 Provincial Profile

Surigao del Norte is one of the 4 provinces in Caraga Region. It is composed of 27 municipalities and the city of Surigao, the provincial capital. There are 434 barangays, of which 108 are urban and 326 rural. The province is classified as 2nd class. At the municipal/city level, only Surigao City belongs to 1st class and the rest are either 5th or 6th class municipality. The population of the province was 442,596 in 1995 with an annual growth rate of 0.70% between 1990 and 1995.

Physical Features

Climate in the province is characterized by an absence of dry season with a very pronounced maximum rain period. The average annual rainfall was registered at 3,640mm. The province is composed of mainland Surigao, major islands of Siargao and Dinagat and other smaller islands and islets. Mainland Surigao has varied terrain ranging from flat to mountainous; Siargao island is predominantly rolling to steep; while Dinagat island is mostly mountainous with elevations ranging from 200m to 700m. The principal river systems generally flow northward and empty into Surigao Strait or Hinatuan Passage. Another important inland water body is Lake Mainit located at the southern part of the province. About 44% of the total land area of the province constitutes forestland, while 56% are agricultural and built-up areas.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The mean annual family income in 1994 was ₱ 55,857 which was well below the national average of ₱ 83,161. Moreover, about 60% of the total number of families lived within and below the established poverty threshold income of ₱ 43,659 in Region X (the province was formerly a part of Region X).

The province has an extensive road network, of which 50% are barangay roads. Transportation on land can be obtained by means of jeepneys and buses and on sea, motorboats. There are only 17 banking institutions and 22 tourism-related establishments. With regard to social services, there are 490 schools, 16 hospitals, and 201 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Urban-rural classification of barangays was modified to reflect actual conditions of the area and using this classification, rural population accounts for 57%, while the remaining 43% is urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid, viral hepatitis, diarrhea, cholera, schistosomiasis, filariasis, malaria and dengue fever.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 39% of the total households in the province relied on the municipal refuse collection services.

5.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 35 Level III systems in 17 municipalities and 1 city. These systems are operated under different kinds of ownership: WDs (3 systems), municipal waterworks (8), barangay waterworks (23), and a private enterprise (1). A total of 25 systems utilize springs and the remaining 9 are either dug well, surface water or deep well. Common issues encountered are inadequate capacity of distribution pipes due to inappropriate planning and designing, high unaccounted-for-water, no regular disinfection, and poor water quality (high turbidity and possible contamination of heavy metals due to mining activities). Collection efficiency of water charges is quite high at bigger waterworks, but at small waterworks, even the analysis on charge collection is not practiced due to weak management practice.

One hundred thirty six (136) Level II systems, mostly using springs, are operating in 20 municipalities and 1 city covering 29 urban and 127 rural barangays. However, in some of these systems, expansion of distribution line and installation of additional faucets are usually

undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity and supply interruption. These Level II systems impose flat rate water charge or supply water free of charge. This practice has negative implications on the financial savings to cope with future repair and depreciation. Cost recovery is a prerequisite in sector management.

The 2,444 operational Level I facilities in the province consist of shallow, deep and dug wells, springs, and rainwater collectors. Of these facilities, 1,584 are considered as safe sources. Among the unsafe sources are 199 shallow wells and 595 open dug wells. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 75% and 25%, respectively. Nonetheless, non-functioning public Level I facilities account for 22% and 8% of the total number of deep and shallow wells, respectively. The share of developed springs in public facilities is 16%. The BWSA or users are responsible on O&M, however it is almost negligible.

About 75% or 321,000 of the present population (456,000 comprising 48% in urban area and 52% in rural area) are adequately served. Under area classification, 74% of urban population and 75% of rural population have access to safe water sources/facilities. Of the served population, only 26% or 85,000 persons are served by Level III systems. About 53% or 169,000 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage with sanitary toilets in the province is 69% or 60,000 of the total households, which is a little bit higher than the national coverage of 66%. These toilets consist of 3% flush type and 97% pour-flush type. In municipalities that have higher water service coverage, higher sanitation coverage occurs and adversely, in lower water supply coverage, lower sanitation coverage also occurs. Service coverage in urban area is 70%, while in rural area, the coverage is 69%. Although, high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of.

The province has a total of 2,037 toilets installed at 489 schools. 60% of the students is adequately served by sanitary toilets. The present average ratio of 80 students per sanitary toilet is well below the service level standard of 40 students per sanitary facility. Some of

these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 78 public utilities; public markets, bus/jeepney terminals, and parks or plazas. All these public utilities are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary.

5.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the role, relationship and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects, however, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of the NEDA Board Resolution No.4 (1994). With the purpose of ensuring common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. Those of implementing water supply projects, DPWH used to undertake, are now transferred to the LGUs. The functions of the then IPHO under the DOH have been devolved to the LGUs. Thus, DILG now undertakes the overall coordination function for the implementation of the WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is primarily responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees and task forces have been organized to address co-ordination issues.

The current major institutional issues are those of management of the transition process and of re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, LGUs' capacity for the sector project is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementers themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There is a need to establish a system, which is perceived as having a direct link to performance, similar to project-based monitoring.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects. CD/CO work was implemented using the process employed by past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity has been very few and far between.

Gender Consideration

The Philippine Government recognizes gender responsiveness as a catalyst of growth and development and adopts the "Philippine Plan for Gender Responsive Development (1995-2025). The Plan aims to pave the way for full participation of women and men in planning and implementation of technology for infrastructure projects, including the WATSAN sector. All government agencies were directed to revise and review regulations and procedures to remove any gender bias and to incorporate gender concepts in their projects. The DILG implements gender responsive WATSAN projects. Sector projects in the past, especially for rural water supply and sanitation that were funded by ADB, UNDP and World Bank had emphasized women's participation in the association or O&M activities.

In the province, the concept of gender and development is still relatively new and government policies have not yet trickled down the LGU officials and beneficiaries. As such, gender disaggregated information/data that will give a clearer perspective to guide sector planners in designing gender-sensitive projects are lacking, among others, type of participation, practices, and health. In this regard, a province-wide survey and group interviews were undertaken to assess gender sensitivity of barangay officials and constituents in the roles of both men and women as well as their modes of participation in sector projects.

The findings are enumerated below. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility - There is no designated gender as to who is responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities - Most community members could not determine who is responsible for the O&M of water supply facilities. But they expressed willingness to contribute for the O&M of future projects.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer.
- consultation and project participation - Most of the men and women were not consulted during project planning and implementation.
- training - Both men and women have access to training and are interested to learn new skills. Health education training programs, however, are usually attended by females.

5.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGU in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1994-1998, IRA of the province represented about 84% of the total income. The province has no income from economic enterprises and there are no loans incurred. The province experienced a net surplus of ₱13.2 million in 1997, but this is expected to decrease to ₱9.0 million in 1998. The debt servicing capacity based on the formula of BLGF is computed to be ₱53.75 million for the year 1998 and this is the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from the 20% DF of the IRA. The infrastructure sector obtained about 60% of the DF in 1998, while the WATSAN sector was very minimal, which is only 2% of the DF. Of the cumulative amount of the DF with ₱145.8 million from 1995 to 1998, the sector received less than 1% of the DF.

The sector investment during the period 1995-1998 amounted to about ₱31.9 million. The investment for Level I and Level II water supply systems were ₱22.29 million (70%) and ₱5.59 million (17%), respectively, while no investment was made for Level III.

The sector projects in previous years were implemented by the DPWH and the DILG. In all of the projects, the provincial government provided counterpart funds of about 60% of the project cost. Other sources of funding were the DILG-Poverty Alleviation Fund, PREMIUMED and ESF, conduits of USAID and World Bank Funds. Presently, the province is trying to access the MDF for the Lake Mainit Integrated Area Development.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the cost is shouldered by the RWSA through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. The capital cost for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first five (5) years of operations are available.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply systems and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. The monthly water fees for Level I in active associations range from ₱10 to ₱20 per household, while those for Level II are ₱15 to ₱20. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. Four (4) WDs are currently operational in the province, two of which have current loan arrears with LWUA.

The percentage of water fee to median monthly household income is about 2.5% for Level III, while less than 1% both for Level I and II. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

5.5 Water Source Development

The study on water source development covers all the municipalities in the province. It gives an emphasis on groundwater sources rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into three (3) main groups based on the ages of the rock formations: Miocene and Older Rocks, Pliocene to Pleistocene Rocks and Recent Deposits. The Miocene and Older rock units cover about 76% of the total provincial area and are largely distributed in the entire areas of Dinagat Island and Socorro Island, a part of Siargao Island, and most areas of the main Mindanao Island. Rocks

classified as Pliocene to Pleistocene, which underlie about 8% of the total land area of Surigao del Norte, are distributed in the west side of Dinagat Island and central western area of the main Mindanao Island. These rocks form lower mountains or non-active volcanoes. The Recent deposits make up about 16% of the province and are limited to the Surigao City; San Francisco (Anao-aon), Mainit, Alegria and Gigaquit in main Mindanao Island; and San Isidro, Dapa, and Pilar in Siargao Island.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. The shallow well area covers only 1% of the province. Deep well area covers about 20% of the province, while the remaining 79% is classified as difficult area. Difficult areas covered by Miocene and Older Rocks generally have alluvial sediments in the narrow areas along the streams. In such areas, groundwater development by means of shallow and deep wells is often possible, though the development potential is very limited.

The groundwater in the province is generally potable. However, high iron concentration is noted in Mainit and Tagana-an. Salt water intrusion was reported in the alluvial plain formed by the Surigao River, and the municipalities of Bacuag, Dapa, General Luna, San Benito, Sapao to Sta. Monica, Rizal to Basilisa, Cagdianao, and Dinagat Proper.

Based on the inventory of water sources prepared through the study, the province has 277 developed springs currently serving the province, which emanate from lower mountain areas in Dinagat and Siargao Islands and high mountain range of the main Mindanao Island. A total of 34 untapped springs are reported in the municipalities of Dinagat in Dinagat Island; San Isidro, Del Carmen and General Luna in Siargao Island; San Francisco, Malimono, Bacuag and Alegria.

According to existing well inventory, the depth of potential aquifers occurs between 5 to 80 mbgl in the Recent alluviums and the Pliocene-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yields of deeper aquifers.

For preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, especially with reference to the development of Level III systems. Groundwater source availability as second priority was presented with standard specifications of wells by municipality, including parameters such as well depth, static water level and specific capacity.

For the furtherance in collecting accurate information to design the concrete specifications of the planned wells, the following recommendations are made. Prior to the detailed design or pre-construction stages, additional detailed groundwater investigation shall be conducted entailing electric resistivity survey and the construction of test wells in the urban areas of San Isidro, San Benito, Sison, Placer, Bacuag, and Tubod municipalities.

The untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation in the following items: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

5.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. About 10% increase of service coverage was assumed during Phase I period in rural water supply, while the urban area is considered to moderately improve the present service level as shown in Table 5.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 5.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*74*	*80*	*95*
	Rural Area	*75*	*85*	*93*
Sanitation	*Urban HH Toilet*	*70*	*75*	*93*
	Rural HH Toilet	*69*	*75*	*90*
	School Toilet	*60*	*85*	*90*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*81*	*90*	*Not applicable*

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 5.6.2.

Table 5.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***Persons***	***36,300***	***150,500***
	Rural Area	***Persons***	***60,200***	***43,700***
Sanitation	***Urban HH Toilet***	***No. of Households***	***8,600***	***27,700***
	Rural HH Toilet	***No. of Households***	***8,200***	***28,400***
	School Toilet	***No. of Students***	***29,000***	***13,400***
	Public Toilet	***No. of Utilities***	***21***	***9***
Sewerage	***Urban Area***	***Persons***	***Not applicable***	***77,076***
Solid Waste	***Urban Area***	***No. of Households***	***14,690***	***Not applicable***

The necessary water supply facilities for Phase I include 21 deep wells/springs for 6,900 house connections in urban area, and 34 Level II systems with spring sources and 442 Level I wells/springs for rural area. For Phase II, 37 deep wells/springs for additional 37,600 connections and 679 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 80% of Level I facilities will be implemented by the LGUs and 10% of these public facilities will be allocated to spring development. Rehabilitation requirements are considered to be 10% of the total number of deep wells to be constructed under PW4SP. A new laboratory building will be constructed to augment the existing

provincial laboratory. Two (2) sets of water quality test instruments/equipment will be necessary; one set to upgrade the existing laboratory, and the other set, for the new laboratory.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system/s, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, 3 WDs are operated in Bacuag, Placer and Surigao City, while municipal Level III systems exist in 14 municipalities. There is no Level III system in other 11 municipalities. At present, aside from the expansion plan of Metro Surigao WD, there are two proposed projects; the Lake Mainit Integrated Area Development Project (LMIADP) and the Integrated Water System in Siargao Island (IWSSI). The former project includes municipalities of Alegria, Mainit, Sison and Tubod in its water supply component, while the latter project involves a total of 7 municipalities. The municipalities involved in the said projects are considered to expand the respective existing systems or create individual systems.

Possibility and necessity to merge service area of some neighboring municipalities to one urban water supply system were also studied from the view points of water source constraints, economical development, etc. Since the municipalities taken up in this PW4SP are generally scattered throughout the province, an individual system was recommended by municipality. The municipalities such as General Luna and San Francisco have quite large scale untapped spring sources, which enable the municipalities to construct wide-area system. In this regard, further study shall be made for some coastal municipalities.

Preference is made to utilize spring sources owing to less O&M activities and cost compared to deep well with electric motor pump. Application of deep wells for water source is regarded as the second priority in principle. Surface water is, on the other hand, not adopted.

Moreover, Phase I sanitation will require 9,000 household toilets, 68 public school toilets and 21 public toilets for urban area. In rural area, 8,000 household toilets and 78 public school toilets are necessary. Solid waste disposal will need 10 refuse collection trucks. For Phase II, urban area will require 28,000 household toilets, 25 public school toilets and 9 public toilets. In rural area a total of 28,000 household toilets and 44 public school toilets are necessary.

5.7 Sector Management for Medium-Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who shares in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with the priority on sustainability.
- Project selection and prioritization on commitment of the beneficiaries, willingness to pay, the current water and sanitation and health conditions, potential for growth and costs
- Appropriate technology to local conditions and resources. Economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach to the provision of potable water supply, sanitation and hygiene education.
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas.
- Self cost recovery and rational cost sharing (Subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector.
- Broader concerns for the environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that, in the medium-term, national and external funds will, although diminishing, continue to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Office (PWSO) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and

incentives are provided for the Office. In the long term, the Office may be promoted to the same level as PPDO. The PWSO will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSO.

For institutional arrangement, the formation of BWSA for Level I and RWSA for Level II and III is a prerequisite. The community, especially the women sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education program. To provide the members with the necessary skills, training programs are to be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that LGUs shall provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the PWSO and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province. The Unit should look into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the prospective Municipal Liaison Task Force (some municipalities have project-based TF) to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) shall establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized on a long term basis and implemented on the national, provincial and municipal levels. This will help promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits that will be derived by the project users.

The DILG shall retain central role as the national government agency that will promote and develop the capacities of the LGUs in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with

local networks or offices that specialize in community management program. Another national agency, the LWUA, shall continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance.

On the manner of participation in sector development, it is important for the LGUs to make the decision together with the users on the appropriate service level (Level I/II/III water supply) it can afford to implement. To achieve this, the LGU must encourage active community participation and involvement through the following: i) sharing relevant information on the project with the users; ii) consulting with users on all phases of project development; iii) giving ample room to the beneficiaries to make project-related decisions; and iv) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, users shall participate in the following (some communities in the province have been tried): i) the participation through a firm involvement and commitment of the community at different implementation stages; expressed participation of all parties through MOAs is a requisite; ii) the sharing of capital costs between project proponent and the users entailing the provision of land, right-of-way, free labor and/or materials by community members; and iii) O&M practices as required by service level.

For Levels I and II water supply, the PWSO should play a major role in promoting and utilizing the modified "Community Development Process" developed by the UNDP-assisted project.

Gender Consideration

The sustainability of WATSAN services depends on responding to the demands of men and women in the community. The LGUs must recognize the requirements and give vital emphasis on the role of gender sensitive participation, especially with reference to maintenance and financing of WATSAN systems. They should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainer's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

5.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for

operation and maintenance of facilities. Unit construction cost per person/household/facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 5.8.1.

Table 5.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*144,396*	*526,132*
	Rural Area	*54,560*	*43,448*
	Sanitation		
	Household Toilet	*836*	*3,799*
	School Toilet	*31,897*	*14,764*
	Public Toilet	*7,226*	*3,097*
	Disinfection of Well	*121*	*78*
	Urban Sewerage	-	*562,655*
	Sub-Total	***239,037***	***1,153,973***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*280*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,165***	***26,782***
Water Quality Laboratory		***2,032***	***0***
Sector Management	*Engineering Studies*	*30,973*	*76,398*
	Institutional Development	*46,547*	*129,289*
	Sub-Total	***77,520***	***205,686***
Total Direct Cost		***288,781***	***1,310,044***
Contingencies	*Physical Contingency*	*28,876*	*131,004*
	Price Contingency	*75,273*	*N.A*
	Value-Added Tax (VAT)	*27,318*	*N.A*
Total Investment Cost		***420,248***	***1,441,048***
Total Investment Cost (excluding Price Contingency)		***344,952***	***1,441,048***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱345 million (in 1997 price level). A total of ₱239 million is required as the construction/rehabilitation cost in Phase I, of which urban water supply and rural water supply share 61% and 23%, respectively. While, remaining 16% is required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: each one set/unit of well drilling equipment, well rehabilitation equipment, service truck with crane and support vehicle; and 21 units of refuse

collection truck. The total procurement cost is estimated at approximately ₱71 million. Out of the requirements, however, only each one set/unit of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱23.2 to ₱31.8 million/year during Phase I period.

5.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱202.87 million (provincial IRA is 29.5% of the total IRA). With regard to overall IRA allocation to the sub-sectors, urban water supply has the largest allotment with 32.3% of total IRA, while rural water supply has only 13.8%.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund 59% of the requirements as a provincial average. Hence, there is a big shortfall of ₱142.1 million in funding. It will become ₱173.8 million in consideration of price escalation with annual rate of 7%. The allotted IRA in calculation for Surigao City, Loreto, Placer and Tubod is sufficient with more than 100% achievement. San Francisco and Santa Monica are expected to achieve higher level with more than 90%. Others are in the range between about20% to 90%.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds; ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. The service coverage for water supply sub-sector in the year 2003 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Cardianao, Libjo, Malimono, San Jose and Tubajon, while Tubod is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province, the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. There are 19 eligible municipalities in the province for Level I water supply, while 23 municipalities in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost was estimated at ₱75.9 million in 1997 year price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, the GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱35.7 million in the current price level) and available IRA of LGUs (₱42.3 million), the projected IRA available meets the cost to be shared by the LGUs. Under this case, the IRA to be used by the LGU is 84% of available IRA to achieve the proposed project.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the project, even if estimated IRA available meets the required cost. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. Under this case, the IRA to be used by the LGU is 27% of available IRA. GOP will possibly finance up to ₱56.9 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱32.6 million or 43.0% of the total project cost shall be granted to the LGUs, aside from 7.0% GOP counterpart fund. The remaining ₱24.3 million or 32.0% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF.

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱79/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱67/HH/month in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱250 /HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), only households with median monthly income will be able to pay the amount (low income households will afford to pay for less than 10 m^3/HH/month).

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

5.10 Monitoring for Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. It includes information collection, tracing the flow of raw data from the field to the central level information analysis and data feedback. With the sector monitoring, planners should be able to take fresh objective view of the way it implements current strategies. A sector monitoring system should reinforce the linkage between water, sanitation and health; be reliable and involve the beneficiaries; be accepted by all sectors; be practical; and be followed through with effective feedback. The best monitors are the community

members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purpose is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded from national and local governments. At the provincial level, monitoring will include projects implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province consisting of NGOs and representatives from the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and updated sector investment program.

6. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF MISAMIS ORIENTAL

6.1 Provincial Profile

Misamis Oriental is located on the northern part of Mindanao and belongs to Region X, the northern Mindanao Region. Cagayan de Oro City, a highly urbanized, independent city is the provincial capital as well as the regional center. The province is composed of 24 municipalities and 2 cities. There are 502 barangays, of which 170 are urban and 332 rural. The province is classified as 1st class. At the municipal level, 15 municipalities/cities belong to 5th class, 1 municipality to 6th class, and the rest has higher classification. The population of the province was 1,015,865 in 1995 with an annual growth rate of 3.27% between 1990 to 1995. Cagayan de Oro City, as an independent city, is excluded from the PW4SP study area.

Physical Features

There are 2 types of climate in the province. Type II has a very pronounced maximum rainfall from November to January and is generally wet the whole year. This occurs in the eastern municipalities of Kinoguitan to Magsaysay. Type III is relatively dry from November to April and wet, the rest of the year. This covers the municipalities of Sugboncogon down to Lugait. The topography of the province is generally characterized by towering plateau areas of relatively high elevation averaging less than 1,000 masl that is typical of volcanic regions. Deep, narrow canyons usually dissect these volcanic peaks. Narrow coastal plain can be found adjacent to Macajalar Bay.

Several steep river valleys traverse the province. The general draining trend is northward with Odiongan, Mallig, Tagoloan, Cagayan and Iponan rivers as the natural drainage systems. About 54% of the total land area of the province constitutes forestland and another 7% as protected land. Production land is about 36%, while the built-up area is about 3%.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 55,536 which was well below the national average of ₱ 83,161. Moreover, about 58% of the total number of families lived within and below the established poverty threshold income of ₱ 43,659 in Region X.

All municipalities have electric supply service with only 49% household coverage. Telecommunication service is available to 29% of the municipalities. Inter-municipal land

transportation can be obtained by means of jeepneys, taxis, cars and buses. There are only 34 banking institutions, 157 industrial/commercial establishments, and 99 tourism-related facilities. With regard to social services, there are 473 schools, 24 hospitals, and 205 health units and barangay health stations.

Provincial population growth rates had been increasing for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 64%, while the remaining 36% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid/paratyphoid, viral hepatitis, diarrhea, skin diseases, scabies, malaria and dengue fever.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 19% of the total households in the province relied on the municipal refuse collection services.

6.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Apart from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on sewerage and solid waste management are also considered.

Water Supply

The province has 25 Level III systems in 20 municipalities/city. These systems utilize deep well and/ or spring sources. Eight (8) waterworks, out of 25 adopt the combined system with communal faucet (Level II service). Common issues encountered are insufficient water pressure resulting to limited connections and rationing, inadequate capacity of distribution pipes due to inappropriate planning and designing, and no regular disinfection. Collection efficiency of water charges is quite high at bigger waterworks, but at small waterworks, even the analysis on charge collection is not practiced due to weak management practice.

Seventy-seven (77) Level II systems, mostly using springs, are operating in all the municipalities covering 23 urban and 125 rural barangays. More than 50% of the waterworks using deep wells have limited water supply of less than 6 hours per day due to insufficient capacity of facility and inability of collect payments of electric charges. Likewise, a considerable number of the waterworks systems using spring source has limited water supply of less than 12 hours a day due to insufficient capacity of water source and facility. Among these, the systems in the municipalities of Kinoguitan, Lagonglong, Laguindingan, Libertad and Medina have encountered supply interruption caused by power failure, pump break down and bursting of pipes. Expansion of distribution line and installation of additional faucets have been usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity. As for water charge, some of the waterworks have collected water fee mostly as flat rate and the others supply water free of charge. Regarding repair works, they request for assistance from the MEO/CEO as needed. Such practice has negative implications on the financial savings to cope with future repair and depreciation. Cost recovery is a prerequisite in sector management.

Level I facilities are common in rural barangays. Of the 3,097 operational Level I facilities in the province, 43% are shallow wells. Of these facilities, 1,717 are considered as safe sources. Most of the unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supply is 57% and 43%, respectively. The share of developed springs in public facilities is 18%.

About 77% or 474,100 of the present population (614,400 comprising 36% in urban area and 64% in rural area) are adequately served. Under area classification, 87% of the urban population and 72% of the rural population have access to safe water sources/facilities. Of the served population, 34% or 160,400 persons are served by Level III systems. About 42% or 198,600 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 66% or 78,911 of the total households, which is higher than the national coverage of 60%. These toilets consist of 6% flush type, 83% pour-flush type and 11% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Sugbongcogon, Laguindingan), high sanitation coverage occurs and adversely, in low water supply coverage (Magsaysay, Balingasag), low sanitation

coverage also occurs. Service coverage in urban area is 77%, while in rural area, the coverage is 60%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 2,965 toilets installed at 428 schools. Only 66% of the students is adequately served by sanitary toilets. The present average ratio of 58 students per sanitary toilet is a little over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 52 public utilities; public markets, bus/jeepney terminals, and parks or plazas. All these public utilities are served with sanitary toilets indicating 100% coverage. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

6.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, which provides overall coordination over the implementation of WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is the main office responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs, and BWSAs have

been organized to deliver the services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

The current major institutional issues are: (1) managing the transition process, and (2) re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementors themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance.

Community Development

There has been limited experience in planning or implementing community development processes for the WATSAN sector projects in the Province of Misamis Oriental. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. While the PPDO and the PHO both have the structure to undertake or conduct CD work, this is done only as part of or as a component of other projects. As such, there is an apparent lack of the identified major responsible players on CD, particularly on the provincial level. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. The training programs that should update the knowledge and skills of LGUs on community development have also been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with

emphasis on gender-related issues. The following were the findings, from the surveys and interviews:

- The barangay councils were male-dominated; two of the three barangay captains are males.
- Two of the three barangays surveyed had operational BWSAs. The males outnumbered females in BWSA membership. Residents of the barangay without BWSA expressed willingness to assist in the formation of their BWSA.
- There is no gender bias when it comes to awareness of sector related information. Women actively participated in the O&M of water facilities. The respondents agreed that women could be assigned in the recording and inspection of facilities and to collect water fees.
- Women constituted the majority of the population in the two barangays. The men however outnumbered women in the barangay councils. All barangay captains are males.
- There were BWSAs in the barangays although the people were not active members. Most of the female respondents expressed willingness to be just members of BWSA, while the males would contribute free labor during project implementation.
- All female respondents were not consulted on their roles and responsibilities on past WATSAN projects but indicated willingness to actively participate in future projects.
- The respondents attended various training programs in 1997, although not WATSAN-related. Both the male and female respondents wanted to attend WATSAN-related training courses, including health education that maybe offered for BWSA members. Many opted for a one-day training sessions.
- The young male and female children were the ones who frequently got sick in 1997. The leading cause of illness was gastroenteritis.

6.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1994-1998, IRA of the province represented about 48.93% of the total income. The province has other sources of income from the operation of its economic enterprises such as MISORTEL (Misamis Oriental Telephone System) and stalls for rent located in the area adjacent to the Provincial Hospital.

On the other hand, actual expenditures for the period 1994 to 1997 were 91.47% of the total revenue, which were mainly broken down into capital outlay (7.78%), personnel expenses (46.63%) and operation and maintenance expenses (37.06%).

The funds for the water supply sector are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱47.42 million for the year 1998, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA and part of which is the water supply and sanitation sector allotment. During the period 1994 to 1998, the 20% DF was sufficient to finance the capital outlay requirements. Due to the low availability of funds, the relevant sector accounts between 1.81% to 19.08% of DF or about 3.8% of IRA.

Planned sector investments during the period 1995-1998 amounted to about ₱ 70.4 million but the actual expenditures disbursed for the sector out of the 20% DF was 16.2% of the required investments or ₱ 11.47 million. Of the investments, Level II and III amounted to about ₱ 58.84 million, while Level I water supply was only ₱ 6.88 million.

The DPWH and the DILG implemented the sector projects in previous years. The DPWH, through its DEOs, still receive requests for assistance from barangay people. With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Level III systems are usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply system is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly had difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱4 to ₱21/household/month. For Level III system, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be

able to repay their loans obtained to improve water supply services. There are 2 WDs and 20 waterworks, which are currently operational in the province.

The percentage of water fee to median monthly household income is about 1.01% for Level III, and less than 1% for Level II and Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

6.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into three (3) main groups based on the ages of the rock formations: the Miocene and Older Systems, the Plio-Pleistocene Series, and Recent Deposits. The Miocene and Older systems are distributed in limited mountainous areas of the southwestern and the central southern sides of the province. The Plio-Pleistocene series are widely distributed in most areas of the eastern part of the province and in the mountainous areas around the Miocene and Older systems of the western part of the province. The Recent Deposits are fairly widely distributed along the seashore in some areas of Cagayan de Oro City, Balingasag, and Gingoog City.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. No solo shallow well area is defined in the province. Deep well areas cover about 60% of Misamis Oriental. These are widely distributed in the mountainous areas formed by volcanic and metamorphic rock units. The difficult areas fall on the remaining area. Saline water intrusion is reported in the coastal areas from Cagayan de Oro to Alubijid and from Naawan to Lugait. Groundwater with high Fe and Mn contents occurs in deep wells and springs around the Bagacay Point in the municipalities of Balingoan, Kinoguitan, and Talisayan.

Based on the inventory of water sources prepared during the study, the province has 320 developed springs currently serving the province, which come out from volcanic mountain areas in the central and western peninsulas. It is reported that a total of 19 untapped springs for future development are mainly located in the municipalities of the central peninsula that belong to the Central Mindanao Cordillera. Other municipalities have few untapped springs.

According to the existing well inventory, the depth of potential aquifers occurs between 20 to 120m in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are Gingoog City, Balingasag, and Tagoloan.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This includes items on the following: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

6.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established by maintaining the existing high service coverage in urban area and a slight increase of 3% from the base year coverage in rural area as shown in Table 6.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 6.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*87*	*87*	*95*
	Rural Area	*72*	*75*	*93*
Sanitation	*Urban HH Toilet*	*77*	*85*	*93*
	Rural HH Toilet	*60*	*75*	*93*
	Public School Toilet	*66*	*80*	*90*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*53*	*90*	*Not applicable*

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 6.6.2.

The necessary water supply facilities for Phase I include 18 deep wells/springs for 6,500 house connections in urban area, and 9 Level II systems with spring sources and 682 Level I wells/springs for rural area. For Phase II, 35 deep wells/springs for additional 36,800 connections and 2,263 Level I wells/springs are required for urban and rural water supplies,

Table 6.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*34,177*	*147,152*
	Rural Area	*Persons*	*57,481*	*135,139*
Sanitation	*Urban HH Toilet*	*No. of Households*	*12,661*	*29,943*
	Rural HH Toilet	*No. of Households*	*21,925*	*53,009*
	Public School Toilet	*No. of Students*	*38,333*	*42,776*
	Public Toilet	*No. of Utilities*	*75*	*75*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*107,955*
Solid Waste	*Urban Area*	*No. of Households*	*24,706*	*Not applicable*

respectively. It is assumed that 90% of Level I facilities will be implemented by the LGUs and 10% of these public facilities will be achieved through spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. A new laboratory building will be constructed to augment the existing provincial laboratory. This will be located in Talisayan to cover the eastern municipalities. Two (2) sets of water quality test instruments/equipment will be necessary to upgrade the existing provincial laboratory and to equip the new laboratory.

For urban water supply, 1 Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system/s, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, 4 out of the 25 municipalities in the PW4SP study area have no Level III system in their urban areas, namely: Balingasag, Binuangan, Magsaysay and Talisayan. At present, there are no particular planned/on-going projects for the municipalities/city in the province.

Water source development study revealed that some municipalities in the planning area have high potential for spring development. Among the various untapped spring sources identified during the course of PW4SP preparation, the untapped sources located in the municipalities of Balingasag and Tagoloan are considered to have favorable conditions for use in Level III services. However, detailed survey to ensure appropriate development of spring sources shall be conducted in the implementation of the projects.

Merging of municipal systems (physical arrangement together with an integrated management system) in the long-term shall be considered. Conditions to be studied include: water source availability, willingness by concerned municipalities and technical study on cost

recovery/economical conditions. The following municipalities may be studied for the integration both in physical and management systems.

- Kinoguitan, Sugbongcogon and Binuangan (using spring either in Kinoguitan or Sugbongcogon utilizing gravity system)

Integration of small Level III systems for the operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 12,661 household toilets, 78 public school toilets and 75 public toilets for urban area. In rural area, 21,925 household toilets and 110 public school toilets are necessary. Solid waste disposal will need 22 refuse collection trucks. For Phase II, urban area will require 29,943 household toilets, 77 public school toilets and 75 public toilets. In rural area a total of 53,009 household toilets and 573 public school toilets are necessary.

6.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources who share in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with emphasis on sustainability
- Project selection and prioritization based on commitment of the beneficiaries, beneficiaries' willingness to pay, current water and sanitation and health conditions, and potential for growth
- Technologies appropriate to local conditions and resources. Economical facilities, without necessarily insisting on low-cost construction
- An integrated approach to the provision of potable water supply, sanitation, and hygiene education
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas
- Self cost recovery and rational cost sharing (subsidy)
- Private sector participation

- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector
- Broader concern for environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that national and external funds although diminishing, will continue to be channeled through local offices of central agencies in the medium-term.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be operational, which may be augmented at the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the Unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of BWSAs for Level I systems and RWSAs for Level II and III systems will be a prerequisite. The community, especially the women's sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education programs. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the

existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

6.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 6.8.1.

The investment cost for Phase I is estimated at about ₱ 583 million (in 1997 price level). A total of ₱ 399 million is required as the construction/rehabilitation cost (including cost well disinfection) in Phase I, of which urban water supply and rural water supply share 34% and 46%, respectively. While, the remaining 20% is required for urban and rural sanitation.

Table 6.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*136,394*	*496,068*
	Rural Area	*182,209*	*461,688*
	Sanitation		
	Household Toilet	*2,840*	*7,276*
	School Toilet	*51,531*	*178,165*
	Public Toilet	*25,808*	*25,808*
	Disinfection of Well	*195*	*197*
	Urban Sewerage	*N/A*	*788,072*
	Sub-Total	***398,977***	***1,957,273***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*280*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,165***	***26,782***
Water quality Laboratory		*2,032*	*0*
Sector Management	*Engineering Studies*	*51,491*	*151,167*
	Institutional Development	*35,238*	*104,654*
	Sub-Total	*86,729*	*255,820*
Total Direct Cost		*488,903*	*2,239,875*
Contingencies	*Physical Contingency*	*48,888*	*223,988*
	Price Contingency	*132,953*	*N.A*
	Value-Added Tax (VAT)	*45,365*	*N.A*
Total Investment Cost		***716,109***	***2,463,863***
Total Investment Cost (excluding Price Contingency)		***583,137***	***2,463,863***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 6 sets/units each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 22 units of refuse collection truck. The total procurement cost is estimated at approximately ₱207 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱37.5 to ₱47.1 million/year during Phase I period.

6.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱ 195.5 million (provincial IRA is 30.6% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 37.21%, followed by rural water supply (33.77%). While, the share of urban sanitation is 17.1%, which is higher than that of rural sanitation of about ₱ 23.34 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 33.53% of the requirements as a provincial average. Hence, there is a big shortfall of ₱ 387.6 million in funding. It will become ₱ 483.7 million in consideration of price escalation with annual rate of 7%. In the municipal achievement percentage in finance, Gingoog City, Gitagum, Laguindingan and Sugbongcogon (100%) are the highest among municipalities, followed by Binuangan (87%). Others are in the range between 20% and 40% to the requirements, while the provincial average is 34%.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of; i) acquisition of external funds, ii) augmentation of sector finance under current arrangements (IRA and others), iii) introduction of private sector participation to mitigate public investment needs, and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2003 would not sustain even the present levels in the provision of only

projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

Investment need ranking of the municipalities is discussed to serve as a guide for implementation in order for the provincial government to effectively arrange its financial resources. The ranking for urban water supply is specifically studied and the result is employed for allocation of provincial IRA to the municipalities in the concerned sub-sector. For the provincial fund allocation, as a currently effective arrangement, it is assumed that 60% of the fund for urban water supply from the provincial government is equally distributed to the top fifth ranking municipalities, while the remaining 40% are equally distributed to the rest of the municipalities. In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipality is Magsaysay, which indicates that it is given priority for investments in all sub-sectors, while Sugbongcogon is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. There are 15 eligible municipalities in terms of 5th and 6th class municipality for Level I water supply in the province, while there are 23 municipalities to meet the condition in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 1999-2003 was estimated at ₱ 289.6 million or ₱202.8 million in 1997 price level.

Two alternatives for the financial arrangements were studied, these are; i) Case 1-Utilization of IRA only, and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Comparing the estimated project cost to be shared by the LGUs of ₱ 95.3 million (at 1997 price level) and the available IRA of LGUs (₱ 71.6

million), there is a shortfall in funding of ₱ 23.7 million. The available IRA of LGUs can meet the proposed 75% of the proposed requirements. As an option to solve this financial shortage, the provincial government may re-arrange IRA allocation; about 100% of replenishment from the remaining provincial IRA allotted to rural water supply sub-sector after reducing allotted amount to the eligible municipality. Another option suggested is to utilize all provincial sector IRA (₱ 59.8 million) without limiting to the available IRA for rural water supply sub-sector, as the possible financial source, to supplement municipal IRA allotted to the eligible municipality. In this case about 82% of the provincial sector IRA is required. The final decision on this financial arrangement will be subject to further discussions entailing other alternatives and agreement between the province and the municipalities.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱ 152.2 million. Out of GOP finance through the loan, ₱ 96.8 million or 47.7% of the total project cost shall be granted to the LGUs, aside from the 2.3% GOP counterpart fund. The remaining ₱ 55.4 million or 27.3% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU is 56% of the available IRA estimated in the previous study.

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱87/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱90 /HH/month in 2003, which is less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱234/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), users will be able to pay the amount.

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

6.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and involve the beneficiaries. It should be accepted by all sectors. It should be practical. It should be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purposes is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded by national and local governments. At the provincial level, projects to be monitored will be those implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province and it shall consist of representatives from NGOs and the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and an updated sector investment program.

7. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF BUKIDNON

7.1 Provincial Profile

The landlocked province of Bukidnon is one of the 4 provinces in Region X, the Northern Mindanao Region. The City of Malaybalay, the seat of the provincial government is about 91km south of Cagayan de OroCity, the regional center. It is comprised of 21 municipalities and 1 component city with 464 barangays broken down into 82 urban and 382 rural. The province is classified as 1st class. At the municipal level, 4 municipalities belong to 5th class, the rest has higher classification. The population of the province was 940,403 in 1995 with an annual growth rate of 2.05% between 1990 and 1995.

Physical Features

The province has 2 types of climate under the Coronas classification. Type III, which is experienced in the northern part is characterized by the absence of a very pronounced maximum rain period with a short dry season. Type IV, which is experienced in the southern part has a rainfall that is more or less evenly distributed throughout the year. The average annual rainfall was registered at 2,567.28mm. The topography of the province is generally described by slightly undulating and rolling upland areas cut by deep and wide valleys. There are clusters of small volcanoes, mostly extinct, the most dominant is Mt. Kitanglad with an elevation 2,838 meters.

There are 2 major surface waters in the northern part of the province, the Tagoloan River and the Cagayan River with watersheds of 1,704km^2 and 1,521km^2, respectively. The Pulangi, Sawaga and Muleta rivers drain the southern part of the province and have a total watershed of 23,169km^2. A mere 33% of the total land area of the province constitute the remaining forestland, while 37% and 30%are devoted to grassland and agriculture, respectively. Built-up area is less than 1% of the total provincial area. The existing land use pattern must be enhanced by rehabilitation of watersheds in order to pursue a sustainable growth of the province.

Socio-economic Aspects

Bukidnon is basically an agricultural province. The major economic activities are farming and livestock production. The average annual family income in 1994 was ₱ 52,627 which, was below the national average of ₱ 83,161. Moreover, about 70% of the total number of

families lived within and below the established poverty threshold income of ₱ 43,659 in Region X.

All municipalities have electric supply with 54% household coverage. Telecommunication service is also available in all municipalities, giving 100% coverage. Inter-municipal land transportation is available by means of jeepneys, buses and cars. There are only 28 banking institutions and 3,444 industrial/commercial establishments and 20 tourism-related facilities. With regard to social services, there are 762 schools, 33 hospitals, and 291 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 70%, while the remaining 30% is urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid, viral hepatitis, diarrhea, cholera, intestinal parasitism, skin disease, malaria, dengue fever and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 22% of the total households in the province relied on the municipal refuse collection services.

7.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Apart from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 30 Level III systems operating under different type of ownership (authority or association). These are 5 water districts, 7 municipal waterworks and 18 RWSAs operated systems. Most of these systems adopt the combined system with communal faucet (Level II

service). Common issues encountered are rationing due to insufficient water pressure caused by unlimited connections, inadequate capacity of distribution pipes due to inappropriate planning and designing, and irregular regular disinfection. Collection efficiency of water charges is quite high in bigger networks, which is in contrast with smaller waterworks offices that experienced very poor collection performance due to weak management practice.

There are 152 Level II systems operating in the municipalities and a component city. The majority of which are utilizing spring sources (132 systems), while 19 systems use deep wells and 1 is using surface water. Most of the waterworks applying pumping systems has limited water supply. This is due to insufficient capability of facilities and inability to collect payments of electric charges. About 30% of the waterworks office impose a flat rate water charge between 5 to 20 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of the MEO or Task Force Division of the Provincial Government.

Level I facilities are common in rural barangays, majority of which are privately owned. Of the 12,140 operational Level I facilities, 21% are shallow wells. According to the PHO, 50% of the shallow wells are considered as unsafe water sources. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 13% and 87%, respectively. The share of developed springs in public facilities is 46%.

About 78% or 770,300 of the present population (982,300 comprising 30% in urban area and 70% in rural area) are adequately served. Under area classification, 74% of urban population and 80% of rural population have access to safe water sources/facilities. Of the served population, 17% or 130,900 persons are served by Level III systems. About 73% or 562,600 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation and Sewerage

The service coverage with sanitary toilets in the province is 67% or 123,500 of the total households, which is higher than the national coverage of 60%. These toilets consist of 13% flush type, 67% pour-flush type and 20% VIP/sanitary pit privy. In municipalities that have high water service coverage (Valencia, Quezon), high sanitation coverage occurs, and adversely, in low water supply coverage (Don Carlos, Kadingilan), low sanitation coverage

also occurs. Service coverage in urban area is a high 87%, while in rural area, a much lower coverage of 59% is reflected. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. There is no sewerage system in the province at present.

The province has a total of 2,638 toilets installed in 742 schools. Only 36% of the students is adequately served by sanitary toilets. The present average ratio of 109 students per sanitary toilet is far below the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 89 public toilets found in public utilities; public markets, bus/jeepney terminals, and parks or plazas in the province. Of these public toilets, 97% are sanitary. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangement are made for the operation and maintenance, as well as the collection of fees to cover such cost.

7.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, which provides overall coordination over the implementation of WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is the main office responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs, and BWSAs have

been organized to deliver the services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

The current major institutional issues are: (1) managing the transition process, and (2) re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementers themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance.

Community Development

The Province of Bukidnon has had experience in community development work through many of the projects it has handled in the past. The province believes in community participation as one of the basis for its development and follows this precept in coming up with barangay development plans. But WATSAN sector projects are considered as just one component in its over-all planning system in the province. Thus, there is no CD process or framework designed strictly for the sector. The manner by which CD/CO work is done was how it was done in past sector projects, particularly the Barangay Water Program.

While a unit exists within the PPDO and PHO to take charge of CD work for its development projects, these units remain as boxes in the organization chart. As such, there is an apparent lack of the identified major responsible players on CD in the LGUs, particularly for the WATSAN sector. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels.

There have been training programs on social mobilization for community development; but for these programs to be effective, it should be made regular and should reach out to all the LGUs in the province. As for the NGOs, there are several working with the province. These NGOS can be tapped for their varied expertise, more particularly in community mobilization/organizing work.

Gender Consideration

The Province of Bukidnon has been implementing GAD projects for some time now. The inclusion or utilization of gender-sensitive approaches to planning and implementing

WATSAN sector projects has been limited, however, to the health and sanitation and hygiene aspects or projects. The total mainstreaming or integration of gender into WATSAN sector projects has still to be realized.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. The following were the findings, from the surveys and interviews:

- The barangay councils were male-dominated; four of the five barangay captains were males.
- While there is no gender bias when it came to awareness of sector related information, women are not given enough responsibilities in the O&M of water facilities. The respondents agreed that women could undertake simple repair and maintenance or handle water bill collection.
- Men constituted the majority of the population in the two barangays.
- The men were responsible for fetching water, which was done three times a day for 30 minutes.
- Both men and women were not consulted on their roles and responsibilities on past WATSAN projects but indicated willingness to actively participate in future projects.
- The respondents attended various training programs in 1997. Both the male and female respondents, however, wanted to attend training programs for BWSA members, including health education.

7.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1997, the IRA of the province represented about 86.62% of the total income. The provincial government has no economic enterprises but it receives municipal income, not on a regular basis from the following: fees and charges from small-scale mining and sand and gravel operations. It manages a provincial hospital subsidizing for their operation, since hospital fees being charged are very low. In addition, it has a health insurance project and a low-cost housing project, which are being subsidized by the province.

On the other hand, actual expenditures for the same period were 81.34% of the total revenue. These expenditures are further broken down into personnel (39.62%), capital outlay (17.00%), and operation and maintenance expenses (24.72%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱ 85.6 million for the year 1998, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay are mainly derived from 20% DF of the IRA. During the period 1994-1998, the 20% DF of the province was not sufficient to cover the actual expenditures for 1995 and 1997. For 1998, it is projected that the 20% DF is more than adequate to cover the capital expenditures of the province. The province allocates a higher percentage of about 3.76% of its IRA funds to WATSAN sector as compared to the other provinces' allocation of about 2% or less of IRA to WATSAN.

Planned sector investments during the period 1994-1998 in the AIP amounted to about ₱218.37 million, but the actual expenditures for the sector from the 20% DF were only ₱29.58 million or only 13.54% of the required investments. Of the investments, Level II and III amounted to about ₱ 163.98 million, while Level I water supply was only ₱ 16 million or one tenth the investment for Levels II and III.

The sector projects in previous years were implemented by the task force under the Provincial Engineering Office (PEO) and the DILG (BWP-institutional building, UNDP-WATSAN and CIDA - capability building). Currently, the provincial government provides the prioritized WATSAN projects with funds under the social services sector. The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector implementation, the following are the local funding sources and corresponding implementing agencies: funding sources are the provincial government, the CDF (Congressmen) and the municipal government. The respective implementing agencies are the PEO-Waterworks, the DPWH-District Office and the Municipal Government.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Level III systems are usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply and

sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply system is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly had difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱10 to ₱50 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. Four (4) WDs and 11 waterworks are currently operational in the province. These WDs have no current loan arrears with LWUA.

The percentage of water fee to median monthly household income is about 4.5% for Level III, 2.97% for Level II and 1.45% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

7.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into 3 main groups based on the ages of the rock formations: the Miocene and Older Systems, the Plio-Pleistocene Series, and Recent Deposits. The Miocene and Older systems are largely distributed in the eastern, northeastern, and northwestern sides of the province. The Plio- Pleistocene series are widely distributed in most of the western areas of the province, covered by the piedmont areas of two old non-active volcanoes, Mt. Kitanglad and Mt. Tago. The Recent Deposits are distributed only along the Pulangi River flowing from southeast to northeast between the volcanoes and the eastern plateau.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. No solo shallow well area is defined

in the province. Deep well area covers about 55% of Bukidnon, while difficult area falls on the remaining area. The shallow and deep wells in the piedmont areas with higher elevation around the two old volcanoes are affected by water quality problems such as high Fe and Mn contents.

Based on the inventory of water sources prepared during the study, the province has 806 developed springs currently serving the province, which come out from high volcanic mountain areas in the central and eastern parts of the province. A total of 108 untapped springs for future development are reported in the mountainous municipalities, which belong to the volcanic areas and the Central Mindanao Cordillera. Municipalities outside these areas have few untapped springs.

According to the existing well inventory, the depth of potential aquifers occurs between 20 to 180m in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters on well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are Manolo Fortich, Lantapan, Maramag, Don Carlos and Dangcagan. In addition, the investigation on the alternative water source availability for the Malaybalay WD shall be conducted within the hillside of the two volcanoes.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

7.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established in consideration of about 5% increase from the base year both in urban and rural area as shown in Table 7.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 7.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*74*	*80*	*95*
	Rural Area	*80*	*85*	*93*
Sanitation	*Urban HH Toilet*	*87*	*93*	*98*
	Rural HH Toilet	*59*	*75*	*93*
	Public School Toilet	*34*	*60*	*90*
	Public Toilet	*97*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*75*	*90*	*Not applicable*

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by

means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 7.6.2.

Table 7.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***Persons***	***53,763***	***301,317***
	Rural Area	***Persons***	***137,085***	***115,281***
Sanitation	***Urban HH Toilet***	***No. of Households***	***23,999***	***55,184***
	Rural HH Toilet	***No. of Households***	***48,355***	***81,374***
	Public School Toilet	***No. of Students***	***74,654***	***120,404***
	Public Toilet	***No. of Utilities***	***3***	***-***
Sewerage	***Urban Area***	***Persons***	***Not applicable***	***215,359***
Solid Waste	***Urban Area***	***No. of Households***	***21,513***	***Not applicable***

The necessary water supply facilities for Phase I include 21 deep wells/springs for 10,100 house connections in urban areas and 73 Level II systems with spring sources and 1,205 Level I wells/springs for rural areas. For Phase II, 52 deep wells/springs for additional 75,300 connections and 1,930 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 10% of Level I facilities will be implemented by the LGUs and 30% of these public facilities will be achieved through spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. Two (2) sets of water quality test instruments/equipment will be necessary; one (1) set to upgrade the existing provincial laboratory in Malaybalay City, and the other set, for the new laboratory in Maramag Provincial Hospital.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Currently, 5 out of the total 22 municipalities/city have no Level III system in their urban areas, namely: Cabanglasan, Damulog, Kadingilan, Kitaotao and San Fernando. At present, there are planned/on-going projects such as the ADB-assisted/LGU urban water supply project, which is coordinated by the DILG. The recipient municipalities/city are Baungon, Impasugong, Lantapan, Libona, Manolo Fortich and Talakag. In addition to this, the WDs of Don Carlos, Kibawe, Malaybalay and Valencia are planning to expand their systems.

Among various untapped spring sources identified during the course of PW4SP preparation, the untapped sources located in the municipalities of Cabanglasan, Dangcagan, Malitbog and Quezon are considered to have favorable conditions for use in Level III services. However, detailed survey to ensure appropriate developments of spring sources shall be conducted in the implementation of the projects.

Merging of municipal systems (physical arrangement) in the long-term is considered. An integrated management system shall also be sought. The conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction. The following municipalities may be studied for the integration, both in physical and management systems.

- Kitaotao and Dangcagan

Integration of small Level III systems for the operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 24,000 household toilets, 135 public school toilets and 3 public toilets for urban area. In rural area, 48,400 household toilets and 234 public school toilets are necessary. Solid waste disposal will need 15 refuse collection trucks. For Phase II, urban area will require 55,200 household toilets and 214 public school toilets. In rural area a total of 81,400 household toilets and 862 public school toilets are necessary.

7.7 Sector Management for Medium-Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources who share in the vision must be identified

and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with emphasis on sustainability
- Project selection and prioritization based on commitment of the beneficiaries, beneficiaries' willingness to pay, current water and sanitation and health conditions, and potential for growth
- Technologies appropriate to local conditions and resources. Economical facilities, without necessarily insisting on low-cost construction
- An integrated approach to the provision of potable water supply, sanitation, and hygiene education
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas
- Self cost recovery and rational cost sharing (subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector
- Broader concern for environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that national and external funds although diminishing, will continue to be channeled through local offices of central agencies in the medium-term.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be operational, which may be augmented at the existing Waterworks division. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the Unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of BWSAs for Level I systems and RWSAs for Level II and III systems will be a prerequisite. The community, especially the women's sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education programs. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long-term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water

districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's

Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

7.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 7.8.1.

Table 7.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*188,513*	*976,213*
	Rural Area	*121,213*	*65,679*
	Sanitation		
	Household Toilet	*29,752*	*56,609*
	School Toilet	*101,143*	*294,932*
	Public Toilet	*1,032*	*0*
	Disinfection of Well	*348*	*141*
	Urban Sewerage	*N/A*	*1,572,121*
	Sub-Total	***442,000***	***2,965,694***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*220*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,105***	***26,782***
Water quality Laboratory		*2,032*	*0*
Sector Management	*Engineering Studies*	*53,765*	*175,392*
	Institutional Develooment	*32,462*	*121,425*
	Sub-Total	***86,227***	***296,818***
Total Direct Cost		*531,364*	*3,289,293*
Contingencies	*Physical Contingency*	*53,115*	*328,929*
	Price Contingency	*132,754*	*N/A*
	Value-Added Tax (VAT)	*49,868*	*N/A*
Total Investment Cost		***767,101***	***3,618,223***
Total Investment Cost (excluding Price Contingency)		***634,129***	***3,618,223***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱634 million (in 1997 price level). A total of ₱442 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 43% and 27%, respectively. While, the remaining 30% are required for urban and rural

sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 15 units of refuse collection truck. The total procurement cost is estimated at approximately ₱ 58.5 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱ 36.7 to ₱ 52.1 million/year during Phase I period.

7.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 5% of total IRA (25% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for the 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱ 318.1 million (provincial IRA is 38% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 33.2%, followed by rural water supply (29.9%). While, the share of rural sanitation is 26.67%, which is higher than that of urban sanitation of about ₱ 32.4 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can

fund only 50.17% of the requirements as a provincial average. Hence, there is a big shortfall of ₱ 315.98 million in funding. It will become ₱381.67 million in consideration of price escalation with annual rate of 7%. In the municipal achievement percentage in finance, Manolo Fortich and Quezon (100%) are the highest among municipalities, followed by Talakag (98%). Others are in the range between 40% and 60% to the requirements, while the provincial average is 50%.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of; i) acquisition of external funds, ii) augmentation of sector finance under current arrangements (IRA and others), iii) introduction of private sector participation to mitigate public investment needs, and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2003 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

Investment need ranking of the municipalities is discussed to serve as a guide for implementation in order for the provincial government to effectively arrange its financial resources. The ranking for urban water supply is specifically studied and the result is employed for allocation of provincial IRA to the municipalities in the concerned sub-sector. For the provincial fund allocation, as a currently effective arrangement, it is assumed that 60% of the fund for urban water supply from the provincial government is equally distributed to the top fifth ranking municipalities, while the remaining 40% are equally distributed to the rest of the municipalities. In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Don Carlos and Damulog which indicate that they are given priority for investments in all sub-sectors, while Valencia is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province, the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. There are 4 eligible municipalities (Cabanglasan, Dangcagan, Kadingilan

and Sumilao) in terms of 5th and 6th class municipality for Level I water supply in the province, while there are 15 municipalities to meet the condition in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 1999-2003 was estimated at ₱ 142 million or ₱100 million in 1997 price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counterpart fund. The remaining 50% shall be shared by the LGUs (47%) and the beneficiaries (3%). Under this case, the IRA to be used by the LGU is about 70% of the available IRA (₱67.9).

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared (even if estimated IRA available meets the required cost to be shared by the LGUs). The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to 75% of the total project cost in the portion of the loan. Out of GOP finance through the loan, 45% of the total project cost shall be granted to the LGUs, aside from the 5% GOP counterpart fund. The remaining 30% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU is about 25% of the available IRA estimated.

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the O & M cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱74/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱94HH/month in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱221/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), users will be able to pay the amount.

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer

repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

7.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and involve the beneficiaries. It should be accepted by all sectors. It should be practical. It should be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purposes is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded by national and local governments. At the provincial level, projects to be monitored will be those implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province and it shall consist of representatives from NGOs and the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and an updated sector investment program.

8. ROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF DAVAO DEL NORTE

8.1 Provincial Profile

Davao del Norte is one of the 6 provinces and 2 independent chartered cities in Region XI, the Southern Mindanao Region. Tagum City is the provincial capital, which is about 55km north of Davao City. It is composed of 8 municipalities and 2 component cities, the newly created cities of Tagum and Island Garden City of Samal. These municipalities/cities have a total of 224 barangays, classified further into 20 urban and 204 rural. The province is classified as 1st class. At the municipal level, the municipalities/cities belong to 1st class (4 municipalities/city), 3rd class (2), and 4th class (4). There are no 5th and 6th classes municipalities. The population of the province was 671,333 in 1995 with an annual growth rate of 2.28% between 1990 and 1995.

Physical Features

The province has Type IV climate, which is typified by unpronounced dry and wet seasons. It is naturally protected by the mountain ranges that act as natural barriers from the onslaught of typhoons. Topography of the province is generally characterized by rugged, mountainous areas on the eastern part, by moderately to steeply sloping on the western part and wide alluvial plain areas on the central lowland. Elevations on the eastern edge ranges from 1,000 to 1,300 meters. The principal rivers are Tagum, Lasang and Hijo. These natural drainage systems generally flow southward and empty into Davao Gulf. About 44% of the total land area of the province are devoted to agriculture, while a mere 26.5% remain as forestland.

Socio-economic Aspects

In consonance with its land use, agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 59,584 which, was well below the national average of ₱ 83,161. Moreover, about half of the families lived within and below the established poverty threshold income of ₱ 41,579 in Region XI.

All the municipalities/cities have electric supply service, but household coverage is only 48%. Telecommunication service is also available to all municipalities/cities. Inter-municipal land transportation is available by means of jeepneys, mini-buses and buses. There are only 32 banking institutions and about 1,220 industrial/commercial and tourism-related establishments. With regard to social services, there are 400 schools, 30 hospitals, and 122 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1998 population was estimated to provide the planning base for this provincial plan. Rural population accounts for 70%, while the remaining 30% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid/paratyphoid, dysentery, intestinal parasitism, diarrhea, conjunctivities, cholera, dengue fever, viral hepatitis, malaria, filariasis, schistosomiasis, skin diseases and scabies.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 20% of the total households in the province relied on the municipal refuse collection services.

8.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Apart from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on sewerage and solid waste management are also considered.

Water Supply

There are 26 Level III systems in the province operated under different kinds of ownership (authority or association) in 8 municipalities/cities, namely; Asuncion, Carmen, Island Garden City of Samal, Kapalong, New Corella, Panabo, Santo Tomas and Tagum City. Majority of the systems utilizes deep well sources. Spring sources are utilized at 5 systems in Island Garden City of Samal and New Corella. Common issues encountered are insufficient water pressure resulting to limited connections and rationing, inadequate capacity of distribution pipes due to insufficient water sources and/ or inappropriate planning and designing, and delay of system expansion together with water source development. These problems are rather critical especially in Asuncion, Carmen, New Corella, Panabo and Tagum City. Water quality problems such as salty taste or muddy water are observed in Carmen and Island Garden City of Samal. The absence of regular disinfection is also a common issue. Collection efficiency of water charges is rather high at larger waterworks, but at small

waterworks, even the analysis on charge collection is not practiced due to weak management practice.

There are 28 Level II systems in 7 municipalities/cities. Majority of these is utilizing spring sources (19 systems) of which the concentration is in Island Garden City of Samal. The remaining 9 systems are using deep well as a water source. These systems are covering 1 urban and 27 rural barangays. Among the 24 waterworks that responded in the questionnaire regarding water fee payment, about 80% impose an average flat rate of 10 Pesos/HH/month and the rest supplies water free of charge. In some of these systems, expansion of distribution line and installation of additional faucets are usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity. Such practice has negative implications on the financial savings to cope with future repair and depreciation. Furthermore, cost recovery is a prerequisite in sector management.

Level I facilities are common in rural barangays, majority of which is privately owned. Of the 42,185 operational Level I facilities, shallow/open dug wells and rainwater collectors occupy about 95% in the province. In this PW4SP preparation, 20% of the shallow wells were estimated as unsafe source referring to information from the PHO. As a result, about 80% of the facilities were classified as unsafe sources, referring to the safe/unsafe definition of DOH. Most of these unsafe shallow wells are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 5% and 95%, respectively. The share of developed springs in public facilities is 5%.

About 49% or 352,800 of the present population (721,514 comprising 30% in urban area and 70% in rural area) are adequately served. Under area classification, 59% of urban population and 44% of rural population have access to safe water sources/facilities. Of the served population, 37% or 130,700 persons are served by Level III systems. About 56% or 197,900 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 73% or 103,154 of the total households, which is well above the national coverage of 60%. These sanitary toilets consist of 6% flush type, 68% pour-flush type and 26% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Tagum City, Kapalong), high sanitation coverage

occurs and adversely, in low water supply coverage (B.E. Dujali, Carmen), low sanitation coverage also occurs. This can be attributed to the development of water supply that almost always follows the upgrading of the sanitation facilities because of access to water.

Service coverage of household toilets in urban area is a high 83%, while in rural area, the coverage is only 69%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains and eventually to the watercourses. Sullage management is unheard of. In urban areas, there are no sewerage facilities.

The province has a total of 1,878 toilets installed in 363 schools. Only 43% of the students is adequately served by sanitary toilets. The present average ratio of 93 students per sanitary toilet is well below the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 35 public utilities; public markets, bus/jeepney terminals, and parks or plazas. All these public utilities are served with sanitary toilets amounting to 100% coverage. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

8.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, which provides overall coordination over the implementation of WATSAN projects of LGUs. The Water Supply and

Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is the main office responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs, and BWSAs have been organized to deliver the services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

The current major institutional issues are: (1) managing the transition process, and (2) re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementers themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance.

Community Development

The community development aspect for WATSAN projects in the Province of Davao del Norte is being handled by a multi-sectoral team with members coming from the Provincial Planning and Development Office (PPDO), Provincial Cooperative Development Office (PCDO), Provincial Engineer's Office (PEO) and DILG-Provincial Office. The provincial government recently issued a memorandum transferring the supervision function of the management, operation and maintenance of barangay/rural water associations to the PCDO after they have been converted to water and sanitation cooperatives or WATSAN cooperatives. The PCDO also is charged with collecting the loan payments in favor of the province borrowed by of the WATSAN association/cooperatives.

The Province of Davao del Norte has had experience in community development work through many of the projects it has handled in the past. The Province believes in community participation as one of the basis of its comprehensive development. Thus it considers WATSAN sector projects as just a component in its over-all planning system. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program; while CD/CO in the formation of water cooperatives is approached

employing the universal principles of cooperativism. While a unit exists within the PPDO and PHO to take charge of CD work for its projects, this remains a box in their respective organization charts. As such, there is apparent lack of a permanent structure and identified major responsible players on CD in the LGUs, particularly for the WATSAN sector. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. There have been training programs on social mobilization for community development; but for these programs to be effective, it should be made regular and should reach out to all the LGUs in the province.

Gender Consideration

The Province of Davao del Norte has been implementing GAD projects; but those under the WATSAN sector has been limited to health and sanitation as well as hygiene projects. Planning and implementing gender-sensitive WATSAN projects has still to be fully integrated in the mainstream of the provincial and municipal LGUs.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. The following were the findings, from the surveys and interviews:

- The barangay councils were male-dominated; all barangay captains were males.
- Two of the three barangays surveyed had operational BWSAs. The males outnumbered females in BWSA membership.
- NGOs/CBOs were actively working in the communities. Significantly, the areas of concern include women's welfare.
- There is no gender bias when it comes to awareness of sector related information. Women actively participated in the O&M of water facilities. The respondents agreed that women could be assigned as bookkeeper or to look after the cleanliness of the facilities.
- Women constituted the majority of the population in the two barangays.
- The people got their water from communal faucets (Level II system). The men (husbands) were responsible for fetching water, which was done three times a day for about 20 minutes per trip.
- Both men and women were not consulted on their roles and responsibilities on past WATSAN projects but indicated willingness to actively participate in future projects.
- The respondents attended various training programs in 1997, although not WATSAN-related. Both the male and female respondents wanted to attend WATSAN-related training courses, including health education, that maybe offered for BWSA members. Many opted for a one-day training sessions.

- The young female children mostly got sick in 1997. The leading causes of illnesses were skin disease, cholera and gastroenteritis.

8.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1994-1998, IRA of the province represented about 76.18% of the total income. The province also derives income from the lease of equipment in road construction, upgrading and rehabilitation. On the other hand, actual expenditures were mainly broken down into personnel expenses (34% of total revenues), capital outlay (17%) and operation and maintenance expenses (49%). From 1994 to 1997, the province reported a net surplus in its operations.

The funds for the water supply sector are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱ 80.5 million for the year 1998, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay are mainly derived from 20% DF of the IRA and part of which is the water supply and sanitation sector allotment. During the period 1995 to 1998, the 20% DF was sufficient to finance the capital outlay requirements. Due to the low availability of funds, the relevant sector accounts between less than .09% to 12.99% of DF or about 2.6% of IRA.

Planned sector investments during the period 1995-1998 amounted to about ₱ 50.497 million but the actual expenditures disbursed for the sector out of the 20% DF was 35.7% of the required investments or ₱ 18.036 million. Of the investments, Level II and III amounted to about ₱ 23.5 million, while Level I water supply was less than ₱ 11.2 million.

The sector projects in previous years were implemented by the DPWH (undertaken through OECF loan assistance up to 1995), the DILG (BWP – institutional building), the RWDC and the Tulungan sa Tubigan Foundation. The DPWH, through its DEOs, still receive requests for assistance from barangay people. With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Level III systems are usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without

interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly had difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱5 to ₱50 /household/month. For Level III system, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. There are 5 WDs and 46 waterworks which are currently operational in the province.

The percentage of water fee to median monthly household income is about 1.68% for Level III and less than 1% for Level II and Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

8.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into three (3) main groups based on the ages of the rock formations: the Miocene and Older Systems, the Plio-Pleistocene Series, and Recent Deposits. The Miocene and Older systems are mainly distributed on the northwestern side of the province. The Plio-Pleistocene series are widely distributed in the northeastern, northern central, and western areas of the province and in the islands of Samal and Talikud. The Recent Deposits are largely distributed in the central basin area surrounded by the lowland hills, which are made of Plio-Pleistocene sediments.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. No solo shallow well area is defined in the province. Deep well area covers about 80% of Davao del Norte, while difficult area falls on the remaining area. Brackish groundwater occurs in the deep aquifers in most of the alluvial plain area where the municipalities of Asuncion, B. E. Dujali, Carmen and Panabo and the city of Tagum are located. Deep groundwater areas with high Fe and Mn contents are reported in the northeastern part of the alluvial plain. The areas that fall on this quality are the municipalities of Asuncion and New Corella. Groundwater of deep wells in Samal Island has slightly high Ca and Mg contents and a similar situation is anticipated to occur in Talikud Island. In the small alluvial plain at the western coastal area of Samal Island, saline water intrusion occurs due to over exploitation of groundwater for urban water supply.

Based on the inventory of water sources prepared during the study, the province has 157 developed springs currently serving the province. Usually, these come out from the high mountain areas in the northwestern part and the low hilly areas in the central part of the province, as well as the western abrasion cliff in Samal Island. A total of 26 untapped springs for future development are reported in the mountainous municipalities of Kapalong, New Corella and Talaingod. Other municipalities have few untapped springs.

From the existing well inventory, the depth of potential aquifers occurs between 20 to 150 meters in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations including geophysical prospecting and construction of test wells, prior to the detailed design or in the pre-construction stage. The areas that fall on this group are the cities of Tagum and Island Garden of Samal.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring sources; ii) fluctuation of discharge rates throughout the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

8.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established to maintain the existing service coverage both in urban and rural areas as shown in Table 8.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 8.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***59***	***60***	***95***
	Rural Area	***44***	***45***	***93***
Sanitation	***Urban HH Toilet***	***83***	***90***	***95***
	Rural HH Toilet	***69***	***85***	***93***
	Public School Toilet	***41***	***70***	***90***
	Public Toilet	***100***	***100***	***100***
Sewerage	***Urban Area***	***0***	***Not applicable***	***50***
Solid Waste	***Urban Area***	***66***	***90***	***Not applicable***

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water

supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 8.6.2.

Table 8.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*29,501*	*227,922*
	Rural Area	*Persons*	*65,149*	*264,407*
Sanitation	*Urban HH Toilet*	*No. of Households*	*9,604*	*39,911*
	Rural HH Toilet	*No. of Households*	*35,756*	*43,019*
	Public School Toilet	*No. of Students*	*69,705*	*81,478*
	Public Toilet	*No. of Utilities*	*26*	*18*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*174,899*
Solid Waste	*Urban Area*	*No. of Households*	*10,617*	*Not applicable*

The necessary water supply facilities for Phase I include 6 deep wells/springs for 5,800 house connections in urban area, and 10 Level II systems with spring sources and 284 Level I wells/springs for rural area. For Phase II, 33 deep wells/springs for additional 57,000 connections and 4,400 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 40% of Level I facilities will be implemented by LGUs and 10% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. A set of water quality test instruments/equipment will be necessary to upgrade the existing provincial laboratory.

For urban water supply, 1 Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system

was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Currently, 2 out of the total 10 municipalities/cities have no Level III system in their urban areas, namely: Braulio E. Dujali and Talaingod. At present, there is no particular planned/on-going project in the province.

With regard to water source development, among various untapped spring sources identified during the course of PW4SP preparation, the untapped sources located in the municipalities of Asuncion, Carmen and New Corella are considered to have favorable conditions for use in Level III services, while deep wells for other municipalities.

Due to water source problem, merged systems shall be studied for the following municipalities/city.

- Long-term: Braulio.E. Dujali, Carmen and Panabo
- Medium-term: Tagum City, New Corella and Asuncion.

Conditions to be studied include water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction.

Merging of small Level III in terms of integration of management system shall be sought, although these waterworks are currently managed individually. Island Garden City of Samal, in particular, shall be studied for its three administrative districts.

Moreover, Phase I sanitation will require 9,604 household toilets, 111 public school toilets and 26 public toilets for urban area. In rural area, 35,756 household toilets and 236 public school toilets are necessary. Solid waste disposal will need 7 refuse collection trucks. For Phase II, urban area will require 39,911 household toilets, 150 public school toilets and 18 public toilets. In rural area a total of 43,019 household toilets and 688 public school toilets are necessary.

8.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources who share in the vision must be identified

and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with emphasis on sustainability
- Project selection and prioritization based on commitment of the beneficiaries, beneficiaries' willingness to pay, current water and sanitation and health conditions, and potential for growth
- Technologies appropriate to local conditions and resources. Economical facilities, without necessarily insisting on low-cost construction
- An integrated approach to the provision of potable water supply, sanitation, and hygiene education
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas
- Self cost recovery and rational cost sharing (subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector
- Broader concern for environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that national and external funds although diminishing, will continue to be channeled through local offices of central agencies in the medium-term.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be operational, which may be augmented at the existing PCDO/PPDO/PEO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the Unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of BWSAs for Level I systems and RWSAs for Level II and III systems will be a prerequisite. The community, especially the women's sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education programs. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community

on projects, loans, and water rates adjustments. The Cooperative Development Authority (CDA), on the other hand, shall continue to provide the mandated support to all duly formed and registered water cooperatives around the country.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level 2 – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level 3 – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's

Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

8.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 8.8.1.

Table 8.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*106,311*	*735,495*
	Rural Area	*120,647*	*446,861*
	Sanitation		
	Household Toilet	*17,600*	*33,936*
	School Toilet	*85,245*	*196,804*
	Public Toilet	*8,947*	*8,947*
	Disinfection of Well	*738*	*329*
	Urban Sewerage	*N/A*	*1,276,763*
	Sub-Total	***339,488***	***2,696,381***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*100*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***985***	***26,782***
Water quality Laboratory		*2,032*	*0*
Sector Management	*Engineering Studies*	*41,795*	*181,278*
	Institutional deveopoment	*28,970*	*125,500*
	Sub-Total	***70,765***	***306,777***
Total Direct Cost		*413,270*	*3,029,941*
Contingencies	*Physical Contingency*	*41,322*	*302,994*
	Price Contingency	*74,910*	*N/A*
	Value-Added Tax (VAT)	*38,425*	*N.A*
Total Investment Cost		***567,928***	***3,332,935***
Total Investment Cost (excluding Price Contingency)		***492,972***	***3,332,935***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱493 million (in 1997 price level). A total of ₱339.5 million is required as the construction/rehabilitation cost (including cost for well disinfection) in Phase I, of which urban water supply and rural water supply share 31% and 36%, respectively. While, the remaining 33% is required for urban and rural sanitation.

With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 7 units of refuse collection truck. The total procurement cost is estimated at approximately ₱ 41 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱36.7 to ₱52.1 million/year during Phase I period.

8.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund). The same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱ 180.799 million (provincial IRA is 48% of the total IRA). In the overall IRA allocation to the sub-sectors, rural sanitation has the largest allotment of 30.92%, followed by rural water supply (28.83%). While, the share of urban water supply is 25.9%, which is higher than that of urban sanitation of bout ₱ 25.88million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 36.68% of the requirements as a provincial average. Hence, there is a big shortfall of ₱ 312.17 million in funding. It will become ₱ 389.1 million in consideration of price escalation with annual rate of 7%. In the municipal achievement percentage in finance, Kapalong (100%) is the highest among municipalities, followed by Talaingod (84%). Others are in the range between 30% and 50% to the requirements, while the provincial average is 37%.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of; i) acquisition of external funds, ii) augmentation of sector finance under current arrangements (IRA and others), iii) introduction of private sector participation to mitigate public investment needs, and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2003 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

Investment need ranking of the municipalities is discussed to serve as a guide for implementation in order for the provincial government to effectively arrange its financial resources. The ranking for urban water supply is specifically studied and the result is employed for allocation of provincial IRA to the municipalities in the concerned sub-sector. For the provincial fund allocation, as a currently effective arrangement, equal distribution was made to all concerned municipalities, since the investment need is limited to those municipalities with ranking of 1st to 4th. In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Asuncion, Carmen, Panabo, Island Garden City of Samal and New Corella which indicate that they are given priority for investments in all sub-sectors, while Kapalong is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. Since all municipalities of the province are 1st to 4th class municipalities, there is no water supply component to meet the conditions in the provision of GOP-assisted Level I water supply in the rural areas, while there are 6 municipalities that meet the condition in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 1999-2003 was estimated at ₱ 76.1 million or ₱53.7 million in 1997 price level.

Two alternatives for the financial arrangements were studied, these are; i) Case 1-Utilization of IRA only, and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Comparing the estimated project cost to be shared by the LGUs of ₱ 25.2 million (at 1997 price level) and the available IRA of LGUs (₱ 27.3 million), the cost to be shouldered by the LGU is about 90% of the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared (even if estimated IRA available meets the required cost to be shared by the LGU). The foreign loan that may be availed of at the maximum financing limit is 75% of the overall project cost. GOP will possibly finance up to 75% of the total project cost in the portion of the loan. Out of GOP finance through the loan, 43.9% of the total project cost shall be granted to the LGUs, aside from the 6.1% GOP counterpart fund. The remaining 31.1% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU is about 30% of available IRA.

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the O&M cost. While, users need to pay water charge up to 2% of their monthly income to sustain the system (₱92/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱90/HH/month in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required

(₱219/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), users will be able to pay the amount.

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

8.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and involve the beneficiaries. It should be accepted by all sectors. It should be practical. It should be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purposes is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded by national and local governments. At the provincial level, projects to be monitored will be those implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province and it shall consist of representatives from NGOs and the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and an updated sector investment program.

9. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF SOUTH COTABATO

9.1 Provincial Profile

The landlocked province of South Cotabato is one of the 6 provinces in Region XI, the Southern Mindanao Region. Koronadal, the provincial capital is about 58km from General Santos City, one of the region's growth centers. The province is composed of 11 municipalities with 198 barangays, of which 35 are urban and 163 rural. It is classified as 1st class. At the municipal level, there are 3 municipalities that are 1st class, 1 municipality (2nd class), 3 municipalities (3rd class) and 4 municipalities (4th class). There are no 5th and 6th classes municipalities. The population of the province was 623,784 in 1995 with a high annual growth rate of 4.16% between 1990 and 1995.

Physical Features

South Cotabato has Type IV climate, which is characterized by unpronounced dry and wet seasons with rainfall that is more or less evenly distributed throughout the year. The province is virtually free from typhoons. The 2 major geomorphic features of the province are the Cotabato Cordillera and the Cotabato Basin. The Cotabato Cordillera is a mountain range of moderate to high relief extension starting from Cotabato City and extending up to Sarangani Bay. The Cotabato Basin is a broad alluvium-filled valley formed by the tributaries of Mindanao River. Young volcanic mountains constitute the central highlands of the province, the most prominent is Mt. Matutum.

Principal river systems are Allah, Banga, Buluan and Silway. The province has 4 lakes, Lake Sebu, Lake Maughan (at the crater of Mt. Parker Volcano) and 2 other smaller lakes. Gold mining activities if left uncontrolled are potential sources of surface water pollution. About 40% of the total land area of the province are devoted for agriculture, while a mere 23% remain as forestland. There is an urgent need to rehabilitate the watersheds in order to pursue a sustainable growth of the province.

Socio-economic Aspects

In consonance with the land use, agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 61,435 which, was below the national average of ₱ 83,161. Moreover, about 35% of the total number of families lived within and below the established poverty threshold income of ₱ 41,579 in Region XI.

All municipalities have electric supply service with a high 75% household coverage. Telecommunication is also available in all municipalities. Land transportation can be obtained by means of jeepneys, cars, taxis and buses. There are 39 banking institutions, 47 industrial/commercial establishments and 31 tourism-related facilities. With regard to social services, there are 364 schools and 28 hospitals.

Provincial population growth rates had been declining for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Urban-rural classification of barangays was modified to reflect actual conditions of the area and using this classification, rural population accounts for 63%, while the remaining 37% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid/paratyphoid, diarrhea, dysentery, dengue fever, viral hepatitis, filariasis, malaria and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 8% of the total households in the province relied on the municipal refuse collection services.

9.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on sewerage and solid waste management are also considered.

Water Supply

The province has 15 Level III systems in 6 municipalities, namely; Koronadal, Norala, Polomolok, Surallah, T'Boli and Tupi. Majority of the systems utilizes deep well sources. Spring sources are utilized in 4 systems. While, 6 systems adopt the combined system with communal faucet (Level II service). Common issues encountered are insufficient water pressure resulting to limited connections and rationing, inadequate capacity of distribution pipes due to inappropriate planning and designing, and no regular disinfection. Collection

efficiency of water charges is quite high in bigger waterworks, but among small waterworks, even the analysis on charge collection is not practiced due to weak management practice.

Sixty-seven (67) Level II systems, mostly using springs, are operating in all the municipalities covering 1 urban and 68 rural barangays. However, in some of these systems, expansion of distribution line and installation of additional faucets are usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity. Most of the waterworks using spring sources supply water to the users free of charge. While the systems utilizing deep well sources impose a minimum level of flat rate water charges ranging from ₱ 5 to ₱ 45 monthly per household. Such practice has negative implications on the financial savings to cope with future repair and depreciation. Furthermore, cost recovery is a prerequisite in sector management.

Level I facilities are common in rural barangays, majority of which are privately owned. The 37,664 operational Level I facilities in the province consist of shallow, deep and dug wells and springs. Of these facilities, 19,959 are considered as safe sources. Among the unsafe sources are 17,558 shallow wells and 147 open dug wells. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 2% and 98%, respectively. The share of developed springs in public facilities is 5%.

About 59% or 385,000 of the present population (657,200 comprising 37% in urban area and 63% in rural area) are adequately served. Under area classification, 63% of the urban population and 56% of the rural population have access to safe water sources/facilities. Of the served population, 18.5% or 71,300 persons are served by Level III systems. About 70% or 267,700 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 67% or 87,250 of the total households, which is higher than the national coverage of 60%. These sanitary toilets consist of 1% flush type, 72% pour-flush type and 27% VIP/sanitary pit latrines. In municipalities that have high water service coverage (Norala, Polomolok), high sanitation coverage occurs and adversely, in low water supply coverage (Lake Sebu, T'boli), low sanitation coverage

also occurs. This can be attributed to the development of water supply that almost always follows the upgrading of the sanitation facilities because of easy access to water.

Service coverage in urban area is 75%, while in rural area, the coverage is quite low at 63%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage facilities.

The province has a total of 2,599 toilets installed in 405 schools. Only 62% of the students is adequately served by sanitary toilets. The present average ratio of 65 students per sanitary toilet is well below the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 38 public utilities; public markets, bus/jeepney terminals, and parks or plazas. About 97% of these are served with sanitary toilets. Although considered as sanitary, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the regular collection of fees to cover such cost.

9.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, which provides overall coordination over the implementation of WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is the main office responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs, and BWSAs have been organized to deliver the services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

The current major institutional issues are: (1) managing the transition process, and (2) re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementors themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance.

Community Development

The Province of South Cotabato considers water supply and sanitation projects to be on the forefront of provincial sector development programs. In fact, the province prides itself of opening various forms of soliciting community participation in WATSAN sector projects. Aside from the manner by which CD/CO work was executed in past sector projects, particularly the Barangay Water Program and the Integrated Community Health Services, people's participation has been "institutionalized". This entails the participation of beneficiaries in site selection and facilities design; the provision of free labor, sites and materials during project implementation; and the involvement in repair and maintenance of the facilities.

The PPDO maintains a unit that conducts CD work, but the person assigned there is not focused solely on WATSAN sector projects. Most municipalities have CD units; but these remain boxes in the organizational chart because they are not manned. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels.

Training programs that should update the knowledge and skills of LGUs on CD/CO work have been very few and far between. There is a need to strengthen the capability of CD/CO

workers through regular training that permeates all levels of the LGU hierarchy. There are several NGOs that can be tapped in assisting the Province in doing CD/CO work should the need arise.

Gender Consideration

The Province of South Cotabato, through the Provincial Population Office, has been implementing gender-sensitive projects. It has also been very active in conducting gender sensitivity training programs for municipal officers and health workers. The inclusion or utilization of gender-sensitive approaches to planning WATSAN projects has been limited. However, it is being undertaken more on health and sanitation as well as in hygiene projects.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. The following were the findings from the surveys:

- The barangay councils were male-dominated; all barangay captains in selected sites were males.
- There is neither gender bias nor lack of gender responsiveness when it comes to sector activities and projects. Women actively participate in the O&M of water facilities.
- Women constituted the majority of the population in the two barangays. The men, however, outnumbered women in the barangay councils.
- The women were responsible for fetching water which, was done once a day for10 minutes.
- There was a BWSA in each of the two barangays. But while most of the respondents were BWSA members, they were not actively involved in their affairs. However, the female members committed more support and participation to future WATSAN projects.
- The males have attended various training programs more than the females. Both the male and female respondents, however, wanted to attend training programs for BWSA members, including health education.
- Both men and women were consulted when the BWSA was formed although on past projects, it was the men who were mostly consulted. All the respondents indicated they would participate in future projects.
- The female children were mostly afflicted with water-borne diseases during the past year. The leading cause was diarrhea.

9.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial

requirements. For the period 1994-1998, the IRA of the province represented about 90.36% of the total income. The province has an economic enterprise, the gymnasium and cultural center which rents out commercial spaces and leases out the gymnasium for sports activities, cultural presentations, concerts and conventions. Occasionally, heavy equipment for road construction projects is made available to other LGUs and private contractors on rental basis. On the other hand, actual expenditures for the same period were 56.73% of the total revenue, which were mainly broken down into capital outlay (10.70%) and operation and maintenance expenses (33.55%). The province has acquired a loan amounting to ₱ 7.2 million for heavy equipment from the Land Bank of the Philippines to be paid within 5 years (up to year 2000). They also have an outstanding loan from the MDF.

The funds for the water supply sector are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱ 41.93 million for the year 1998, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay are mainly derived from 20% DF of the IRA and part of which is the water supply and sanitation sector allotment. Except for 1995, in most years, the 20% DF was sufficient to finance the capital outlay requirements. Due to the low availability of funds, the relevant sector accounts between less than 1% to 6.7% of DF or about 1.34% of IRA.

Planned sector investments during the period 1995-1998 amounted to about ₱ 2.9 million but the actual expenditures disbursed for the sector out of the 20% DF was ₱ 3.87 million and was 29.7% higher than the required investments. Of the investments, Level II and III investments amounted to about ₱ 2.4 million, while Level I water supply was less than ₱.5 million.

The DPWH and the DILG implemented the sector projects in previous years. The DPWH, through its DEOs, still receive requests for assistance from barangay people. With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5% to 12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply system is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly had difficulty managing the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱ 10 to ₱ 50 /household /month. For Level III system, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. There are 5 WDs and 10 waterworks, which are currently operational in the province.

The percentage of water fee to median monthly household income is about 3.54% for Level III, 1.92% for Level II and less than 1% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

9.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into 3 main groups based on the ages of the rock formation: the Miocene and Older Systems, the Plio-Pleistocene Series, and Recent Deposits. The Miocene and Older systems are distributed in the mountainous areas on the eastern, northeastern, southwestern, and southwestern sides of the province. The Plio-Pleistocene series are widely distributed in the mountainous areas around the Miocene and Older systems on the eastern, central, and western sides of the province. The Recent Deposits are largely distributed on the northwestern side of the province and are in parallel that extend from southeast to northwest. Also, the Deposits widely cover the circumference area of General Santos City on the southeastern side of the province.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. No solo shallow well area is defined in the province. Deep well area covers about 75% of South Cotabato, while difficult area falls on the remaining area. Brackish water is observed in shallow and deep wells along the national highway of the northwestern alluvial plain, where the municipalities of Koronadal and Tantangan are located.

Based on the inventory of water sources prepared during the study, the province has 100 developed springs currently serving the province, which come out from the high mountain areas on the northeastern and southwestern parts, and from the mountain range area on the central part of the province. A total of 34 untapped springs for future development is reported in the Cotabato Cordillera and piedmont of the Roxas Range. Other municipalities have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 20 to 150 meters in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are Koronadal and Banga.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources to proposed service areas; and iv) elevation differences between the source and service areas.

9.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established to increase slightly than the current service coverage in both urban and rural area as shown in Table 9.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 9.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*63*	*65*	*95*
	Rural Area	*56*	*58*	*93*
Sanitation	*Urban HH Toilet*	*75*	*85*	*93*
	Rural HH Toilet	*63*	*75*	*93*
	Public School Toilet	*64*	*80*	*90*
	Public Toilet	*97*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*21*	*90*	*Not applicable*

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by

means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 9.6.2.

Table 9.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*31,703*	*227,620*
	Rural Area	*Persons*	*64,272*	*243,378*
Sanitation	*Urban HH Toilet*	*No. of Households*	*13,790*	*29,156*
	Rural HH Toilet	*No. of Households*	*28,833*	*61,130*
	Public School Toilet	*No. of Students*	*51,914*	*47,243*
	Public Toilet	*No. of Utilities*	*10*	*14*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*161,339*
Solid Waste	*Urban Area*	*No. of Households*	*34,069*	*Not applicable*

The necessary water supply facilities for Phase I include 9 deep wells/spring sources for 6,300 house connections in urban area, and 27 Level II systems with spring sources and 667 Level I wells/springs for rural area. For Phase II, 36 deep wells/spring sources for additional 56,900 connections and 4,062 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 30% of Level I facilities will be implemented by the LGUs and 10% of these public facilities will be allocated to spring development. Rehabilitation requirements are considered to be 10% of the total number of deep wells to be constructed under PW4SP. Three (3) sets of water quality test instruments/equipment will be necessary; one set to upgrade the existing provincial laboratory in Koronadal, and the other 2 sets, for the new laboratories to be set up at the municipal hospitals of Polomolok and Sto. Nino.

For urban water supply, 1 Level III system is, in principle, considered for urban area of every municipality. In municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, 6 of the 11 municipalities have no Level III system in the respective urban areas, namely; Banga, Lake Sebu, Sto. Nino, Tampakan, Tantangan and T'Boli. At present, there is no particular plan/on-going project except for the expansion of Tupi WD. However, the province will apply for the urban water supply project, which is coordinated by the DILG. The study on the utilization of lake water at Lake Maughan was recently commenced.

With regard to source development, spring sources in Lake Sebu and T'Boli may be fully used for Level III systems, while for other municipalities, deep wells may be utilized.

Merging of municipal systems (physical arrangement together with integrated management system) in the long-term shall be considered. Conditions to be studied include; water source availability, willingness of concerned municipalities and technical study on cost recovery/economical construction. The following municipalities may be studied for the integration, both in physical and management systems:

- Norala and Sto. Nino
- Surallah and Banga
- Koronadal and Tampakan

Integration of small Level III systems for the operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 13,790 household toilets, 72 public school toilets and 10 public toilets for urban area. For rural area, 28,833 household toilets and 185 public school toilets are necessary. Solid waste disposal will need 11 refuse collection trucks. For Phase II, urban area will require 29,156 household toilets, 85 public school toilets and 14 public toilets. For rural area a total of 61,130 household toilets and 606 public school toilets are necessary.

9.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources who share in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with emphasis on sustainability
- Project selection and prioritization based on commitment of the beneficiaries, beneficiaries' willingness to pay, current water and sanitation and health conditions, and potential for growth
- Technologies appropriate to local conditions and resources. Economical facilities, without necessarily insisting on low-cost construction
- An integrated approach to the provision of potable water supply, sanitation, and hygiene education
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas
- Self cost recovery and rational cost sharing (subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector
- Broader concern for environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that national and external funds although diminishing, will continue to be channeled through local offices of central agencies in the medium-term.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be operational, which may be augmented at the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the Unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of BWSAs for Level I systems and RWSAs for Level II and III systems will be a prerequisite. The community, especially the women's sector, shall be involved in all phases of project management (planning, construction and

O&M) and in undertaking health and hygiene education programs. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure that full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long-term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the Province of South Cotabato must continue to recognize and give vital emphasis on the role of gender sensitive participation in the use, maintenance and financing of WATSAN systems. Thus, special measures must be instituted to give equal voice and opportunities to the men and women in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the province should continue to provide training to its LGUs through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

9.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 9.8.1.

Table 9.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*112,112*	*721,876*
	Rural Area	*76,512*	*287,719*
	Sanitation		
	Household Toilet	*4,225*	*8,344*
	School Toilet	*70,444*	*189,403*
	Public Toilet	*3,441*	*4,817*
	Disinfection of Well	*2,566*	*297*
	Urban Sewerage	*N/A*	*1,177,775*
	Sub-Total	***269,299***	***2,390,231***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*110*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***995***	***26,782***
Water quality Laboratory		*2,032*	*0*
Sector Management	*Engineering Studies*	*34,250*	*156,547*
	Institutional Development	*21,411*	*108,379*
	Sub-Total	***55,661***	***264,926***
Total Direct Cost		*327,987*	*2,681,939*
Contingencies	*Physical Contingency*	*32,786*	*268,194*
	Price Contingency	*85,276*	*N.A*
	Value-Added Tax (VAT)	*30,645*	*N.A*
Total Investment Cost		***476,694***	***2,950,133***
Total Investment Cost (excluding Price Contingency)		***391,294***	***2,950,133***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱391 million (in 1997 price level). A total of ₱269.3 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 42% and 28%, respectively. While, the remaining 30% is required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 11 units of refuse collection truck. The total procurement cost is estimated at approximately ₱ 50 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱ 23.4 to ₱ 32.9 million/ year during Phase I period.

9.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱149.89million (provincial IRA is 40.96% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 42.32%, followed by rural water supply (25.32%). While, the share of rural sanitation is 20.34 %, which is higher than that of urban sanitation of about ₱18.02 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 38.31% of the requirements as a provincial average. Hence, there is a big shortfall of ₱241.41 million in funding. It will become ₱297.02 million in consideration of price

escalation with annual rate of 7%. In the municipal achievement percentage in finance, Norala (94%) is the highest among municipalities, followed by Banga (77%). Others are in the range between 49% and 62% to the requirements, while the provincial average is 38%.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of; i) acquisition of external funds, ii) augmentation of sector finance under current arrangements (IRA and others), iii) introduction of private sector participation to mitigate public investment needs, and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2003 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

Investment need ranking of the municipalities is discussed to serve as a guide for implementation in order for the provincial government to effectively arrange its financial resources. The ranking for urban water supply is specifically studied and the result is employed for allocation of provincial IRA to the municipalities in the concerned sub-sector. For the provincial fund allocation, as a currently effective arrangement, it is assumed that 90% of the fund for urban water supply from the provincial government is equally distributed up to the third ranking municipalities, while the remaining 10% are equally distributed to the rest of the municipalities. In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipality is T'boli, which indicates that it is given priority for investments in all sub-sectors, while Norala is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. Since all municipalities of the province fall on the 1st to 4th class municipalities, there is no water supply component to meet the conditions in provision of GOP-assisted Level I water supply in the rural areas (limited to 5th to 6th municipalities), while there are 7 municipalities that meet the condition for GOP-assisted projects (limited to

3rd to 6th municipalities). The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 1999-2003 was estimated at ₱85.6 million or ₱60.3 million in 1997 price level.

Two alternatives for the financial arrangements were studied, these are; i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and the beneficiaries (3%). Comparing the estimated project cost to be shared by the LGUs, which is ₱28.3 million (at 1997 price level) and the available IRA of LGUs (₱28.6 million), the cost to be shouldered by the LGU meets the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared (even if estimated IRA available meets the required cost to be shared by the LGU). The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. Under this case, the IRA to be used by the LGU is about 36% of available IRA. GOP will possibly finance up to 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, 45% of the total project cost shall be granted to the LGUs, aside from the 5% GOP counterpart fund. The remaining 30% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU is 36% of the available IRA.

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱100/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱89/HH/month in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱216/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), users will be able to pay.

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer

repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

9.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and involve the beneficiaries. It should be accepted by all sectors. It should be practical. It should be followed through with effective feedback. The best monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purposes is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded by national and local governments. At the provincial level, projects to be monitored will be those implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province and it shall consist of representatives from NGOs and the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and an updated sector investment program.

10. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF SARANGANI

10.1 Provincial Profile

Sarangani is one of the 6 provinces in Region XI, the Southern Mindanao Region. The capital town of Alabel is about 16km from General Santos City, one of the region's growth centers. The province is composed of 7 municipalities with 140 barangays, of which 17 are urban and 123 rural. The province is classified as 4th class. At the municipal level, the municipalities are either 2nd or 3rd classes. The population of the province was 367,006 in 1995 with an annual growth rate of 5.33% between 1990 and 1995.

Physical Features

Climate in the province belongs to Type IV under the Coronas classification. It is characterized by a rainfall that is more or less distributed throughout the year. The province is considered as an area outside the typhoon belt. The 2 major geomorphic features of the province are the Cotabato Cordillera and the Central Mindanao Cordillera. The former is a mountain range of moderate relief extending from Cotabato City to Sarangani Bay, while the latter, is generally composed of young volcanic mountains, the most prominent is Mt. Matutum with an elevation of 2,286 meters.

The principal river systems commonly flow southward and empty into Sarangani Bay or Celebes Sea. These are Glan, Lun Padidu, Kalaong, Buayan and Siguel rivers. About 31% of the total land area of the province constitutes forestland and another 31% are devoted to agricultural use. Built-up area is a mere 1%. About 37% comprise grassland/openland/inland water areas. The existing land use pattern must be enhanced by rehabilitation of watersheds in order to pursue a sustainable growth of the province.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 44,861 which, was well below the national average of ₱ 83,161. Moreover, about 60% of the total number of families lived within and below the established poverty threshold income of ₱ 41,579 in Region XI.

All municipalities have electric supply service, but with only 21% household coverage. Telecommunication service is also available in all municipalities. Inter-municipal transportation on land can be obtained by means of jeepneys and buses and on sea, by

motorboats. There are only 7 banking institutions and 553 industrial/commercial establishments and 14 tourism-related facilities. With regard to social services, there are 179 schools, 6 hospitals, and 75 health units and barangay health stations.

Provincial population growth rates had been increasing for the last 6 censal years. The 1997 population was estimated to provide the planning base for this provincial plan. Considering the 1995 urban-rural classification of barangays, rural population accounts for 70%, while the remaining 30% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid/paratyphoid, intestinal parasitism, conjunctivities, viral hepatitis, diarrhea, cholera, filariasis, malaria, skin diseases, scabies and dengue fever.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 11% of the total households in the province relied on the municipal refuse collection services. Unserved households primarily depend on individual disposal such as dumping in vacant lots or bodies of water, burying and composting.

10.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on sewerage and solid waste management are also considered.

Water Supply

The province has 7 Level III systems in 4 municipalities, namely; Alabel, Glan, Maasim and Malapatan. Majority of the systems utilizes deep well sources. Spring source is only utilized at one system, in Maasim. Common issues are low service coverage (6 to 23% even in urban area) and delays of system expansion. Collection efficiency of water charges is high in bigger systems, which is in contrast with smaller waterworks that experienced very poor collection performance due to weak management practice.

There are a total of 56 Level II systems in all municipalities and majority is utilizing spring sources (49 systems) except for the 6 systems in Malapatan and the system in Malungon. These systems are covering 4 urban and 52 rural barangays at present. Most of the systems utilizing deep well sources have experienced intermittent water supply (less than 8 hours a day) due to difficulty in collecting electric bills and insufficient capacity of facilities to meet the demand. Some of the waterworks using spring sources supply water free of charge. Regarding repair works, they request for assistance from the PEO, as the need arises. Such practice has negative implications on the financial savings to cope with future repair and depreciation. Furthermore, cost recovery is a prerequisite in sector management.

Level I facilities are common in rural barangays, majority of which are privately owned. Of the 6,728 operational Level I facilities, 62% are shallow wells. According to the PHO, as a provincial average, 30% of these shallow wells are estimated to be unsafe. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Applying the unsafe percentage to shallow wells for each municipality, 3,780 Level I facilities are safe sources, while 2,948 facilities are under unsafe sources. Percentage shares between public and private Level I facilities for rural water supplies are 16% and 84%, respectively. The share of developed springs in public facilities is 11%.

About 57% or 220,500 of the present population (386,200 comprising 30% in urban area and 70% in rural area) are adequately served. Under area classification, 70% of the urban population and 52% of the rural population have access to safe water sources/facilities. Of the served population, only 11% or 24,800 persons are served by Level III systems. About 89% or 195,700 persons depend on Level I facilities.

Sanitation and Sewerage

The service coverage with sanitary toilets in the province is 49% or 36,550 of the total households, which is much lower than the national coverage of 60%. These toilets are mostly the pour-flush type. The flush type and the recently introduced VIP type are altogether a mere fraction of 0.25%. In municipalities that have high water service coverage (Alabel, Maitum), high sanitation coverage occurs and adversely, in low water supply coverage (Glan, Malungon), low sanitation coverage also occurs. Service coverage in urban area is 62%, while in rural area, the coverage is 44%. Although, high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 988 toilets installed in 177 schools. Sanitary toilets adequately serve only 47% of the total number of students. The present average ratio of 85 students per sanitary toilet is far below the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 51 public utilities; public markets, bus/jeepney terminals, and parks or plazas. All these public utilities have sanitary toilets rendering 100% coverage. However, the manner of usage and maintenance are improper making the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

10.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) for the relevant sector was prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, which provides overall coordination over the implementation of WATSAN projects of LGUs. The Water Supply and Sanitation-Project Management Office (WSS-PMO), a unit within DILG, is the main office responsible for water and sanitation activities.

At the provincial and municipal levels, there are central agency field offices (DPWH and DILG) and LGU offices working on the sector. Water districts, RWSAs, and BWSAs have been organized to deliver the services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Project management offices (PMOs at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

The current major institutional issues are: (1) managing the transition process, and (2) re-establishing the leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects is insufficient and will require substantial input and support.

There is wide dissatisfaction among implementors themselves over the existing monitoring system. This leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance.

Community Development

The Province of Sarangani has had relevant experience in community development work that can be utilized for the WATSAN sector. This is the approach through which the barangay development plans are formulated where the participation and decisions of the formal and informal community leaders and their constituents are actually embodied in the plan. Although the PPDO and the PHO both have units that conduct community development work, their personnel are not confined to doing CD work solely for the WATSAN sector. WATSAN is looked upon as one component in the over-all planning process, albeit an important cog in the wheel of the Province's development. For the sector, therefore, there still remains an apparent lack of a permanent structure and of the identified major responsible players on CD. These create a gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels.

There have been numerous training programs on CD conducted by different project proponents. For the WATSAN sector, CD training should be conducted with regularity and be brought down to the level of the municipal and barangay LGUs. On the matter of NGOs, the Province sees these organizations as partners in well-planned development and has tapped the expertise of the NGOs particularly in community mobilizing and organizing.

Gender Consideration

The Province of Sarangani is very well aware of the importance of gender and development when it ensured the institutionalization of GAD in the planning, programming and budgeting of all provincial and municipal agencies' programs, projects and activities. This was embodied in Executive Order No. 7, signed by Governor Priscilla L. Chiongbian last June 1997. Since then, several seminars and training on different gender issues and topics have been conducted for provincial, municipal and barangay officers and employees.

However, GAD was not integrated in the programming, planning and implementation of water sector projects. In this regard, a province-wide survey and group interviews were undertaken to assess gender sensitivity of barangay/BWSA officials and constituents in the roles of both women and men as well as their modes of participation in sector projects. The findings are enumerated below. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

10.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1994-1998, IRA of the province represented about 89.32% of the total income. The province does not have an economic enterprise. On the other hand, actual expenditures for the same period were mainly broken down into capital outlay (22.8%), personnel expenses (35.96%) and operation and maintenance expenses (32.21%).

The funds for the water supply sector are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱41.52 million for the year 1998, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA and part of which is the water supply and sanitation sector allotment. Except for 1994 and 1995, in most years, the 20% DF was sufficient to finance the capital outlay requirements. Due to the low availability of funds, the relevant sector accounts between less than 10.35% to 37.65% of 20% DF or about 2% to 7.5% of IRA, although it is noted that in recent years the water supply sector has been given more funds.

Planned sector investments during the period 1995-1998 amounted to about ₱57.05 million but the actual expenditures disbursed for the sector out of the 20% DF was lower at ₱45.1 million. Of the investments, Level II obtained planned allocation of ₱28.32 million, which is almost half of the planned investments for the water supply sector. The provincial government and the DPWH implemented the sector projects in previous years. The funds from the CDF (Countrywide Development Fund) were also availed of.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to 30 years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

In 1998, a cost-sharing scheme was authorized, which prescribed that for any central government grants that are provided for the development of Level I water supply and sanitation facilities to the limited municipalities, the LGUs and beneficiaries concerned shall share the capital cost required. No subsidies from the central government will be provided for the construction of Level II and Level III water supply systems.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly has difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱10 to ₱40/household/month. For Level III systems, the O&M cost are basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services. There are 7 Level

III water systems in the province; 2 WDs, 3 LGU-managed and 2 are managed by water cooperatives.

The percentage of water fee to median monthly household income is about 3.23% for Level III, 1.07% for Level II and less than 1% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

10.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geologic rock units observed in the province are classified into three (3) main groups based on the ages of the rock formations: the Miocene and Older Systems, the Plio-Pleistocene Series, and Recent Deposits. The Miocene and Older systems are mainly distributed in the eastern mountainous areas as a narrow belt along the provincial boundary from south to north and in most parts of the western mountainous areas. The Plio-Pleistocene series are widely distributed in the eastern part of the province, extending from south to north in the western side of the Miocene and Older systems. Two thirds of the western part of the eastern mountainous areas are covered by these formations. The Recent Deposits cover a wide alluvial plain, which fringes the Sarangani Bay area and the southwest coastal area along the Celebes Sea.

For planning purposes in the development of groundwater sources, the provincial area is divided into shallow well, deep well and difficult areas. The province has solo shallow well areas but very limited in the municipalities of Maitum and Kiamba along the seashore side of the western part of the province. Deep well areas cover about 50% of Sarangani, and are widely distributed in the southern and western coast of the eastern peninsula. In the southern seashore of the western part of the province, deep well areas are quite limited. Difficult areas fall on the remaining area outside the shallow and deep well areas. Saline water intrusion occurs in the coastal areas of Alabel, Malapatan, Glan, and Maasim. Groundwater with high Ca and Mg contents is distributed in the reef limestone area in the eastern part of the province, in the municipalities of Alabel, Malapatan, and Glan.

Based on the inventory of water sources prepared during the study, the province has 136 developed springs currently serving the province, which come out from the high mountain areas in the southeastern and the western parts of the province. A total of 45 untapped springs for future development are reported in the mountainous areas of all municipalities.

According to the existing well inventory, the depth of the potential aquifers occurs between 15 to 120m in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are Alabel and Maasim.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

10.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development are established to maintain the existing service coverage, that is, a very slight increase from the base year both in urban (2% increase) and rural area (3% increase) as shown Table 10.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-

Table 10.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*70*	*72*	*95*
	Rural Area	*52*	*55*	*93*
Sanitation	*Urban HH Toilet*	*61*	*80*	*93*
	Rural HH Toilet	*44*	*60*	*80*
	Public School Toilet	*46*	*60*	*90*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*38*	*60*	*Not applicable*

term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 10.6.2.

Table 10.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*16,194*	*135,077*
	Rural Area	*Persons*	*48,905*	*140,942*
Sanitation	*Urban HH Toilet*	*No. of Households*	*7,422*	*19,011*
	Rural HH Toilet	*No. of Households*	*16,640*	*32,018*
	Public School Toilet	*No. of Students*	*26,191*	*52,301*
	Public Toilet	*No. of Utilities*	*43*	*53*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*84,458*
Solid Waste	*Urban Area*	*No. of Households*	*4,931*	*Not applicable*

The necessary water supply facilities for Phase I include 7 deep wells/springs for 3,000 house connections in urban area, and 17 Level II systems with spring sources and 77 Level I wells/springs for rural area. For Phase II, 21 deep wells/springs for additional 33,800 connections and 2,352 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 20% of Level I facilities will be implemented by the LGUs and 5% of these public facilities will be allocated to spring development. Rehabilitation requirements are considered to be 10% of the total number of deep wells to be constructed under PW4SP. Two (2) new laboratory buildings will be constructed in Alabel and Glan. Kiamba will utilize the existing municipal hospital to house the new laboratory. Three (3) sets of water quality test instruments/equipment will be necessary; one set to upgrade the existing provincial laboratory in Alabel, and the other 2 sets, for the new laboratories in Glan and Kiamba.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system/s, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, 3 out of the total 7 municipalities have no Level III system, namely; Kiamba, Maitum and Malungon. At present, there are no particular planned/on-going projects for the municipalities in the province. The municipality of Maitum is going to prepare F/S for the establishment of a Level III system with spring source development. Individual systems by municipality shall be operated where urban areas are geographically scattered.

Among various untapped spring sources identified during the course of PW4SP preparation, the untapped sources, located in Alabel, Maitum, Malapatan and Malungon are considered to have favorable conditions for Level III service. However, detailed survey to ensure

appropriate spring source development shall be conducted in the implementation of the projects.

Integration of small Level III systems for operation and management shall be sought, although, these systems are currently managed individually.

Moreover, Phase I sanitation will require 7,422 household toilets, 40 public school toilets and 43 public toilets for urban area. In rural area, 16,640 household toilets and 91 public school toilets are necessary. Solid waste disposal will need 6 refuse collection trucks. For Phase II, urban area will require 19,011 household toilets, 84 public school toilets and 53 public toilets. In rural area a total of 32,018 household toilets and 373 public school toilets are necessary.

10.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments will have to make adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources who share in the vision must be identified and harnessed for sector management. Local planners need to focus on the long-term requirements.

The following policy and strategy statements will be adopted by the Provincial Government:

- Facility management with emphasis on sustainability
- Project selection and prioritization based on commitment of the beneficiaries, beneficiaries' willingness to pay, current water and sanitation and health conditions, and potential for growth
- Technologies appropriate to local conditions and resources. Economical facilities, without necessarily insisting on low-cost construction
- An integrated approach to the provision of potable water supply, sanitation, and hygiene education
- Equitable provision of water supply and sanitation between rural and urban areas; between wealthy and depressed areas
- Self cost recovery and rational cost sharing (subsidy)
- Private sector participation
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector

- Broader concern for environmental protection and management in sector development
- Provision of water supply and sanitation services under emergency conditions

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up a coordinated regulatory framework considering, among others, the following: water allocation and water rights policies (conflict resolution); water rate review; association registration; water quality, etc.

It is assumed that national and external funds although diminishing, will continue to be channeled through local offices of central agencies in the medium-term.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be operational, which may be augmented at the PPDO/PEO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the Unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of BWSAs for Level I systems and RWSAs for Level II and III systems will be a prerequisite. The community, especially the women's sector, shall be involved in all phases of project management (planning, construction and O&M) and in undertaking health and hygiene education programs. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments.

Community Development

To ensure, therefore, that the full and active participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is

recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative*;* Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development utilizing the KASFALA method; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision

of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Level I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

10.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1997 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 10.8.1.

The investment cost for Phase I is estimated at about ₱252.4 million (in 1997 price level). A total of ₱172.6 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share are 33.6% and 32.5%, respectively. While, the remaining 33.9% is required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Table 10.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*58,049*	*421,832*
	Rural Area	*56,097*	*123,310*
	Sanitation		
	Household Toilet	*7,346*	*22,275*
	School Toilet	*35,907*	*125,264*
	Public Toilet	*14,796*	*18,237*
	Disinfection of Well	*141*	*0*
	Urban Sewerage	*N/A*	*616,543*
	Sub-Total	***172,555***	***1,327,632***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*70*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***955***	***26,782***
Water quality Laboratory		*2,032*	*0*
Sector Management	*Engineering Studies*	*21,503*	*89,793*
	Institutional Development	*14,558*	*62,165*
	Sub-Total	***36,060***	***151,958***
Total Direct Cost		*211,602*	*1,506,372*
Contingencies	*Physical Contingency*	*21,153*	*150,637*
	Price Contingency	*54,773*	*N/A*
	Value-Added Tax (VAT)	*19,697*	*N/A*
Total Investment Cost		***307,226***	***1,657,009***
Total Investment Cost (excluding Price Contingency)		***252,380***	***1,657,009***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 6 units of refuse collection truck. The total procurement cost is estimated at approximately ₱40 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1997 price level is estimated at ₱8.7 to ₱14.4 million/year during Phase I period.

10.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for

this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector was assumed to be 4% of total IRA (20% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 1999 to 2003 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱103.04 million (provincial IRA is 45.4% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 32.9%, followed by rural water supply (25.84%). While, the share of urban sanitation is 21.65%, which is higher than that of rural sanitation of about ₱20.18 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 40.83 % of the requirements as a provincial average. Hence, there is a big shortfall of ₱149.34 million in funding. It will become ₱183.37 million in consideration of price escalation with annual rate of 7%. In the municipal achievement percentage in finance, Maitum (100%) is the highest among municipalities, followed by Kiamba (96%). Others are in the range between 52% and 75% to the requirements, while the provincial average is 41%.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of; i) acquisition of external funds, ii) augmentation of sector finance under current arrangements (IRA and others), iii) introduction of private sector participation to mitigate public investment needs, and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2003 would not sustain even the present levels in the provision of only the projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

Investment need ranking of the municipalities is discussed to serve as a guide for implementation in order for the provincial government to effectively arrange its financial

resources. The ranking for urban water supply is specifically studied and the result is employed for allocation of provincial IRA to the municipalities in the concerned sub-sector. For the provincial fund allocation, as a currently effective arrangement, it is assumed that 90% of the fund for urban water supply from the provincial government is equally distributed up to the second ranking municipalities, while the remaining 10% are equally distributed to the rest of the municipalities. In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipality is Malungon, which indicates that it is given priority for investments in all sub-sectors, while Alabel is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 1st batch provinces for preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply, public/school toilet facilities and distribution of toilet bowls were identified to meet the conditions in provision of GOP-assisted project. Since all municipalities of the province are 2nd and 3rd class municipalities, there is no water supply component to meet the conditions in the provision of the GOP-assisted Level I water supply in the rural areas (since these are limited to 5th and 6th class municipalities). While, in the sanitation sub-sector, there are four (4) municipalities such as Alabel, Kiamba, Maasim and Maitum to meet the condition for GOP-assisted projects. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 1999-2003 was estimated at ₱34.38 million or ₱ 24.56 million in 1997 price level.

Two alternatives for the financial arrangements were studied, these are; i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and the beneficiaries (3%). Comparing the estimated project cost to be shared by the LGUs of ₱11.5 million (1997 price level) and the available IRA of LGUs (₱20.3 million), the cost to be shouldered by the LGU meets the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared (even if the estimated IRA available meets the required cost to be shared by the LGU). The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to 75% of the total project cost in the portion of the loan. Out of GOP finance through the loan, 39.2% of the total project cost shall be granted to the LGUs, aside from the 10.8% GOP counterpart fund. The remaining 35.8% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU is 14% of the available IRA.

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (₱100/HH/month in 2003). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱91/HH/month in 2003, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱ 221/HH/month in 2003). Based on the experience that water fee must not exceed 5% of income (average monthly water consumption of 15 m^3), users will be able to pay.

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

10.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and involve the beneficiaries. It should be accepted by all sectors. It should be practical. It should be followed through with effective feedback. The best

monitors are the community members themselves since accurate monitoring reports are in their best interest. A consensus on common and practical definition of terms for monitoring purposes is needed.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

There are existing Project Monitoring Committees (PMCs) at the provincial and municipal levels tasked with the monitoring of local government projects funded by national and local governments. At the provincial level, projects to be monitored will be those implemented and managed at this level with funds directly released to the province as provided under MO 175. The PMC shall be established in the province and it shall consist of representatives from NGOs and the administration.

This PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and an updated sector investment program.

11. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF NORTHERN SAMAR

11.1 Provincial Profile

Northern Samar is one of the three (3) provinces in Samar Island and belongs to Region VIII, the Eastern Visayas Region. Catarman is the provincial capital. The province is composed of 24 municipalities with 569 barangays, of which 101 are urban and 468 rural. The province is classified as 2nd class. At the municipal level, 13 municipalities belong to 5th class, 7 municipalities to 6th class, and the rest has higher classification. The population of the province was 454,195 in 1995 with an annual growth rate of 3.21% between 1990 and 1995.

Physical Features

The province has Type II climate. It is characterized by no distinct dry and wet seasons. The two (2) major geomorphic feature of the province are the Samar Central Highlands with minimum elevation of 600 masl and the western mountain system. This system has low rolling hills with elevations of less than 300 masl. The western coastline is very irregular.

The principal river systems commonly flow northward and empty into the Philippine Sea. Catarman River is the largest in the province with a watershed of 772km^2. About 64% of the total land area of the province constitutes agricultural land and another 32% as forestland. Built-up area is less than 1%.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 45,485 which was well below the national average of ₱ 83,161. Moreover, about 56% of the total number of families lived within and below the established poverty threshold income of ₱ 37,053 in Region VIII.

About 92% of the municipalities have electric supply service with only 28% household coverage. Telecommunication service is available to all municipalities. Inter-municipal land transportation can be obtained by means of jeepneys, taxis, cars and buses. There are 10 banking institutions, 967 industrial/commercial establishments, and 11 tourism-related facilities. With regard to social services, there are 561 schools, 8 hospitals, and 136 health units and barangay health stations.

Provincial population growth rates had been increasing for the last 6 censal years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 72%, while the remaining 28% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid, diarrhea, skin diseases, dengue fever, intestinal parasitism, conjunctivities, cholera and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 15% of the total households in the province relied on municipal refuse collection services.

11.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has only three (3) Level III systems, namely, Catarman WD, San Isidro WD and privately managed Costa Real WWs. Among them, Catarman WD practices scheduled water supply due to insufficient water source at present.

There are 42 Level II systems operating in the municipalities. Most of these are utilizing spring sources (40 systems), while only 2 systems are using shallow well/surface water. Majority supplies water for 24 hrs, however, minimal discharges are experienced due to the El Nino phenomenon. It is also common that water quality examination is not adequately conducted. About 20% of the waterworks impose a flat rate water charge of 5 to 20 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of the MEO/CEO or DEO.

Level I facilities are common in rural barangays. Of the 5,000 operational Level I facilities, 94% are shallow wells. In the course of PW4SP preparation, 40% of the shallow wells were assumed as unsafe water source. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 44% and 56%, respectively. The share of developed springs in public facilities is 20%.

About 61% or 291,800 of the present population (477,300 comprising 28% in urban area and 72% in rural area) are adequately served. Under area classification, 65% of the urban population and 60% of the rural population have access to safe water sources/facilities. Of the served population, only 1% or 4,200 persons are served by Level III systems. About 95% or 276,200 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 59% or 52,873 of the total households, which is a bit lower than the national coverage of 60%. Almost all these sanitary toilets are the pour-flush type. In municipalities that have high water service coverage (Laoang, San Antonio), high sanitation coverage occurs and adversely, in low water supply coverage (Victoria, Silvino Lobos), low sanitation coverage also occurs. Service coverage in urban area is 60%, while in rural area, the coverage is 58%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 985 toilets installed at 534 schools. Only 34% of the students is adequately served by sanitary toilets. The present average ratio of 115 students per sanitary toilet is very much higher than the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 21 public utilities; public markets, bus/jeepney terminals, and parks or plazas. About 86% of these public toilets has sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

11.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) were prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, through the Water Supply and Sanitation Program Management Office (WSS-PMO) which provides overall coordination over the implementation of WATSAN projects of LGUs.

At the provincial level, the PPDO is in charge of the formulation of integrated and sectoral development plans and policies for the consideration of the Provincial Development Council, while the PEO undertakes survey, design of facilities, construction supervision and assistance in O&M of facilities. The PHO is responsible for health, hygiene and sanitary improvement in coordination with MHOs. Normally, projects of Level I/II systems are initiated by BCs, and LGUs implement the projects with funds made available for the purpose. The project implementing capacity of LGUs is still limited and may require assistance from national government line-agencies, NGOs, etc. Water Supply Project Task Forces have set up as needed. Larger water supply systems are managed by either municipalities or WDs which have a higher level of management expertise.

The current major institutional issues are: managing the transition process, and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently, and will require substantial input and support.

Community Development

There has been limited experience in planning or implementing community development processes for the WATSAN sector projects in the Province of Northern Samar. The manner

by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. While the PPDO and the PHO both have the structure to undertake or conduct CD work, this is done only as part of or as a component of other projects. As such, there is an apparent lack of the identified major responsible players on CD, particularly on the provincial level. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. The training programs that should update the knowledge and skills of LGUs on community development have also been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. . In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

11.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 96.53% of the total income. The provincial government has no economic enterprises but it receives municipal income, not on a regular basis from the fees and charges from small-scale mining and sand and gravel operations.

On the other hand, actual expenditures for the same period were 72.58% of the total revenue. These expenditures are further broken down into personnel (53.13%), capital outlay (7.86%), and operation and maintenance expenses (11.59%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱ 47.39 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay are mainly derived from 20% DF of the IRA. During the period 1995-1999, the 20% DF of the province was sufficient to cover the actual expenditures except in 1998 when the province incurred a deficit of ₱4.7 million. For 1999, it is projected that the 20% DF is adequate to cover the capital expenditures of the province. Projected amount is ₱52.1 million.

The provincial government provides the prioritized WATSAN projects with funds under the social services sector. In the AIP of the province, a total investment cost of ₱12.05 million was planned for WATSAN sector during the period of 1995-1998. But, the actual expenditure for the sector out of the 20% DF of the province was ₱3.186 million or only 26.44% of the required investments. Further, there is a need to clarify which of the planned investments were implemented and funded from any of the available sources, e.g., local funds (provincial and municipal government) and foreign funds.

In 1997, disbursed amount to WATSAN sector was only ₱1.01 million (2.68% of the actual total disbursements from 20% DF). Likewise, in 1998, the WATSAN sector is allocated a smaller amount of ₱0.97 million which is equivalent to only 2.06% of the planned 20% DF and the actual disbursed amount of the 20% DF. Priority components in the WATSAN sector are construction of DW, SW, tank, etc., for which a total amount of ₱10.89 million was

appropriated (equivalent to 90.36% of the WATSAN allotment) for the period 1995–1998, and funded mainly by the National Government.

The financial assistance was obtained from foreign donors such as UNICEF, OECF (Level I) and PAF2 (DILG). The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector implementation, funding sources are provincial government, CDF (Congressmen) and the municipal governments, while implementing agencies on the above mentioned are the PEO and PPDO (for monitoring), DPWH-District Office and the Municipal Governments, respectively.

With regard to capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since the beneficiaries do not recognize the cost requirements. The monthly fee for Level I in the active association is about ₱10 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees.

The percentage of water fee to median monthly household income is about 0.87% for Level III, 0.29% for Level II and less than 0.14% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

11.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

Northern Samar shares common geologic features and history with the other two provinces comprising the Island of Samar. The lithologic units can be classed under two general rock suites: (1) the suite of igneous rocks of Cretaceous-Paleogene periods, comprising the core of Samar Island, and (2) the clastic and non-clastic sequence of rocks dated from Early Miocene to Pleistocene epochs found surrounding the core.

The Samar Central Highlands is a NNW-SSE trending mountain system of moderate to high relief extending from Catarman to Leyte Gulf. The youngest rock units are marine and terrestrial sediments of Oligocene to Miocene epoch in surrounding area of the mountain range, and volcanic rocks as andesite flow of Oligocene epoch. The western mountains were formed by submarine andesite and basalt flow. Presently, the islets formed by volcanic and pyroclastic rocks are in the northern and western sides of the mountains. The alluvial deposits are very limited along the seashore.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Some solo shallow well areas are defined in the province. Deep well area covers about 85% of Northern Samar, while difficult area falls on the remaining area. Ironic water are observed in shallow and deep wells belonging to the Samar Central Highlands, where the municipalities of Catubig, Las Navas, Lope de Vega and Silvino Lobos are located. On the other hand, saline water intrusion areas are found in the northern coastal belts made of alluvial plains in the province.

Based on the general information of water sources gathered during the study, the province has numerous developed springs currently serving the province. Such spring sources are located at the mountain area on the western part and from the highland area on the central to eastern parts of the province. Untapped springs for future development shall be investigated in Allen, Lavezares, San Isidro, Victoria and the western islets. Other municipalities out of above mentioned area have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 22 to 120 meters in the recent alluvium, fluviatile deposits and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. In the mountainous area, water tables are reported at 60 mbgs to 100mbgs. There are two kinds of groundwater quality problems in the province; one is ironic water distributed in the Samar Central Highlands area, and the other is salt water intrusion along the seashore alluvial plains.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to prepare groundwater database and conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. Groundwater database study shall cover the entire province, while test well investigations shall be conducted in Catarman, Mondragon and San Roque.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) elevation difference between two points. Additionally, spring water quality in the Samar Central Highlands area shall be examined to confirm the existence of pollutants from mining sites.

11.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage and viable investment using available IRA both in urban and rural water supply as shown in Table 11.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 11.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*65*	*65*	*95*
	Rural Area	*60*	*60*	*93*
Sanitation	*Urban HH Toilet*	*60*	*68*	*93*
	Rural HH Toilet	*58*	*65*	*90*
	School Toilet	*34*	*50*	*90*
	Public Toilet	*86*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*56*	*65*	*Not applicable*

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2004. Additional service coverage of the sector by phase is shown in Table 11.6.2.

The necessary water supply facilities for Phase I include 17 deep wells/springs for 1,700 house connections in urban area, and 273 Level I wells/springs for rural area. For Phase II, 33 deep wells/springs for additional 35,400 connections and 2,500 Level I wells/springs are

Table 11.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***Persons***	***9,317***	***141,645***
	Rural Area	***Persons***	***21,664***	***145,637***
Sanitation	***Urban HH Toilet***	***No. of Households***	***4,267***	***19,545***
	Rural HH Toilet	***No. of Households***	***9,376***	***44,760***
	School Toilet	***No. of Students***	***25,497***	***63,239***
	Public Toilet	***No. of Utilities***	***6***	***12***
Sewerage	***Urban Area***	***Persons***	***Not applicable***	***41,075***
Solid Waste	***Urban Area***	***No. of Households***	***8,905***	***Not applicable***

required for urban and rural water supplies, respectively. It is assumed that 50% of Level I facilities will be implemented by the LGUs and 25% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. Three (3) sets of water quality test instruments/equipment will be necessary; one (1) set to upgrade the existing laboratory in Catarman, and the other two (2) sets, for the new laboratories in Allen and Laoang.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there is no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine the respective system of the municipalities.

Currently, 22 out of the total 24 municipalities have no Level III system in their urban areas. There are no specific planned/on-going projects such as foreign donor assisted project/s at present.

Merging of municipal systems (physical arrangement) in the long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction.

Integration of small Level III systems for operation and management shall also be sought, although these systems are currently managed individually.

Some municipalities have high potential in spring development for urban water supply. However, detailed survey to ensure appropriate developments of spring sources shall be conducted in the implementation of the projects.

Moreover, Phase I sanitation will require 4,267 household toilets, 29 public school toilets and 6 public toilets for urban area. In rural area, 9,376 household toilets and 89 public school toilets are necessary. Solid waste disposal will need 17 refuse collection trucks. For Phase II, urban area will require 19,545 household toilets, 92 public school toilets and 12 public toilets. In rural area a total of 44,760 household toilets and 449 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

11.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments need to adjust their current policies and structures to achieve closer coordination with the overall policies, institutional and regulatory frameworks, and resource-sharing systems of the water sector.

The adjustments would enable the LGUs to avail of opportunities in the sector, specifically:

- To immediately improve the physical infrastructure for water, sanitation, and related environmental services; and
- To acquire permanent capabilities for planning, management, and development of sustainable institutions in the sector.

In line with the proposed adjustments, the Province will adopt the following policies and strategies in relation to the development of the water sector:

- Facilities will be managed with emphasis on sustainability;
- Project selection and prioritization based on beneficiaries' commitment and willingness to pay, on the current water, sanitation and health conditions, and on potential for growth;
- Technology appropriate to local conditions and resources shall be adopted. Facilities will be selected and designed for economy, while construction costs should not compromise quality, reliability, useful life, and provisions for upgrading and expansion;
- An integrated approach shall be used in the provision of potable water supply, sanitation, and hygiene education;
- Water supply and sanitation services shall be made available equally to rural and urban areas, and to wealthy and depressed areas;
- Cost recovery measures consistent with national policies on subsidies and loans to the sector shall be implemented at the local level;

- Private sector participation will be preferred whenever practical in the design, construction, operation, and maintenance of the facilities;
- The province will consider and, if practical, tap potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Environmental protection and management measures will be integrated in all sector development plans and activities;
- Provisions shall be made to ensure water supply and sanitation services under emergency conditions.

To be successfully implemented, these polices and strategies require a common vision to be shared by its officials and by a critical mass of its citizens that can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of water associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds that, although diminishing, are assumed to continue in the medium-term to be channeled through local offices of central agencies.
- Adoption of this PW4SP as a basis for the Annual Sector Plan which, together with the budgets, will be reviewed by the Governor and passed upon by the legislation as part of the annual provincial budget approval process.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up by the Province, supported by adequate logistics and incentives. The PWSU will implement, assist and monitor all water supply and sanitation services in cooperation with the Municipalities which, for their part, will establish a Municipal Sector Liaison Team (MSLT). The DILG WSS-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU and MSLT.

For institutional arrangements, the formation of community-based associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I

systems and RWSAs for Level II and III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. In all cases, women shall have equal opportunities to be trained and involved in all phases of project management (planing, construction and O&M) and in undertaking health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

11.8 Cost Estimates for Future Sector Development

Investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 11.8.1.

Table 11.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	Component	Phase I	Phase II
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*46,585*	*553,674*
	Rural Area	*87,787*	*470,240*
	Sanitation		
	Household Toilet	*2,717*	*10,185*
	School Toilet	*27,553*	*126,324*
	Public Toilet	*2,210*	*4,421*
	Disinfection of Well	*359*	*181*
	Urban Sewerage	*N/A*	*299,848*
	Sub-Total	***167,211***	***1,464,872***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*260*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,125***	***26,782***
Water quality Laboratory		*1,434*	*0*
Sector Management	*Engineering Studies*	*21,378*	*150,190*
	Institutional Development	*15,504*	*103,978*
	Sub-Total	***36,882***	***254,168***
Total Direct Cost		*206,651*	*1,745,821*
Contingencies	*Physical Contingency*	*20,661*	*174,582*
	Price Contingency	*56,718*	*N.A*
	Value-Added Tax (VAT)	*19,111*	*N.A*
Total Investment Cost		***303,141***	***1,920,403***
Total Investment Cost (excluding Price Contingency)		***246,383***	***1,920,403***

Notes: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The total investment cost for Phase I is estimated at about ₱246.4 million (in 1998 price level). A total of ₱167.2 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 28% and 53%, respectively. While, the remaining 19% is required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 17 units of refuse collection truck. The total procurement cost is estimated at approximately ₱62.6 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱9.6 to ₱12.6 million/year during Phase I period.

11.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Provincial allocation to the relevant sector was assumed to be 3% of total IRA (15% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2000 to 2004 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱121.61 million (provincial IRA is 2.80% of the total IRA). In the overall IRA allocation to the sub-sectors, rural water supply has the largest allotment of 47.9%, followed by urban water supply (33.2%). While, the share of rural sanitation is 18.7%, which is higher than that of urban sanitation of about ₱7.44 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 49% of the requirements as a provincial average. Hence, there is a big shortfall of ₱124.78 million in funding. It will become ₱181.53 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in

finance, Capul, Laoang, Lavezares, Rosario, San Antonio, San Isidro and San Vicente (100%) is the highest among municipalities, followed by Mondragon (78%). Majority is in the range between 40% and 60% to the respective requirements, while the provincial average is 49% (40% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is noted that for urban and rural water supply sub-sectors, that the service coverage in the year 2004 would not sustain even at the present levels in the provision of only the projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Lope de Vega, Las Navas and Biri, which indicate that they are given priority for investments in all sub-sectors while Laoang is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 4th batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are fifteen (15) eligible municipalities in terms of 5^{th} and 6^{th} municipalities for GOP-assisted Level I rural water supply in the province, while all municipalities (24) in the province meet the condition for GOP-assisted projects (limited to 3^{rd} to 6^{th} municipalities) in sanitation sub-sector.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost (₱132.7 million in 1998 price level) in combination of the foreign assisted loan and government counter part fund. The

remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGU will increase to ₱80.0 million from ₱62.4 million (1998 price level), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱80.0 million) and available IRA of LGUs (₱78.0 million), it was identified that there was a shortage of ₱2.0 million, achieving 97% of the proposed requirements. An option suggested is to utilize sector IRA alloted (concerned municipalities and province) to urban water supply or other sub-sectors without limiting to the available IRA for rural water supply sub-sector, as the possible financial source

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱99.6 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱63.0 million or 47.5% of the total project cost shall be granted to the LGUs, aside from the 2.5% GOP counterpart fund. The remaining ₱36.5 million or 27.5% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU will increase to ₱29.9 million from ₱25.8 million (1998 price level), considering price contingency and VAT, which is about 40% of available IRA estimated in the previous study (₱80.0 million).

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱65/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114/HH/month in 2004, 2.3% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱267/HH/month in 2004, 5.5% of monthly income). Based on experience that water fee must not exceed about 5% of income, the monthly water rate seems to be affordable.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

11.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. It should be followed through with effective feedback.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and practical, and should involve the beneficiaries and be accepted by all sectors.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

12. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF EASTERN SAMAR

12.1 Provincial Profile

Eastern Samar is one of the six (6) provinces comprising Region VIII, the Eastern Visayas Region. The municipality of Borongan is the provincial capital. The province is composed of 23 municipalities. Based on the 1995 NSO data, there are 597 barangays, of which 178 are urban and 419 are rural. The province is classified as 2nd class. At the municipal level, 15 municipalities belong to 5th class, 2 municipalities to 6th class, and the remaining have higher classification. The population of the province was 362,324 in 1995 with an annual growth rate of 1.80% between 1990 and 1995.

Physical Features

The province has Type II climate that is typified by an absence of dry season with very pronounced maximum rain period. The rugged mountains of the Samar Central Highlands and the relatively flat areas of the alluvial plains and coastal shorelines generally characterize the topography of Eastern Samar. There are no active or inactive volcanoes in Samar Island.

Suribao River is the largest of the eight (8) major rivers in the province. It has a watershed of 920 km^2 and drains to the Philippine Sea passing through the municipality of Maydolong. Also, there are numerous underground solution channels. About 27% of the total land area of the province constitutes agricultural land, while 24% is grassland. Remaining forest cover is only 38% and the built-up area is less than 1%.

Socio-economic Aspects

Agriculture and fishery are the major economic activities in the province. The average annual family income in 1994 was ₱ 60,634, which was below the national average of ₱ 83,161. Moreover, about 30% of the total number of families lived within and below the established poverty threshold income of ₱ 37,053 in Region VIII.

All municipalities have electric supply service but with a low 26% household coverage. Likewise, telecommunication service is available all municipalities. Inter-municipal land transportation can be obtained by means of jeepneys and buses. There are 6 banking institutions and 1,335 industrial/commercial establishments. With regard to social services, there are 420 schools, 16 hospitals, and 118 health units and barangay health stations.

Provincial population growth rates had been fluctuating for the last 6 sensual years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 66%, while the remaining 34% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were viral hepatitis, diarrhea, skin diseases, intestinal parasitism, typhoid, conjunctivities, dengue fever, dysentery and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 28% of the total households in the province relied on the municipal refuse collection services.

12.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 7 Level III systems operating under different types of ownership (authority or association) together with their service coverage. These are three (3) Water Districts, three (3) Municipal Waterworks and one (1) RWSA operated system. Among them, Borongan WD has experienced insufficient water supply during dry season and salt water intrusion into its deteriorated distribution pipes. Also, spring sources of Balangkayan and Maydolong are sometimes affected by saline water due to high tide. Improvement/rehabilitation of transmission/distribution pipes together with augmentation of water source are current issues for these systems. Water quality examination is also a common issue since the existing practice is very limited in sampling frequencies and items to be examined. Collection efficiency of water charges is quite high at larger waterworks, which is in contrast with smaller waterworks that experienced very poor collection due to weak management practice.

There are 114 Level II systems operating in the municipalities. Most of these systems are utilizing spring sources (105 systems), while 9 systems use shallow/deep wells. Majority supplies water for 24 hours a day with good water quality. In the municipality of Mercedes, however, water quality of its Level II system does not meet the standard for drinking purpose due to saline water. Waterworks using electric pumps impose a flat rate water charge of 5 to 100 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of the MEO/PEO as required. It is also common that water quality examination is not adequately conducted.

Level I facilities are common in rural barangays. Of the 4,050operational Level I facilities, 83 percent are shallow wells. In the course of the PW4SP preparation, 40% of the shallow wells were assumed as unsafe water source by municipality. All deep wells, covered/ improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 58% and 42%, respectively. The share of developed springs in public facilities is 10%.

About 57% or 213,900 of the present population (373,100 comprising 34% in urban area and 66% in rural area) are adequately served. Under area classification, 68% of urban population and 52% of rural population have access to safe water sources/facilities. Of the served population, 7% or 14,900 persons are served by Level III systems. About 80% or 172,300 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 61% or 42,726 of the total households, which is a little above the national coverage of 60%. These toilets consist of 1% flush type, 72% pour-flush type and 27% VIP/dry type. In municipalities that have high water service coverage (Borongan, Sulat), high sanitation coverage occurs and adversely, in low water supply coverage (General Mac Arthur, Guiuan), low sanitation coverage also occurs. Urban area has service coverage of 72%, while rural area has 56%. In urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. There is no sewerage system in any of the urban areas.

The province has a total of 1,514 toilets installed at 449 schools. Sanitary toilets adequately serve 56% of the students. The present average ratio of 66 students per sanitary toilet is a little over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 22 public toilets found in public markets, bus/jeepney terminals, and parks or plazas in the province. All these public toilets are sanitary indicating 100% coverage. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

12.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) were prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, through the Water Supply and Sanitation Program Management Office (WSS-PMO) which provides overall coordination over the implementation of WATSAN projects of LGUs.

At the provincial level, the PPDO is responsible for planning WATSAN sector projects while the PEO undertakes survey, design of facilities, construction supervision and assistance in O&M of facilities. The PHO is responsible for health, hygiene and sanitary improvement in coordination with MHOs. Normally, projects of Level I/II systems are initiated by BCs, and LGUs implement the projects with funds made available for the purpose. Presently, there are very few functioning BWSAs, and majority of the BWSAs needs to be re-activated. The province has some experience in implementing Level III projects and municipalities seem to have some capacity for the work in Level I/II levels; however, generally the implementing capacity of LGUs is still limited and may require assistance from national government line-

agencies, NGOs, etc. For this purpose, Water Supply Project Task Forces have set up as needed. For the ADB-assisted RW3SP, a WATSAN team was organized. Larger water supply systems are managed by either municipalities or WDs which have a higher level of management expertise.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently, and will require substantial input and support.

Community Development

There has been limited experience in planning or implementing community development processes for the WATSAN sector projects in the Province of Eastern Samar. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. While the PPDO both have the structure to undertake or conduct CD work, this is done only as part of or as a component of other projects. As such, there is an apparent lack of the identified major responsible players on CD, particularly on the provincial level. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. The training programs that should update the knowledge and skills of LGUs on community development have also been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector. Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they

are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.

- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

12.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 95.88% of the total income. The provincial government has no economic enterprises, but it receives municipal income, not on a regular basis from the following: fees and charges from small-scale mining and sand and gravel operations.

On the other hand, actual expenditures for the same period were 97.8% of the total revenue. These expenditures are further broken down into personnel (72.2%), capital outlay (10.5%), and operation and maintenance expenses (15.0%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱43.92 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1995-1998, the 20% DF of the province were sufficient to cover the actual expenditures. For 1999, it is projected that the 20% DF amounting to ₱50.6 million will not be adequate to cover the capital expenditures of the province, which is projected at ₱59.16 million; thus resulting to a projected deficit of ₱8.56 million.

Before 1998, there was no investment record used for WATSAN sector by the province. In 1998, a total investment of ₱2.48 million was made for the WATSAN sector, mainly for

Level II which was equivalent to only 4.9% of the 20% DF (or 0.87% of IRA). For 1999, the provincial government provided the prioritized WATSAN projects with funds under the social services sector.

The implementation of water supply projects was previously undertaken by the Provincial Planning and Development Office (PPDO), Provincial Engineering Office (PEO), PHO, DILG, DPWH, LWUA and NGO. The PEO implements the Provincial government funded projects under the General Fund. The implementation of these projects is closely monitored with reference to progressive disbursements. For the sector implementation, the following are the local funding sources: provincial government, CDF (Congressmen) and the municipal government and the respective implementing agencies are the PEO, DPWH-District Office and the Municipal Government.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. While, some of the active BWSAs for Level I water supply collected monthly fees ranging from about ₱10.00 to as much as ₱50.00/HH per month. Cost recovery for Level III systems, particularly those covered by Water Districts is managed through different systems. The households covered by the Water District can be disconnected in case of no payment by the users.

The percentage of water fee to median monthly household income is about 0.97% for Level III, 0.6% for Level II and 0.1% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

12.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

Eastern Samar shares common geologic features and history with the other two provinces comprising the Island of Samar. The lithologic units can be classed under two general rock suites: (1) the suite of igneous rocks of Cretaceous-Paleogene periods, comprising the core of Samar Island, and (2) the clastic and non-clastic sequence of rocks dated from Early Miocene to Pleistocene epochs found surrounding the core.

The Samar Central Highlands is a NNW-SSE trending mountain system of moderate to high relief extending from Catarman to Leyte Gulf through the western and southern parts of the province. The youngest rock units are marine and terrestrial sediments of Oligocene to Miocene epoch in surrounding area of mountain range, and volcanic rocks as andesite flow of Oligocene epoch. The fluviatile and alluvial deposits are very limited along northern rivers and coastal areas.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Some solo shallow well areas are defined in the province. Deep well area covers about 45% of Eastern Samar, while difficult area falls on the remaining area. Ironic water are observed in shallow and deep wells belonging to the Samar Central Highlands, where the municipalities of Arteche, Can-avid, Dolores, Oras and San Policarpio are located. On the other hand, saline water intrusion areas are found in the eastern coastal areas made of alluvial plains in the province.

Based on the general information of water sources gathered during the study, the province has numerous developed springs currently serving the province. Such spring sources are located in the mountain areas on the western highland area of the province. Untapped springs for future development must be investigated in the eastern coastal areas. Two untapped springs yield 11.6 lps and 115.7 lps in the municipality of Can-avid. Other municipalities have few untapped springs with small yield.

Based on the existing well inventory, the depth of potential aquifers occurs between 20m to 80m in the recent alluvium, fluviatile deposits and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering safe quality

and invariable yield of deeper aquifers. In the mountainous area, water tables are reported at 10 mbgs to 30 mbgs. There are two kinds of groundwater quality problems in the province. One is ironic water distributed in the Samar Central Highlands area and the other, saline water intrusion located along the seashore alluvial plains in the province.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to prepare/conduct the groundwater database with detailed groundwater investigations entailing the construction of test wells and spring water quality examination, prior to the detailed design or in the pre-construction stage. The groundwater database study including test wells shall cover the northern part of the province, while the municipalities that fall on the need of test well investigation are Can-avid and Oras. The spring water quality examination shall be conducted in southern mountainous areas of the province. The municipalities that fall on the need of water quality examination are Balangiga, Balangkayan, Gen, Mac Arthur, Giporlos, Hernani, Lawaan, Maydolong and Quinapondan.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

12.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage, physical targets of Level I facility for rural water supply under on-going ADB-assisted project and viable investment using available IRA both in urban and rural water supply as shown in Table 12.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-

Table 12.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*68*	*69*	*95*
	Rural Area	*52*	*59*	*93*
Sanitation	*Urban HH Toilet*	*72*	*85*	*93*
	Rural HH Toilet	*56*	*68*	*90*
	School Toilet	*56*	*85*	*90*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*73*	*75*	*Not applicable*

term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. For rural water supply, Level I facilities to be constructed under the on-going ADB-assisted project are adopted for Phase I requirements. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Household toilets, school and public toilets to be provided under the on-going ADB-assisted project are taken into account for Phase I requirements. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the

number of required trucks for the year 2004. Additional service coverage of the sector by phase is shown in Table 12.6.2.

Table 12.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*12,446*	*117,322*
	Rural Area	*Persons*	*22,230*	*98,333*
Sanitation	*Urban HH Toilet*	*No. of Households*	*8,268*	*15,034*
	Rural HH Toilet	*No. of Households*	*12,326*	*26,849*
	School Toilet	*No. of Students*	*29,624*	*13,212*
	Public Toilet	*No. of Utilities*	*7*	*0*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*24,129*
Solid Waste	*Urban Area*	*No. of Households*	*7,705*	*Not applicable*

The necessary water supply facilities for Phase I include 16 deep wells/springs for 2,240 house connections in urban area and 247 Level I wells/springs for rural area. These Level I facilities will be constructed under the on-going ADB assisted project. For Phase II, 27 deep wells/springs for additional 29,300 connections and 1,700 Level I wells/springs are required for urban and rural water supplies, respectively. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. The on-going ADB-assisted project will provide new laboratories and facilities that are considered sufficient for the medium term requirement of the province.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there is no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction.

The following municipalities may be studied for the integration both in physical and management systems.

- Can-avid, Dolores and Taft
- Balangiga, Giporlos and Lawaan
- Guian and Mercedes

Integration of small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 8,268 household toilets, 53 public school toilets and 7 public toilets for urban area. In rural area, 12,326 household toilets and 101 public school toilets are necessary. Solid waste disposal will need 15 refuse collection trucks. For Phase II, urban area will require 15,034 household toilets and 23 public school toilets. In rural area a total of 26,849 household toilets and 301 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

12.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments need to adjust their current policies and structures to achieve closer coordination with the overall policies, institutional and regulatory frameworks, and resource-sharing systems of the water sector.

The adjustments would enable the LGUs to avail of opportunities in the sector, specifically:

- To immediately improve the physical infrastructure for water, sanitation, and related environmental services; and
- To acquire permanent capabilities for planning, management, and development of sustainable institutions in the sector.

In line with the proposed adjustments, the Province will adopt the following policies and strategies in relation to the development of the water sector:

- Facilities will be managed with emphasis on sustainability;
- Project selection and prioritization based on beneficiaries' commitment and willingness to pay, on the current water, sanitation and health conditions, and on potential for growth;
- Technology appropriate to local conditions and resources shall be adopted. Facilities will be selected and designed for economy, while construction costs should not compromise quality, reliability, useful life, and provisions for upgrading and expansion;
- An integrated approach shall be used in the provision of potable water supply, sanitation, and hygiene education;
- Water supply and sanitation services shall be made available equally to rural and urban areas, and to wealthy and depressed areas;

- Cost recovery measures consistent with national policies on subsidies and loans to the sector shall be implemented at the local level;
- Private sector participation will be preferred whenever practical in the design, construction, operation, and maintenance of the facilities;
- The province will consider and, if practical, tap potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Environmental protection and management measures will be integrated in all sector development plans and activities;
- Provisions shall be made to ensure water supply and sanitation services under emergency conditions.

To be successfully implemented, these polices and strategies require a common vision to be shared by its officials and by a critical mass of its citizens, that can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of water associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds that, although diminishing, are assumed to continue in the medium-term to be channeled through local offices of central agencies.
- Adoption of this PW4SP as a basis for the Annual Sector Plan which, together with the budgets, will be reviewed by the Governor and passed upon by the legislation as part of the annual provincial budget approval process.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up by the Province, supported by adequate logistics and incentives. The PWSU will implement, assist and monitor all water supply and sanitation services in cooperation with the Municipalities which, for their part, will establish a Municipal Sector Liaison Team (MSLT). The DILG WSS-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU and MSLT.

For institutional arrangements, the formation of community-based associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems and RWSAs for Level II and III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. In all cases, women shall have equal opportunities to be trained and involved in all phases of project management (planing, construction and O&M) and in undertaking health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water

districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's

Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

12.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. Among others, the required cost for Level I facilities and sanitation facilities under on-going ADB assisted project was excluded from medium-term development plan. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. Investment cost required by phase for the province is summarized in Table 12.8.1.

Table 12.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*61,698*	*461,001*
	Rural Area	*0*	*241,146*
	Sanitation		
	Household Toilet	*2,641*	*5,938*
	School Toilet	*34,325*	*75,654*
	Public Toilet	*0*	*0*
	Disinfection of Well	*277*	*129*
	Urban Sewerage	*N/A*	*19,677*
	Sub-Total	***98,941***	***978,185***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*230*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,115***	***26,782***
Water quality Laboratory		*0*	*0*
Sector Management	*Engineering Studies*	*12,544*	*103,503*
	Institutional Develpment	*5,970*	*70,036*
	Sub-Total	***18,513***	***175,159***
Total Direct Cost		*118,570*	*1,180,126*
Contingencies	*Physical Contingency*	*11,851*	*118,013*
	Price Contingency	*34,873*	*N.A*
	Value-Added Tax (VAT)	*11,254*	*N.A*
Total Investment Cost		***174,548***	***1,298,139***
Total Investment Cost (excluding Price Contingency)		***141,614***	***1,298,139***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

Total investment cost for Phase I is estimated at about ₱141.6 million (in 1998 price level). A total of ₱98.9 million is required as the construction/rehabilitation cost (including cost for

disinfection of well) in Phase I, of which urban water supply and sanitation share 62.5% and 37.5%, respectively. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 15 units of refuse collection truck. The total procurement cost is estimated at approximately ₱58.5 million. The works for Level I facilities and the supporting vehicle/equipment will be managed through the ADB-assisted project. However, those for maintenance of facilities will be required through the future. In this connection, one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱10.3 to ₱14.6 million/year during Phase I period.

12.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The on-going ADB-assisted project for rural water supply (Level I) and sanitation improvement (implementation period: 1999-2001) was fully considered for the financial study as part of the Medium Term Development Plan. In this regard, financial arrangements required are those excluding the components scheduled by ADB-assisted project. Furthermore, sector IRA allocation was discounted (less than 3%) to ensure LGU's contribution (10% of construction cost) to the ADB-assisted project (overlapping period with the project is from 1999 to 2001).

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Provincial allocation to the relevant sector is assumed to be about 3%. This means that approximately 15% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal

IRA to the sector. The fund available for this sector for 5-year implementation period from 2000 to 2004 was calculated as a sum of municipal and provincial allotments.

The projected provincial IRA to the sector during the period of 2000-2004 is estimated at ₱114.1 million, which is equivalent to 2.7% of combined provincial and municipal IRA. This percentage arrived as a result of adjustment in use of IRA for those municipalities, required cost of which is lower than the allotted IRA. With regard to the allocation to sub-sectors, urban water supply has the largest allotment of 57.8% (₱65.1 million out of the total ₱114.1 million). Rural sanitation is allotted ₱31.0 million (27.2%) and is larger than that for urban sanitation (₱17.1 million). The proportion of IRA allotment for the sub-sectors differs by municipality and depends on their priority sub-sectors.

In the allocation of municipal IRA, Borongan (capital) has the largest allotment with ₱7.9 million (11.9%) followed by the municipality of Dolores with ₱5.4 million (8.3%).

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund 81% of the requirements as a provincial average. Hence, there is a shortfall of ₱27.6 million in funding. It will become ₱60.5 million in consideration of contingencies and VAT. In the municipal achievement percentage in finance, the majority achieves 90-100% of targets. Hernani is also achievement level (94%). Remaining municipalities are in the range between 50% and 90% to the respective requirements, while the provincial average is 81% (65% in consideration of the contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to the sub-sectors except for rural water supply that the service coverage in the year 2004 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Giporlos, Can-avid, Maslog, Arteche and General Macarthur, which indicates that they are given priority for investments in all sub-sectors. The

municipality of Borongan (Capital) and San Julian are the least priority in terms of investment ranking.

Potential ODA assisted project was additionally studied, to which central government will extend grant. In this connection, Level I rural water supply component was excluded, since on-going ADB assisted project will cover the requirements for medium-term development target. While some sanitation components beyond the scope of the said ADB assisted project were studied for limited classes of the municipality to meet the established provincial target in 2004.

For the Project, the DILG is assumed to be Executing Agency and the province Implementing Agency in the meantime. The project may be merged together with those of the 4th batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are seventeen (17) eligible municipalities for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The sanitation component comprises 130 school toilets to the rural communities. The works for Level I facilities and its supporting vehicle/equipment will be managed through ADB-assisted project.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan (45% or ₱19.0 million) and government counter part fund (5% or ₱2.1 million). The remaining 50% of the overall cost shall be shared between the LGUs by 47% or ₱19.8 million and BWSAs (beneficiaries) by 3% or ₱1.3 million. Under this case, the IRA to be used by the LGU will increase to ₱27.1 million from ₱19.8 million (1998 price level), considering contingencies and VAT. The required cost is covered by the available IRA (₱33.1 million).

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱31.6 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱19.0 million or 45% of the total project cost shall be granted to the LGUs, aside from the 5% GOP

counterpart fund. The remaining ₱12.6 million or 30% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU will increase to ₱8.7 million from ₱7.2 million (1998 price level), considering contingencies and VAT, which is 26% of available IRA estimated in the previous study (₱33.1 million).

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱144/HH/month in 2004). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2004, 1.6% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱269/HH/month in 2004, 3.7% of monthly income). Based on the experience that water fee must not exceed 5% of income, the monthly water rate seems to be affordable.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

12.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. It should be followed through with effective feedback.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and practical, and should involve the beneficiaries and be accepted by all sectors.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase

13. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF SAMAR

13.1 Provincial Profile

Samar is located at the eastern part of the Visayas group of islands and belongs to Region VIII, the Eastern Visayas Region. The province is composed of 25 municipalities and one (1) component city with Catbalogan as the provincial capital. Based on the 1995 NSO records, there are 952 barangays, of which 110 are urban and 842 rural. The province is classified as 2^{nd} class. At the municipal level, 16 municipalities belong to 5^{th} class, 2 municipalities to 6^{th} class, and the rest has higher classification. The population of the province was 589,373 in 1995 with an annual growth rate of 1.88% between 1990 and 1995.

Physical Features

There are 2 types of climate in the province. Type II has an absence of dry season with very pronounced maximum rain period lasting for 2-3 months. This occurs in the southeastern part of the province. Type IV has a rainfall that is more or less evenly distributed throughout the year and covers the northwestern areas. The topography of the province is generally characterized by the rugged mountains of the Samar Central Highlands with minimum elevation of 600 masl; the low rolling hills (elevations not exceeding 300 masl) and the plains along the coastal area. Generally, the western coastline is very irregular.

Five (5) major rivers traverse the province. Gandara River is the largest with a watershed of 1,731 km^2 and drains to Samar Sea. Most river courses are structurally controlled and underground channels abound. About 38% of the total land area of the province constitutes forestland and another 24% as grassland. Agricultural land occupies about 27%, while built-up area is less than 1%.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱ 45,864 which was well below the national average of ₱ 83,161. Moreover, about 46% of the total number of families lived within and below the established poverty threshold income of ₱ 37,053 in Region VIII.

All municipalities have electric supply service but with only 54% household coverage. Telecommunication service is also available in all municipalities. Inter-municipal land transportation can be obtained by means of jeepney, rent-a car, car and bus. There are only 19

banking institutions, 913 industrial/commercial establishments, and 20 tourism-related facilities. With regard to social services, there are 988 schools, 64 hospitals, and 13 health units and barangay health stations.

Provincial population growth rates had been fluctuating for the last 6 censal years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 61%, while the remaining 39% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid/paratyphoid, viral hepatitis, diarrhea, skin diseases, intestinal parasitism, conjunctivities, cholera, dengue fever and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. However, there are no available data on the number of household that is covered by municipal refuse collection services.

13.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 7 Level III systems operating under different type of ownership (authority or association) together with their service coverage. These are four (4) Water Districts and three (3) LGU-managed waterworks. The common problem in the above waterworks is water leakage due to the deteriorated distribution pipes. Collection efficiency of water charges is quite high at bigger networks, which is in contrast with smaller waterworks office, which experienced very poor collection due to weak management practice.

There are 205 Level II systems operating in the municipalities/city, majority of which are utilizing spring sources (200 systems), while 5 systems use deep wells. Most of these supply water for 24 hours, however, there are some systems in Almagro, Gandara, Motiong and Santa Rita that supply water less than 4 hours a day. It is also common that water quality examination is not adequately conducted. About 10% of the waterworks office impose a flat rate water charge of 5 to 25 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of the MEO/CEO or DEO.

Level I facilities are common in rural barangays. Of the 2,500 operational Level I facilities, 38% are shallow wells. In the course of PW4SP preparation, 50% of the shallow wells were assumed as unsafe water source. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 71% and 29%, respectively. The share of developed springs in public facilities is 19%.

About 66% or 400,500 of the present population (607,600 comprising 39% in urban area and 61% in rural area) are adequately served. Under area classification, 76% of urban population and 59% of rural population have access to safe water sources/facilities. Of the served population, 30% or 118,500 persons are served by Level III systems. About 62% or 247,700 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 35% or 41,874 of the total households, which is very much lower than the national coverage of 60%. These toilets consist of 3% flush type, 76% pour-flush type and 21% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Hinabangan, Matuguinao), high sanitation coverage occurs and adversely, in low water supply coverage (Villareal, Marabut), low sanitation coverage also occurs. Service coverage in urban area is 42%, while in rural area, the coverage is 31%. Although a relatively high percentage of sanitary toilets are disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 1,603 toilets installed at 911 schools. Only 45% of the students is adequately served by sanitary toilets. The present average ratio of 87 students per sanitary toilet is double the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 14 public utilities; public markets, bus/jeepney terminals, and parks or plazas. All these public utilities are served with sanitary toilets indicating 100% coverage. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

13.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government‘s decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) were prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH

have also been devolved to the LGUs. It is now the DILG, through the Water Supply and Sanitation Program Management Office (WSS-PMO) which provides overall coordination over the implementation of WATSAN projects of LGUs.

At the provincial level, the PPDO is in charge of the formulating integrated and sectoral development plans and policies for the consideration of the Provincial Development Council, while the PEO undertakes survey, design of facilities, construction supervision and assistance in O&M of facilities. The PHO is responsible for health, hygiene and sanitary improvement in coordination with MHOs. Level I/II systems are operated and maintained by BWSAs or BCs. However, most of BWSAs are not functioning and need to be re-activated. Normally, projects of Level I/II systems are initiated by BCs, and LGUs implement the projects with funds made available for the purpose. Municipalities seem to have some capacity for the

work in Level I/II service levels, however, assistance from the province is required not only for finance but also for the technical aspect. The province has some experience in implementing Level III projects. Generally, the project implementing capacity of LGUs is still limited and may require assistance from national government line-agencies, NGOs, etc. Water Supply Project Task Forces have set up as needed. Larger water supply systems are managed by either municipalities or WDs, which have higher level of management expertise.

The current major institutional issues are: managing the transition process, and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently, and will require substantial input and support.

Community Development

There has been limited experience in planning or implementing community development processes for the WATSAN sector projects in the Province of Samar. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. While the PPDO and the PHO both have the structure to undertake or conduct CD work, this is done only as part of or as a component of other projects. As such, there is an apparent lack of the identified major responsible players on CD, particularly on the provincial level. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. The training programs that should update the knowledge and skills of LGUs on community development have also been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

13.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 95.91% of the total income. The provincial government has no economic enterprises, but it receives municipal income, not on a regular basis from the following: fees and charges from small-scale mining and sand and gravel operation. It manages a provincial hospital subsidizing for their operations, since hospital fees being charged are very low. In addition, it has a health insurance project and a low cost housing project.

On the other hand, actual expenditures for the same period were 79.58% of the total revenue. These expenditures are further broken down into personnel (59.16%), capital outlay (1.08%), and operation and maintenance expenses (19.34%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱49.55 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay are mainly derived from 20% DF of the IRA. During the period 1995-1998, the 20% DFs of the province were sufficient to cover the actual expenditures incurred. For 1999, it is also projected that the 20% DF will be adequate to cover the capital expenditures of the province.

The provincial government provides the prioritized WATSAN projects with funds under the social services sector, or specifically the health sector. In the AIP of the province, a total investment cost of ₱51.58 million was planned for water supply and sanitation sector during the period of 1995-1998. But, the actual expenditure for the sector out of the 20% DF of the province was ₱25.02 million or only 48.5% of the required investments.

The implementation of water supply projects was previously undertaken by a task force under the Provincial Engineering Office (PEO) and DILG (BWP – institutional building, UNDP – WATSAN and CIDA – capability building). The PEO implements the provincial government funded projects under the General Fund. For sector implementation, funding sources are provincial government, CDF (Congressmen) and the municipal government. The implementing agencies on the above mentioned are the PEO, DPWH-District Office and the Municipal Government, respectively.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱5.00 - ₱30.00 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 1.48% for Level III, 0.74% for Level II and 0.25% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

13.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

Samar shares common geologic features and history with the other two provinces comprising the Island of Samar. The lithologic units can be classed under two general rock suites: (1) the suite of igneous rocks of Cretaceous-Paleogene periods, comprising the core of Samar Island, and (2) the clastic and non-clastic sequence of rocks dated from Early Miocene to Pleistocene epochs found surrounding the core.

The Samar Central Highlands is a NNW-SSE trending mountain system of moderate to high relief extending from Catarman to Leyte Gulf through the eastern part of the province. The youngest rock units are marine and terrestrial sediments of Oligocene to Miocene epoch in the surrounding area of mountain range, and volcanic rocks as andesite flow of Oligocene epoch. The western mountains were formed by submarine andesite and basalt flow. Presently, the islets formed by volcanic and pyroclastic rocks are in the western side (Samar Sea) of the province. The alluvial deposits are very limited along the seashore.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Some solo shallow well areas are defined in the province. Deep well area covers about 50% of Samar, while difficult area falls on the remaining area. Ironic water are observed in shallow and deep wells belonging to the northern part of the Samar Central Highlands, where the municipalities of Gandara, San Jose, Santa Margarita and Tarangnan are located. On the other hand, saline water intrusion areas are found in western coastal belts made of alluvial plains in the province.

Based on the general information of water sources gathered during the study, the province has numerous developed springs currently serving the province. Such spring sources are located in the mountain areas on the western part and from the highland area on the central part of the province. Untapped springs for future development shall be investigated in the mountain

municipalities and western islets. Other municipalities out of above-mentioned area have few untapped springs.

From the existing well inventory, the depth of potential aquifers occurs between 22 to 120 meters in the recent alluvium, fluviatile deposits and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering safe quality and invariable yield of deeper aquifers. In the mountainous area, water tables might be deeper. There are two kinds of groundwater quality problems in the province. One is ironic water distributed in the northern part of the Samar Central Highlands area, and the other is saline water intrusion located along the seashore alluvial plains.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct water quality investigations for deep well, spring and surface water (river), prior to the detailed design or in the pre-construction stage. Groundwater and river water quality examination shall cover the northern part of the province where the municipalities/city of Calbayog, Gandara, Pagsanghan, San Jose, Santa Margarita and Tarangnan are located. Spring water quality examination shall cover the eastern part of the province comprising the municipalities of San Jose de Buan, Paranas and Hinabangan.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) elevation difference between the two points.

13.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage and viable investment using available IRA

both in urban and rural water supply as shown in Table 13.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 13.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*76*	*76*	*95*
	Rural Area	*59*	*62*	*93*
Sanitation	*Urban HH Toilet*	*42*	*68*	*93*
	Rural HH Toilet	*31*	*50*	*68*
	School Toilet	*45*	*70*	*90*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*No available data*	*50*	*Not applicable*

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate

measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2004. Additional service coverage of the sector by phase is shown in Table 13.6.2.

Table 13.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*57,200*	*165,446*
	Rural Area	*Persons*	*12,016*	*114,729*
Sanitation	*Urban HH Toilet*	*No. of Households*	*21,895*	*35,717*
	Rural HH Toilet	*No. of Households*	*11,767*	*25,790*
	School Toilet	*No. of Students*	*46,184*	*41,677*
	Public Toilet	*No. of Utilities*	*1*	*0*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*132,530*
Solid Waste	*Urban Area*	*No. of Households*	*30,170*	*Not applicable*

The necessary water supply facilities for Phase I include 26 deep wells/springs for 11,150 house connections in urban area, and 1 Level II system with spring source and 20 Level I wells/springs for rural area. For Phase II, 37 deep wells/springs for additional 41,370 connections and 2,000 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 70% of Level I facilities will be implemented by the LGUs and 20% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. Two (2) new laboratory buildings in Calbayog City and Calbiga shall be constructed to augment the existing provincial laboratory in Catbalogan. Three (3) sets of water quality test instruments/equipment will be necessary; one (1) set to upgrade the existing laboratory, and the other two (2) sets, for the new laboratories.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Currently, 19 out of the total 26 municipalities/city have no Level III system in their urban areas. Calbiga WD has an expansion program together with creating/merging the water supply systems in three (3) municipalities of Pinabacdao, San Sebastian and Villareal. Also, Calbayog City is presently constructing a water treatment plant and a new intake facility to improve the current water supply condition together with expansion of its service area.

Merging of municipal systems (physical arrangement) in the long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction.

The following municipalities may be studied for the integration, both in physical and management system:

- Calbiga, Pinabacdao, San Sebastian and Villareal
- Calbayog City and Sta. Margarita
- Pagsanghan and Tarangnan

Integration of small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 21,895 household toilets, 103 public school toilets and 1 public toilet for urban area. In rural area, 11,767 household toilets and 121 public school toilets are necessary. Solid waste disposal will need 27 refuse collection trucks. For Phase II, urban area will require 35,717 household toilets and 116 public school toilets. In rural area a total of 25,790 household toilets and 387 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

13.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments need to adjust their current policies and structures to achieve closer coordination with the overall policies, institutional and regulatory frameworks, and resource-sharing systems of the water sector.

The adjustments would enable the LGUs to avail of opportunities in the sector, specifically:

- To immediately improve the physical infrastructure for water, sanitation, and related environmental services; and
- To acquire permanent capabilities for planning, management, and development of sustainable institutions in the sector.

In line with the proposed adjustments, the Province will adopt the following policies and strategies in relation to the development of the water sector:

- Facilities will be managed with emphasis on sustainability;
- Project selection and prioritization based on beneficiaries' commitment and willingness to pay, on the current water, sanitation and health conditions, and on potential for growth;
- Technology appropriate to local conditions and resources shall be adopted. Facilities will be selected and designed for economy, while construction costs should not compromise quality, reliability, useful life, and provisions for upgrading and expansion;
- An integrated approach shall be used in the provision of potable water supply, sanitation, and hygiene education;
- Water supply and sanitation services shall be made available equally to rural and urban areas, and to wealthy and depressed areas;
- Cost recovery measures consistent with national policies on subsidies and loans to the sector shall be implemented at the local level;
- Private sector participation will be preferred whenever practical in the design, construction, operation, and maintenance of the facilities;
- The province will consider and, if practical, tap potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Environmental protection and management measures will be integrated in all sector development plans and activities;
- Provisions shall be made to ensure water supply and sanitation services under emergency conditions.

To be successfully implemented, these polices and strategies require a common vision to be shared by its officials and by a critical mass of its citizens, that can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of water associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds that, although diminishing, are assumed to continue in the medium-term to be channeled through local offices of central agencies.

- Adoption of this PW4SP as a basis for the Annual Sector Plan which, together with the budgets, will be reviewed by the Governor and passed upon by the legislation as part of the annual provincial budget approval process.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up by the Province, supported by adequate logistics and incentives. The PWSU will implement, assist and monitor all water supply and sanitation services in cooperation with the Municipalities which, for their part, will establish a Municipal Sector Liaison Team (MSLT). The DILG WSS-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU and MSLT.

For institutional arrangements, the formation of community-based associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems and RWSAs for Level II and III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. In all cases, women shall have equal opportunities to be trained and involved in all phases of project management (planing, construction and O&M) and in undertaking health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a

comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three

phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

13.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 13.8.1.

The total investment cost for Phase I is estimated at about ₱496.1 million (in 1998 price level). A total of ₱346.5 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 70% and 14%, respectively. While, the remaining 16% is required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 27 units of refuse collection truck. The total procurement cost is estimated at approximately ₱83.2 million. Out of the requirements, however, only one set/unit each of

Table 13.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*240,649*	*623,235*
	Rural Area	*47,658*	*362,995*
	Sanitation		
	Household Toilet	*5,406*	*6,059*
	School Toilet	*52,304*	*117,451*
	Public Toilet	*368*	*0*
	Disinfection of Well	*119*	*146*
	Urban Sewerage	*N/A*	*967,469*
	Sub-Total	***346,504***	***2,077,353***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*260*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,145***	***26,782***
Water quality Laboratory		*3,755*	*0*
Sector Management	*Engineering Studies*	*44,458*	*143,598*
	Institutional Development	*19,259*	*99,414*
	Sub-Total	***63,717***	***243,011***
Total Direct Cost		*415,122*	*2,347,147*
Contingencies	*Physical Contingency*	*41,499*	*234,715*
	Price Contingency	*114,743*	*N.A*
	Value-Added Tax (VAT)	*39,573*	*N.A*
Total Investment Cost		***610,937***	***2,581,862***
Total Investment Cost (excluding Price Contingency)		***496,063***	***2,581,862***

Note: Institutional development includes:
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱27.3 to ₱38.9 million/year during Phase I period.

13.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector is assumed to be about 4%. This means that approximately 20% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2000 to 2004 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱273.03 million (provincial IRA is 3.93% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 68.5%, followed by rural water supply (12.7%). While, the share of rural sanitation is 10.2%, which is higher than that of urban sanitation of about ₱23.47 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 55% of the requirements as a provincial average. Hence, there is a big shortfall of ₱223.02 million in funding. It will become ₱337.91 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Almagro, Hinabangan, Pinabacdao (100%) and Zumarraga are the highest among municipalities, followed by San Jorge and San Jose de Buan and (98%). Majority is in the range between 40% and 60% to the respective requirements, while the provincial average is 55% (45% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2004 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Villareal, San Jose de Buan, San Sebastian and Santo Niño which indicate that they are given priority for investments in all sub-sectors. The municipality of Hinabangan is the least priority in terms of investment ranking.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 4th batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet were identified to meet the conditions in provision of GOP-assisted project. There are eleven (11) eligible municipalities in terms of 5th and 6th class municipality for Level I water supply in the province while there are 21 municipalities to meet the condition in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 2000 - 2004 was estimated at ₱104.0 million or ₱77.5 million in 1998 price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGUs will increase to ₱46.7 million from ₱36.4 million (1998 price level), considering price contingency. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱46.7 million) and available IRA of LGUs (₱47.7 million). The required cost is covered by the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. Foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱58.1 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱36.1 million or 46.6% of the total project cost shall be granted to the LGUs, aside from the 3.4% GOP counterpart fund. The remaining ₱22.0 million or 28.4% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGUs will increase to ₱16.7 million (1998 price level), considering price contingency and VAT, which is about 35% of available IRA (₱47.7 million).

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level

I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱76/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2004, 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱221/HH/month in 2004, 4% of monthly income). Monthly water rate seems to be affordable.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

13.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. It should be followed through with effective feedback.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and practical, and should involve the beneficiaries and be accepted by all sectors.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

14. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF BILIRAN

14.1 Provincial Profile

Biliran is an island province located on the eastern part of the Visayas group of islands. The province belongs to Region VIII, the Eastern Visayas Region. Naval is the provincial capital. The province is composed of 8 municipalities. There are 132 barangays, of which 20 are urban and 112 rural. The province is classified as 4^{th} class. At the municipal level, six (6) municipalities belong to 5^{th} class, one (1) municipality to 6^{th} class, and the remaining one (1) is 4^{th} class. The population of the province was 132,209 in 1995 with an annual growth rate of 2.20% between 1990 and 1995.

Physical Features

The province has Type II climate and is characterized by an absence of dry season with very pronounced maximum rain period. It ranks third as to the frequency of the most number of tropical cyclones that enter into the country. Rugged mountains that bisect the entire length of the main island and two (2) small alluvial plains in Culaba and Naval generally characterize the topography of the province. Several inactive volcanoes can be found in Biliran Island. Also, Maripipi Island is a volcanic island.

Caray-caray River is the largest of the seven (7) major rivers in the province. It has a watershed of 85 km^2 and drains to Biliran Strait passing through Naval. About 56% of the total land area of the province constitutes agricultural land and another 17% as grassland. Forestland is only 23%, while built-up area is a mere 3%.

Socio-economic Aspects

Agriculture and fishery are the major economic activities in the province. The average annual family income in 1994 was ₱ 51,042 which was well below the national average of ₱ 83,161. Moreover, half of the total number of families lived within and below the established poverty threshold income of ₱ 37,053 in Region VIII.

All municipalities have electric supply service but with only 49% household coverage. Telecommunication service is available to only 1 municipality. Inter-municipal land transportation can be obtained by means of jeepneys, taxis, cars and buses. There are 3 banking institutions, 617 industrial/commercial establishments and 9 tourism-related facilities.

With regard to social services, there are 143 schools, 1 hospital, and 47 health units and barangay health stations.

Provincial population growth rates had been fluctuating for the last 6 censal years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 70%, while the remaining 30% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were viral hepatitis, diarrhea, skin diseases, and intestinal parasitism.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 11% of the total households in the province relied on the municipal refuse collection services.

14.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Apart from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on sewerage and solid waste management are also considered.

Water Supply

The province has 16 Level III systems operating under different types of ownership (authority or association) together with their service coverage. These are one (1) Water District, two (2) Municipal Waterworks and 13 RWSAs operated systems. Among them, Naval WD practices rationing water supply due to insufficient capacity of pipeline. Water leakage from distribution pipes is also a current problem. Collection efficiency of water charges is quite high at bigger waterworks, which is in contrast with smaller waterworks that experienced very poor collection due to weak management practice.

There are 67 Level II systems operating in the municipalities. Majority of these systems is utilizing spring sources (57 systems), while 10 systems use deep/dug wells. Most of these

supply water for 24 hours with good water quality. However, in the island municipality of Maripipi, the systems using well sources have water quality problem such as dirty water due to bursting of pipes and metallic taste arising from ground water sources. It is also common that water quality examination is not adequately conducted. About 20% of the waterworks impose a flat rate water charge of 2 to 10 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of MEO, PEO or DEO as required.

Level I facilities are common in rural barangays. Of the 360 operational Level I facilities, 47% are shallow wells. In the course of PW4SP preparation, 50% of shallow wells were assumed as unsafe water source. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of the unsafe sources are found near potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 55% and 45%, respectively. Share of developed springs in public facilities is 33%.

About 74% or 101,100 of the present population (136,900 comprising 30% in urban area and 70% in rural area) are adequately served. Under area classification, 76% of urban population and 73% of rural population have access to safe water sources/facilities. Of the served population, 40% or 40,300 persons are served by Level III systems. About 38% or 38,200 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 59% or 15,556 of the total households, which is a little lower than the national coverage of 60%. These toilets consist of 13% flush type, 86% pour-flush type and 1% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Almeria, Kawayan), high sanitation coverage occurs and adversely, in low water supply coverage (Culaba, Cabucgayan), low sanitation coverage also occurs. Both urban and rural areas have service coverage of 59%. In urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. There is no sewerage system in any of the urban areas.

The province has a total of 284 toilets installed at 136 schools. Only 35% of the students are adequately served by sanitary toilets. The present average ratio of 113 students per sanitary toilet is well below the service level standard of 40 students per sanitary facility. Some of

these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 12 public toilets found in public markets, bus/jeepney terminals, and parks or plazas in the province. About 83% of these public toilets are sanitary. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

14.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government's decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) were prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, through the Water Supply and Sanitation Program Management Office (WSS-PMO) which provides overall coordination over the implementation of WATSAN projects of LGUs.

At the provincial level, the PPDO is in charge of formulating comprehensive development plans and policies for the consideration of the Provincial Development Council. In the planning and implementing WATSAN sector projects, PPDO coordinates with PEO which undertakes survey, design of facilities, construction supervision and assistance in O&M of facilities. The PHO is responsible for health, hygiene and sanitary improvement in coordination with MHOs. Normally, Level I/II system projects are initiated by BCs, and LGUs implement the projects with funds made available for the purpose. Presently, there are a few functional BWSAs remaining, thus majority of the BWSAs needs to be re-activated. The province has some experience in implementing Level III projects and municipalities seem to have some capacity for the work in Level I/II service levels; however, the implementing capacity of LGUs is still limited and may require assistance from national government line-agencies, NGOs, etc. For this purpose, Water Supply Project Task Forces

have set up as needed. For the ADB-assisted RW3SP, a WATSAN team was organized. Larger water supply systems are managed by either municipalities or WDs, which have a higher level of management expertise.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently, and will require substantial input and support.

Community Development

There has been limited experience in planning or implementing community development processes for the WATSAN sector projects in the Province of Biliran. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. While the PPDO and the PHO both have the structure to undertake or conduct CD work, this is done only as part of or as a component of other projects. As such, there is an apparent lack of the identified major responsible players on CD, particularly on the provincial level. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. The training programs that should update the knowledge and skills of LGUs on community development have also been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector. Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they

are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.

- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

14.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 93.50% of the total income. The provincial government has no economic enterprises, but it receives municipal income, not on a regular basis from the fees and charges from small-scale mining and sand and gravel operations. It manages a provincial hospital subsidizing for their operations, since hospital fees being charged are very low.

On the other hand, actual expenditures for the same period were 99.4% of the total revenue. These expenditures are further broken down into personnel (55.1%), capital outlay (3.8%), and operation and maintenance expenses (29.5%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱18.7 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. In 1995, the 20% DF of the province was not sufficient to cover the actual expenditures, but from 1996 to 1998, the province had surplus funds due to delays in releasing of the funds. For 1999, it is projected that the 20% DF is more than adequate to cover the capital expenditures of the province, which is projected at ₱16.28 million.

Limited information was available on the annual planned activities in the water supply sector and their corresponding funding sources and investment from 1995 to 1998. It is shown that only ₱5.9 million was spent for the repair and maintenance of water supply facilities for the period 1995-1998 and these were sourced from both provincial and municipal funds.

In the AIP of the province for the year 1998, a total investment cost of ₱4.2 million was planned for water supply. But, the actual expenditures for the sector out of the 20% DF of the province were only ₱10,000 or less than 1% of the required investments. Further, there is a need to clarify which of the planned investments were implemented and funded from any of the available sources such as local funds (provincial and municipal government) and foreign funds.

The implementation of water supply projects was previously undertaken by a task force comprising the Provincial Planning and Development Office (PPDO) which is assigned for water supply and sanitation on a project basis, Provincial Engineering Office (PEO) for implementation of Levels I, II and III systems and Provincial Health Office (PHO) for water quality surveillance. The PEO implements the Provincial government funded projects under the General Fund. The implementation of these projects is closely monitored with reference to the Local Committee to decide on priority projects for their financing, the members of which come from Budget Office, Treasurer's Office, PPDO and Accounting Office. All projects must have barangay resolutions. The PDC (Provincial Development Council) also prepares its justification for the prioritization of projects and progressive disbursements.

For the sector implementation, the following are the local funding sources and corresponding implementing agencies: funding sources are provincial government, CDF (Congressmen) and the municipal government and the respective implementing agencies are the PEO, DPWH-District Office and the Municipal Government.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. For Level I services, common problems cited by the respondents through barangay survey, with

respect to O&M of WATSAN facilities is the lack of funds for maintenance work. This can be attributed to the fact that majority of the members/ beneficiaries do not pay for their water supply. The monthly payment for water consumption is minimal, which is ₱10.00 or below, and is believed by users to be sufficient to cover the cost of O & M of WATSAN facilities.

In the water districts or Level III waterworks, O & M expenses are basically covered by the user fees depending on the water consumption amount by water user category. The water charge system was established by LWUA to compel water districts to be self-sufficient, financially viable and be able to repay any loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 1.19% for Level III, 0.71% for Level II and 0.24% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

14.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

There are volcanic cones and associated flows distributed in Biliran and Maripipi islands controlled by a major fault structure that runs parallel to the Philippine Rift Zone. These probably emerged contemporaneous with extensive volcanism prevalent throughout the archipelago during the Quaternary. The evolution of Biliran and Maripipi islands is related to this period of volcanism. The clastic rocks and limestone are found unconformably overlying the clastic rocks with late Miocene to early Pliocene epochs. The clastic rocks occur along the western slope of Biliran Island. In the eastern and western coastal areas of Biliran Island, the recent deposits are well sorted along the rivers with thin and narrow form.

On the islands of Biliran and Maripipi, three broad lithologic classifications have been identified: (1) the sedimentary sequence during early Miocene to Pleistocene epochs, (2) Quaternary volcanics and (3) Recent deposits.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Solo shallow well area is located in the western coasts of Biliran Island, which covers approximately 5% of the

provincial area. Deep well area covers about 40% of the province, while difficult area falls on the remaining area. Ironic and acidic groundwater may be observed in shallow and deep wells in the eastern piedmont of volcanic mountains where the municipalities of Cabucgayan, Caibiran, Culaba and Kawayan are located.

Based on the inventory of water sources prepared during the study, the province has 122 developed springs currently serving the province. Such spring sources come out from the volcanic mountains of the province. The number of untapped springs for future development was not available during the study period. However, spring source can be developed in all provincial area including the 2 islets.

Based on the existing well inventory, the depth of potential aquifers occurs about 30m in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. The trend of acid groundwater is examined in Leyte Valley. This groundwater characteristic will be observed in the eastern area of Biliran Island. In this case, deep well shall be designed with anti-corrosive materials such as PVC and SUS.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the groundwater database and water quality examination, prior to the detailed design or in the pre-construction stage. The province of Biliran falls on these groups.

Untapped springs shall also be surveyed to confirm development possibility in the detailed groundwater investigation. This will include items on the following: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

14.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-

sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage, physical targets of Level I facility for rural water supply under on-going ADB-assisted project and viable investment using available IRA both in urban and rural water supply as shown in Table 14.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. Types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 14.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***76***	***76***	***95***
	Rural Area	***73***	***76***	***93***
Sanitation	***Urban HH Toilet***	***59***	***68***	***93***
	Rural HH Toilet	***59***	***68***	***80***
	School Toilet	***35***	***60***	***90***
	Public Toilet	***83***	***100***	***100***
Sewerage	***Urban Area***	***0***	***Not applicable***	***50***
Solid Waste	***Urban Area***	***38***	***50***	***Not applicable***

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. For rural water supply, Level I facilities to be constructed under on-going ADB-assisted project are adopted for Phase I requirements. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into

account the existing facilities, the exigency to examine the water samples at the right time and the facilities to be provided under the on-going ADB-assisted project.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Household toilets, school toilets and public toilets to be provided under the on-going ADB-assisted project are taken into account for Phase I requirements. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2004. Additional service coverage of the sector by phase is shown in Table 14.6.2.

Table 14.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***Persons***	***8,177***	***21,566***
	Rural Area	***Persons***	***6,840***	***19,328***
Sanitation	***Urban HH Toilet***	***No. of Households***	***2,674***	***6,435***
	Rural HH Toilet	***No. of Households***	***3,739***	***6,996***
	School Toilet	***No. of Students***	***10,442***	***12,847***
	Public Toilet	***No. of Utilities***	***17***	***5***
Sewerage	***Urban Area***	***Persons***	***Not applicable***	***14,542***
Solid Waste	***Urban Area***	***No. of Households***	***3,237***	***Not applicable***

The necessary water supply facilities for Phase I include 5 deep wells/springs for 1,540 house connections in urban area and 76 Level I wells/springs for rural area. These Level I facilities will be constructed under the on-going ADB-assisted project. For Phase II, 9 deep wells/springs for additional 3,590 connections and 326 Level I wells/springs are required for urban and rural water supplies, respectively. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP.

Aside from the portable water test kits to be provided by the on-going ADB-assisted project, one (1) set of water quality test instruments/equipment will still be needed to upgrade the existing laboratory in Biliran Provincial Hospital.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction.

Integration of small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 2,674 household toilets, 19 public school toilets and 17 public toilets for urban area. In rural area, 3,739 household toilets and 29 public school toilets are necessary. Solid waste disposal will need 6 refuse collection trucks. For Phase II, urban area will require 6,435 household toilets, 23 public school toilets and 5 public toilets. In rural area, a total of 6,996 household toilets and 112 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

14.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments need to adjust their current policies and structures to achieve closer coordination with the overall policies, institutional and regulatory frameworks, and resource-sharing systems of the water sector.

The adjustments would enable the LGUs to avail of opportunities in the sector, specifically:

- To immediately improve the physical infrastructure for water, sanitation, and related environmental services; and
- To acquire permanent capabilities for planning, management, and development of sustainable institutions in the sector.

In line with the proposed adjustments, the Province will adopt the following policies and strategies in relation to the development of the water sector:

- Facilities will be managed with emphasis on sustainability;
- Project selection and prioritization based on beneficiaries' commitment and willingness to pay, on the current water, sanitation and health conditions, and on potential for growth;

- Technology appropriate to local conditions and resources shall be adopted. Facilities will be selected and designed for economy, while construction costs should not compromise quality, reliability, useful life, and provisions for upgrading and expansion;
- An integrated approach shall be used in the provision of potable water supply, sanitation, and hygiene education;
- Water supply and sanitation services shall be made available equally to rural and urban areas, and to wealthy and depressed areas;
- Cost recovery measures consistent with national policies on subsidies and loans to the sector shall be implemented at the local level;
- Private sector participation will be preferred whenever practical in the design, construction, operation, and maintenance of the facilities;
- The province will consider and, if practical, tap potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Environmental protection and management measures will be integrated in all sector development plans and activities;
- Provisions shall be made to ensure water supply and sanitation services under emergency conditions.

To be successfully implemented, these polices and strategies require a common vision to be shared by its officials and by a critical mass of its citizens, that can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of water associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds that, although diminishing, are assumed to continue in the medium-term to be channeled through local offices of central agencies.
- Adoption of this PW4SP as a basis for the Annual Sector Plan which, together with the budgets, will be reviewed by the Governor and passed upon by the legislation as part of the annual provincial budget approval process.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up by the Province, supported by adequate logistics and incentives. The PWSU will implement, assist and monitor all water supply and sanitation services in cooperation with the Municipalities which, for their part, will establish a Municipal Sector Liaison Team (MSLT). The DILG WSS-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU and MSLT.

For institutional arrangements, the formation of community-based associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems and RWSAs for Level II and III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. In all cases, women shall have equal opportunities to be trained and involved in all phases of project management (planing, construction and O&M) and in undertaking health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long-term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the LGUs must recognize and give vital emphasis on the role of

gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

14.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. Among others, the required cost for Level I facilities and sanitation facilities under the on-going ADB-assisted project was excluded from medium-term development plan. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. Investment cost required by phase for the province is summarized in Table 14.8.1.

The total investment cost for Phase I is estimated at about ₱75.1 million (in 1997 price level). A total of ₱51.9 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and urban and rural sanitation share 72.5% and 27.5%, respectively. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well rehabilitation equipment and support vehicle; and 6 units of refuse collection truck. The total procurement cost is estimated at approximately ₱14.4 million. The works for Level I facilities and the supporting vehicle/equipment will be managed through ADB-assisted project. However, those for maintenance of facilities will be required throughout the future. In this connection, one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱8.1 to ₱10.4 million/year during Phase I period.

Table 14.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*37,614*	*90,403*
	Rural Area	*0*	*58,065*
	Sanitation		
	Household Toilet	*381*	*1,423*
	School Toilet	*9,807*	*31,523*
	Public Toilet	*4,052*	*1,842*
	Disinfection of Well	*19*	*24*
	Urban Sewerage	*N/A*	*106,157*
	Sub-Total	***51,874***	***289,436***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*80*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***965***	***26,782***
Water quality Laboratory		*478*	*0*
Sector Management	*Engineering Studies*	*6,707*	*23,673*
	Institutional Development	*2,792*	*16,441*
	Sub-Total	***9,498***	***40,063***
Total Direct Cost		*63,816*	*356,281*
Contingencies	*Physical Contingency*	*6,280*	*35,628*
	Price Contingency	*17,308*	*N.A*
	Value-Added Tax (VAT)	*6,001*	*N.A*
Total Investment Cost		***92,404***	***391,909***
Total Investment Cost (excluding Price Contingency)		***75,081***	***391,909***

Note: Institutional development includes;
1. Capacity enhancement program, 2.Community management program, 3 Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

14.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The on-going ADB-assisted project for rural water supply (Level I) and sanitation improvement (implementation period: 1999-2001) was fully considered for the financial study as part of the Medium Term Development Plan. In this regard, financial arrangements required are those excluding the components scheduled by ADB-assisted project. Furthermore, sector IRA allocation was discounted (less than 3%) to ensure LGU's contribution (10% of construction cost) to the ADB-assisted project (overlapping period with the project is from 1999 to 2001).

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Provincial allocation to the relevant sector is assumed to be about 3%. This means that approximately 15% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2000 to 2004 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱41.20 million (provincial IRA is 2.83% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 63.8%. While, the share of urban sanitation is 21.0%, which is higher than that of rural sanitation of about ₱6.3 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only ₱41.20 million or 55% of the requirements as a provincial average. It will become ₱51.2 million in consideration of contingencies and VAT. In the municipal achievement, however, the percentage of Biliran, Kawayan, Maripipi and Almeria is 90-100%. While, Cabucgayan and Naval are in the low level with more or less 35%. The provincial average is 54% (44% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors except for rural water supply that the service coverage in the year 2004 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Culaba, Cabucgayan and Caibiran, which indicates that they are given priority for investments in all sub-sectors. The municipality of Kawayan is the least priority in terms of investment ranking.

Potential ODA assisted project was additionally studied, to which central government will extend grant. In this connection, Level I rural water supply component was excluded in this

study, since the on-going ADB assisted project will cover the requirements for medium-term development target. While some sanitation components beyond the scope of the said ADB assisted project were studied for limited classes of the municipality to meet the established provincial target in 2004.

For the project, the DILG is assumed to be the Executing Agency and the province, the Implementing Agency in the meantime. The project may be merged together with those of the 4th batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including public and school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are eight (8) eligible municipalities to meet the condition for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The sanitation component comprises 4 public toilets and 43 school toilets to the rural communities. The works for Level I facilities and its supporting vehicle/equipment will be managed through ADB-assisted project.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost, utilizing the foreign assisted loan (39.6% or ₱7.5 million) and government counterpart fund (10.4% or ₱2.0 million). The remaining 50% of the overall cost shall be shared between the LGUs by 47% or ₱8.9 million and BWSAs (beneficiaries) by 3% or ₱0.6 million. Cost comparison was made between the estimated project cost to be shared by the LGUs and available IRA of LGUs in the implementation period. Considering contingencies and VAT, the IRA to be used by LGUs will increase to ₱11.4 million from ₱8.9 million (1998 price level). The required cost is covered by the available IRA (₱14.4 million).

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP is possibly to finance up to ₱14.2 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱7.5 million or 39.6% of the total project cost shall be granted to the LGUs, aside from 10.4% GOP counterpart fund. The remaining ₱6.7 million or 35.4% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF.

Under this case, the IRA to be used by the LGU will increase to ₱2.5 million from ₱2.2 million (1998 price level), considering contingencies and VAT, which is 18% of available IRA estimated in the previous study (₱14.4 million).

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱119/HH/month in 2004). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2004, 1.9% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱244/HH/month in 2004, 4.1% of monthly income). Based on the experience that water fee must not exceed 5% of income, the monthly water rate seems to be affordable.

For sanitation, governmental support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

14.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. It should be followed through with effective feedback.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and practical, and should involve the beneficiaries and be accepted by all sectors.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

15. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF LEYTE

15.1 Provincial Profile

Leyte is located at the eastern part of the Visayan group of islands and belongs to Region VIII, the Eastern Visayas Region. Tacloban City, a component city is the provincial capital as well as the regional center. The province is composed of 41 municipalities and 2 cities. Based on the 1995 NSO records, there are 1,643 barangays, of which 385 are urban and 1,258 rural. The province is classified as 1st class. At the municipal level, 18 municipalities belong to 5th class, 2 municipalities to 6th class, and the rest has higher classification. Population of the province was 1,511,251 in 1995 with an annual growth rate of 1.89% between 1990 and 1995. Ormoc City, as an independent city, is excluded from PW4SP study area.

Physical Features

There are 2 types of climate in the province. Type II, which is experienced in the eastern part has a very pronounced maximum rainfall and is generally wet the whole year. Type IV, which is experienced in the western part has a rainfall that is more or less evenly distributed throughout the year. The Leyte Central Highlands Range with an elevation of 1,219 masl and two (2) smaller mountain systems, the northwest and the northeast sectors are the major geomorphic feature of the province. Primary lowlands are the valleys of Leyte and Ormoc.

There are eight (8) major rivers that traverse the province. Layog River with a watershed of 597km^2 is the largest. About 47% of the total land area of the province constitutes agricultural land. Forestland is a mere 9%, while built-up area is only about 2%. The remaining 42% are either grassland, open land or inland/fishpond/mangrove areas.

Socio-economic Aspects

Agriculture and fishing are the major economic activities in the province. The presence of six (6) industrial parks is another promising economic activity. The average annual family income in 1994 was ₱ 51,042 which was well below the national average of ₱ 83,161. Moreover, about 46% of the total number of families lived within and below the established poverty threshold income of ₱ 37,053 in Region VIII.

All municipalities have electric supply service but with only 53% household coverage. Telecommunication service is also available in all municipalities. Inter-municipal land transportation can be obtained by means of jeepneys, taxis, cars and buses. There are 47

banking institutions, 710 industrial/commercial establishments, and 29 tourism-related facilities. With regard to social services, there are 808 schools, 23 hospitals, and 262 health units and barangay health stations.

Provincial population growth rates had been steadily increasing for the last 6 censal years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 68%, while the remaining 32% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were typhoid/paratyphoid, viral hepatitis, diarrhea, skin diseases, scabies, dengue fever, dysentery, conjunctivities, gastroenteritis, cholera, intestinal parasitism, filariasis and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 55% of the total households in the province relied on the municipal refuse collection services.

15.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 22 Level III systems operating under different type of ownership (authority or association) together with their service coverage. These are ten (10) Water Districts, nine (9) Municipal Waterworks and three (3) RWSAs operated systems. Among them, Leyte Metropolitan WD, Metro Carigara WD and Metro Hilongos WD are serving a total of 14 municipalities/city. Common issues encountered are rationing due to insufficient water pressure caused by limited water source, inadequate capacity of distribution pipes due to inappropriate planning and designing, and insufficient water quality examination. Collection efficiency of water charges is quite high at bigger waterworks, which is in contrast with

smaller waterworks office that experienced very poor collection due to weak management practice.

There are 218 Level II systems operating in the municipalities and Tacloban City; 194 systems utilize spring sources, while 24 systems use deep wells. Most of these practice scheduled water supply due to insufficient water source/insufficient capacity of the facilities. Such problems are mainly caused by order-less expansion or indiscriminate tapping of individual connections resulting to insufficient water flow/reduction of water pressure. Water quality examination is commonly not adequately conducted. About 20% of the waterworks office impose a flat rate water charge of 5 to 30 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of the MEO/CEO.

Level I facilities are common in rural barangays. Of the 21,700 operational Level I facilities, 60% are shallow wells. In the course of PW4SP preparation, 40% of the shallow wells were assumed as unsafe water source. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 38% and 62%, respectively. The share of developed springs in public facilities is 12%.

About 66% or 960,100 of the present population (1,450,900 comprising 32% in urban area and 68% in rural area) are adequately served. Under area classification, 82% of urban population and 59% of rural population have access to safe water sources/facilities. Of the served population, 32% or 307,000 persons are served by Level III systems. About 61% or 583,300 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 69% or 199,596 of the total households, which is a little higher than the national coverage of 60%. These toilets consist of 18% flush type, 78% pour-flush type and 4% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Hindang, Palo), high sanitation coverage occurs and adversely, in low water supply coverage (Jaro, Mahaplag), low sanitation coverage also occurs. Service coverage in urban area is 77%, while in rural area, the coverage is 66%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of

wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 4,499 toilets installed at 1,279 schools. Only 57% of the students is adequately served by sanitary toilets (58% for public school students). The present average ratio of 59 students per sanitary toilet is a little over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 235 public utilities; public markets, bus/jeepney terminals, and parks or plazas. Almost all public utilities (99%) are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

15.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government‘s decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) were prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, through the Water Supply and Sanitation Program Management Office (WSS-PMO) which provides overall coordination over the implementation of WATSAN projects of LGUs.

At the provincial level, the PPDO is responsible for planning WATSAN sector projects while the PEO undertakes survey, design of facilities, construction supervision and assistance in O&M of facilities. The PHO is responsible for health, hygiene and sanitary improvement in coordination with MHOs. Normally, Level I/II system projects are initiated by BCs, and LGUs implement the projects with funds made available for the purpose. The municipalities

seem to have some capacity for the work in Level I/II service levels, however, the assistance from province is required not only for finance but also for technical aspect. The province has some experience in implementing Level III projects. In general, the project implementing capacity of LGUs is still limited and may require continued assistance from national government line-agencies, NGOs, etc. For this purpose, Water Supply Project Task Forces have set up as needed. Larger water supply systems are managed by either municipalities or WDs that have a higher level of management expertise.

The current major institutional issues are: managing the transition process, and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently, and will require substantial input and support.

Community Development

There has been limited experience in planning or implementing community development processes for the WATSAN sector projects in the Province of Leyte. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. While the PPDO and the PHO both have the structure to undertake or conduct CD work, this is done only as part of or as a component of other projects. As such, there is an apparent lack of the identified major responsible players on CD, particularly on the provincial level. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. The training programs that should update the knowledge and skills of LGUs on community development have also been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.
- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

15.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 87.48% of the total income. The provincial government has no economic enterprises, but it receives rental income from the lease of its lots by national government offices. It manages eleven (11) district hospitals as a result of devolution subsidizing for their operation, since hospital fees being charged are very low and not even sufficient to cover the costs of operation and maintenance of the system. In addition, it has a day care center, which is being subsidized by the province, with counterpart from the municipalities. There is no cost recovery scheme for the equity provided by the province in the day care center project.

Actual expenditures for the same period were 81.94% of the total revenue. These expenditures are further broken down into personnel (65.27%), capital outlay (3.82%), and operation and maintenance expenses (12.85%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱98.1 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay are mainly derived from 20% DF of the IRA. During the period 1995-1999, the 20% DF of the province were not sufficient to cover the actual expenditures for the year 1995, 1996 and 1998. For 1999, it is also projected that the 20% DF amounting to ₱121.4 million will not be adequate to cover the capital expenditures of the province.

The Provincial government has not given priority to WATSAN sector. It was in 1997 when the funds were allotted to province-wide municipal and barangay projects including WATSAN, but there were no available data on the actual expenditures for WATSAN sector. In the AIP of the province, there were no definite projects identified for water supply and sanitation sector during the period of 1995-1999, since WATSAN sector was combined with other projects.

The sector projects in previous years were funded by UNICEF and were undertaken by PPDO, PEO and PHO. Currently, the provincial government provides the prioritized WATSAN projects with funds under the social services sector. The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector project implementation, funding sources are provincial government, CDF (Congressmen) and the municipal government, while the implementing agencies are the PEO, DPWH-District Office and the Municipal Government, respectively.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range

from ₱5.00 - ₱30.00 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 1.5% for Level III, 0.7 - 1.2% for Level II and 0.2% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

15.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

In the island of Leyte, four broad lithologic classifications are made: (1) a schist body, (2) an igneous complex with serpentinized faceis of probable Cretaceous period to Oligocene epoch, (3) a sedimentary sequence equivalent to that of Samar Island during early Miocene to Pleistocene epoch, and (4) a Quaternary volcanics.

The most extensive exposure of the schist body during Pre-Cretaceous period is found at the east-side of Sta. Cruz, San Miguel and the west-side of Babatngon. The layer that is unconformably overlying on the said rocks in the western side of the island is corraline limestone with marly faceis. There are volcanic cones and associated flows distributed along a northwestern trending belt controlled by a major fault structure which runs parallel to the Philippine Rift Zone. The evolution of Biliran Island is related to this period of volcanism. Recent deposits consist mostly of unconsolidated alluvium; fine sand, silt, clay with minor gravel. In Ormoc Valley, the deposits are well sorted along the rivers forming varying thickness, width and length. Leyte Valley is rich in tuffaceous sediments.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. A few solo shallow well areas are located at the western coasts of the province. Deep well area covers about 65% of Leyte, while difficult area falls on the remaining area. Ironic water is observed in shallow and deep wells along the national highway of Leyte Valley, where the municipalities of Capoocan, Carigara, Kananga, Palo, Santa Fe, Tanauan, Tolosa and Tunga are located.

Based on the inventory of water sources prepared during the study, the province has 900 developed springs currently serving the province. Such spring sources come out from the mountain systems on the eastern and western parts, and from the mountain range on the central part of the province. A total of 162 untapped springs for future development is reported in the same location of developed springs. Other municipalities out of the above-mentioned area have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 20 to 120 meters in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. In Leyte Valley, groundwater is characterized by slightly higher iron contents and acid pH. Such quality is caused either by groundwater itself, well materials eluded in acid water, or combination of groundwater and well materials. In this case, deep wells shall be designed with anti-corrosive materials such as PVC and SUS.

There is a potential surface water source at Lake Danao on the southern slope of Alto Peak, probably a dammed lake caused by mudflows from Alto Peaks' eruption. This lake has a catchment area of about 6.5 km^2 with a water level of 560 masl. Available water to be developed was estimated at more than 1.00 m^3/sec. Water quality was examined and classified into Class AA of the DENR water quality criteria for fresh water.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are located in the chain area from San Miguel to Julita.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) elevation difference between the two points.

15.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing existing service coverage and viable investment using available IRA both in urban and rural water supply as shown in Table 15.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 15.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***82***	***82***	***95***
	Rural Area	***59***	***59***	***93***
Sanitation	***Urban HH Toilet***	***78***	***80***	***93***
	Rural HH Toilet	***66***	***75***	***90***
	School Toilet58	***58***	***75***	***90***
	Public Toilet	***99***	***100***	***100***
Sewerage	***Urban Area***	***0***	***Not applicable***	***50***
Solid Waste	***Urban Area***	***89***	***90***	***Not applicable***

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed

under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine (dry type) are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2004. Additional service coverage of the sector by phase is shown in Table 15.6.2.

Table 15.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***Persons***	***62,357***	***272,406***
	Rural Area	***Persons***	***65,585***	***470,106***
Sanitation	***Urban HH Toilet***	***No. of Households***	***26,318***	***63,913***
	Rural HH Toilet	***No. of Households***	***48,967***	***102,866***
	School Toilet	***No. of Students***	***76,848***	***102,512***
	Public Toilet	***No. of Utilities***	***3***	***0***
Sewerage	***Urban Area***	***Persons***	***Not applicable***	***229,472***
Solid Waste	***Urban Area***	***No. of Households***	***22,637***	***Not applicable***

The necessary water supply facilities for Phase I include 38 deep wells/springs for 12,000 house connections in urban area, and 66 Level II systems with spring sources and 632 Level I wells/springs for rural area. For Phase II, 59 deep wells/springs for additional 68,100 connections and 7,900 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 50% of Level I facilities will be implemented by the LGUs and 10% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. Three (3) sets of water quality test instruments/equipment will be necessary; one (1) set to upgrade the existing laboratory in Palo, and the other two (2) sets, for the new laboratories to be set-up in Baybay and Kananga.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Currently, 12 out of the total 42 municipalities/city have no Level III system in their urban areas. At present, there is a proposed project (WB-assisted LGU Urban Water Supply project) for Tabango. In addition to this, the LMWD is planning to expand its service area to the municipalities of Alangalang and Sta. Fe.

Among various untapped spring sources identified during the course of PW4SP preparation, the untapped sources located in the municipalities of Inopacan, La Paz and Merida are considered to have favorable conditions for use in Level III services. However, detailed survey to ensure appropriate developments of spring sources shall be conducted in the implementation of the projects.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction. The following municipalities may be studied for the integration both in physical and management systems:

- Leyte Metropoplitan WD, Alangalang and Sta. Fe
- La Paz, Dulag, MacAuthur and Mayorga
- Metro Carigara WD and Jaro

Integration of small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 26,318 household toilets, 95 public school toilets and 3 public toilets for urban area. In rural area, 48,967 household toilets and 285 public school toilets are necessary. Solid waste disposal will need 26 refuse collection trucks. For Phase II, urban area will require 63,913 household toilets and 145 public school toilets. In rural area a total of 102,866 household toilets and 1,182 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

15.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments need to adjust their current policies and structures to achieve closer coordination

with the overall policies, institutional and regulatory frameworks, and resource-sharing systems of the water sector.

The adjustments would enable the LGUs to avail of opportunities in the sector, specifically:

- To immediately improve the physical infrastructure for water, sanitation, and related environmental services; and
- To acquire permanent capabilities for planning, management, and development of sustainable institutions in the sector.

In line with the proposed adjustments, the Province will adopt the following policies and strategies in relation to the development of the water sector:

- Facilities will be managed with emphasis on sustainability;
- Project selection and prioritization based on beneficiaries' commitment and willingness to pay, on the current water, sanitation and health conditions, and on potential for growth;
- Technology appropriate to local conditions and resources shall be adopted. Facilities will be selected and designed for economy, while construction costs should not compromise quality, reliability, useful life, and provisions for upgrading and expansion;
- An integrated approach shall be used in the provision of potable water supply, sanitation, and hygiene education;
- Water supply and sanitation services shall be made available equally to rural and urban areas, and to wealthy and depressed areas;
- Cost recovery measures consistent with national policies on subsidies and loans to the sector shall be implemented at the local level;
- Private sector participation will be preferred whenever practical in the design, construction, operation, and maintenance of the facilities;
- The province will consider and, if practical, tap potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Environmental protection and management measures will be integrated in all sector development plans and activities;
- Provisions shall be made to ensure water supply and sanitation services under emergency conditions.

To be successfully implemented, these polices and strategies require a common vision to be shared by its officials and by a critical mass of its citizens that can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of water associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds that, although diminishing, are assumed to continue in the medium-term to be channeled through local offices of central agencies.
- Adoption of this PW4SP as a basis for the Annual Sector Plan which, together with the budgets, will be reviewed by the Governor and passed upon by the legislation as part of the annual provincial budget approval process.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up by the Province, supported by adequate logistics and incentives. The PWSU will implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities, which for their part will establish a Municipal Sector Liaison Team (MSLT). The DILG WSS-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU and MSLT.

For institutional arrangements, the formation of community-based associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems and RWSAs for Level II and III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. In all cases, women shall have equal opportunities to be trained and involved in all phases of project management (planing, construction and O&M) and in undertaking health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the

existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long-term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

15.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 15.8.1.

The total investment cost for Phase I is estimated at about ₱762 million (in 1998 price level). A total of ₱530 million is required as construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 49% and 32%, respectively. While, the remaining 19% is required for urban and rural

Table 15.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*258,488*	*1,039,564*
	Rural Area	*168,219*	*1,238,806*
	Sanitation		
	Household Toilet	*11,980*	*23,557*
	School Toilet	*88,730*	*309,855*
	Public Toilet	*1,105*	*0*
	Disinfection of Well	*1,070*	*571*
	Urban Sewerage	*N/A*	*1,675,146*
	Sub-Total	***529,592***	***4,287,498***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*420*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,305***	***26,782***
Water quality Laboratory		*1,434*	*0*
Sector Management	*Engineering Studies*	*67,350*	*336,982*
	Institutional Development	*38,721*	*233,295*
	Sub-Total	***106,071***	***570,277***
Total Direct Cost		*638,402*	*4,884,557*
Contingencies	*Physical Contingency*	*63,820*	*488,456*
	Price Contingency	*168,534*	*N.A*
	Value-Added Tax (VAT)	*59,948*	*N.A*
Total Investment Cost		***930,704***	***5,373,012***
Total Investment Cost (excluding Price Contingency)		***761,971***	***5,373,012***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 26 units of refuse collection truck. The total procurement cost is estimated at approximately ₱81.1 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱71.4 to ₱87.3 million/year during Phase I period.

15.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector is assumed to be about 4%. This means that approximately 20% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2000 to 2004 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱394.43 million (provincial IRA is 3.83% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 48.6%, followed by rural water supply (28.0%). While, the share of rural sanitation is 17.1%, which is higher than that of urban sanitation of about ₱31.6 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 52% of the requirements as a provincial average. Hence, there is a big shortfall of ₱367.5 million in funding. It will become ₱536.3 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Alangalang, Baybay, Dagami, Hindang, Javier (Bugho), Kananga,, Mayorga, Merida, Palo, Tolosa and Villaba (100%) are the highest among municipalities. Majority is in the range between 40% and 60% to the respective requirements, while the provincial average is 52% (42% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors that the service

coverage in the year 2004 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Mahaplag and Tabango, which indicates that they are given priority for investments in all sub-sectors. The municipality of Hindang is the least priority in terms of investment ranking.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 4th batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are twelve (12) eligible municipalities in terms of 5th and 6th municipalities for GOP-assisted Level I rural water supply in the province, while there are twenty six (26) municipalities to meet the condition for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 2000-2004 was estimated at ₱215.7 million or ₱159.8 million in 1998 price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (44.5%) and beneficiaries (3%). Under this case, the IRA to be used by the LGUs will increase to ₱96.3 million from ₱75.1 million (1998 price level), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱96.3 million) and available IRA of LGUs (₱99.1 million). The required cost is covered by the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit

of 75% of the overall project cost. GOP will possibly finance up to ₱119.9 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱76.6 million or 48% of the total project cost shall be granted to the LGUs, aside from the 2% GOP counterpart fund. The remaining ₱43.3 million or 27% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGUs will increase to ₱36.9 million from ₱31.8 million (1998 price level), considering price contingency and VAT, which is 37% of available IRA (₱99.1 million).

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱79/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱112HH/month in 2004, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱221/HH/month in 2004). Based on the experience that water fee must not exceed about 5% of income (average monthly water consumption of 15 m^3), the monthly water rate seems to be affordable.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

15.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. It should be followed through with effective feedback.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and practical, and should involve the beneficiaries and be accepted by all sectors.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

16. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF SOUTHERN LEYTE

16.1 Provincial Profile

Southern Leyte is one of the six (6) provinces comprising Region VIII, the Eastern Visayas Region. The municipality of Maasin is the provincial capital. The province is composed of 19 municipalities. In 1998, there are 501 barangays, of which 60 are urban and 441 are rural. The province is classified as 3rd class. At the municipal level, 15 municipalities belong to 5th class, 1 municipality to 6th class, and the rest has higher classification. The population of the province was 317,565 in 1995 with an annual growth rate of a negative 0.26% between 1990 and 1995.

Physical Features

The province has two (2) types of climate: Type II which is characterized by an absence of dry season with very pronounced maximum rain period and Type IV which has a rainfall that is more or less evenly distributed throughout the year. The topography of the province is generally characterized by the rugged mountains of the Leyte Central Highlands Range that bisects the entire length of the main island of Leyte. Relatively flat areas can be found along alluvial plains and coastal areas.

Salog River is the largest of the six (6) major rivers in the province. It has a watershed of 208 km^2 and drains to Sogod Bay passing through Tomas Oppus and Bontoc. About 65% of the total land area of the province constitutes agricultural land. Remaining forest cover is only 33%, while built-up area is a mere 2%.

Socio-economic Aspects

Agriculture and fishery are the major economic activities in the province. The average annual family income in 1994 was ₱ 45,503 which was well below the national average of ₱ 83,161. Moreover, about 60% of the total number of families lived within and below the established poverty threshold income of ₱ 37,053 in Region VIII.

All municipalities have electric supply service with a high 70% household coverage. Likewise, telecommunication service is available in all municipalities. Inter-municipal land transportation can be obtained by means of jeepneys, taxis and buses. There are 15 banking institutions, 300 industrial/commercial establishments and 20 tourism-related facilities. With

regard to social services, there are 391 schools, 13 hospitals, and 118 health units and barangay health stations.

Provincial population growth rates had been declining for the last 6 censal years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 73%, while the remaining 27% are urban.

An indicator of health problem related to water supply and sanitation is the high incidence of water-related diseases. The reported cases in the province were viral hepatitis, diarrhea, skin diseases, intestinal parasitism, typhoid, conjunctivities, dengue fever, gastro-enteritis and scabies.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 15% of the total households in the province relied on the municipal refuse collection services.

16.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 36 Level III systems operating under different types of ownership (authority or association) together with their service coverage. These are two (2) Water Districts, thirteen (13) Municipal Waterworks and twenty-one (21) RWSAs operated systems. Some of these practice scheduled water supply due to insufficient water sources and/or inadequate capacity of existing facilities. Improvement/rehabilitation of transmission/distribution pipes together with augmentation of water source are the current issues for these systems. Water quality examination is also a common issue, since the current practice is very limited in terms of sampling frequencies and items to be examined. Collection efficiency of water charges is

quite high at larger waterworks, which is in contrast with smaller waterworks that experienced very poor collection due to weak management practice.

There are 239 Level II systems operating in the municipalities. Majority utilizes spring sources (235 systems), while 4 systems use shallow/deep/dug wells. Most of these systems supply water for 24 hours with good water quality. About 30% of the waterworks impose a flat rate water charge of 5 to 20 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of the MEO/PEO or DEO as required. It is also prevalent that water quality examination is not adequately conducted.

Level I facilities are common in rural barangays. Of the 3,690 operational Level I facilities, 71% are shallow wells. In the course of PW4SP preparation, 30 - 80% of the shallow wells were assumed as unsafe water source by municipality. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 42% and 58%, respectively. The share of developed springs in public facilities is 17%.

About 73% or 229,500 of the present population (316,100 comprising 27% in urban area and 73% in rural area) are adequately served. Under area classification, 77% of urban population and 71% of rural population have access to safe water sources/facilities. Of the served population, 33% or 74,800 persons are served by Level III systems. About 28% or 64,500 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 82% or 53,230 of the total households, which is well above the national coverage of 60%. These toilets consist of 2% flush type and 98% pour-flush type. In municipalities that have high water service coverage (Hinundayan, Silago), high sanitation coverage occurs and adversely, in low water supply coverage (San Juan, Bontoc), low sanitation coverage also occurs. Urban area has service coverage of 76%, while rural area has 84%. In urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. There is no sewerage system in any of the urban areas.

The province has a total of 1,875 toilets installed at 367 schools. Sanitary toilets adequately serve 81% of the students. The present average ratio of 43 students per sanitary toilet is almost equal the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. There are 39 public toilets found in public markets, bus/jeepney terminals, and parks or plazas in the province. All these public toilets are sanitary indicating 100% coverage. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

16.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

Drastic changes took place among the DPWH, DILG, DOH and LGUs after the government‘s decentralization and issuance of NEDA Board Resolution No.4 (1994). To ensure common interpretation of the Resolution, the Implementing Rules and Regulations (IRR) were prepared. The role of implementing water supply projects, which DPWH used to undertake, has been transferred to the LGUs. The functions of the then IPHO under the DOH have also been devolved to the LGUs. It is now the DILG, through the Water Supply and Sanitation Program Management Office (WSS-PMO) which provides overall coordination over the implementation of WATSAN projects of LGUs.

At the provincial level, the PPDO is in charge of the formulating integrated and sectoral development plans and policies for the consideration of the Provincial Development Council, while the PEO undertakes survey, design of facilities, construction supervision and assistance in O&M of facilities. The PHO is responsible for health, hygiene and sanitary improvement in coordination with MHOs. The PSWDO together with the MSWDO are responsible in community organizing activities. Normally, projects of Level I/II systems are initiated by BCs, and LGUs implement the projects with funds made available for the purpose. The implementing capacity of LGUs is still limited and may require continued assistance from national government line-agencies, NGOs, etc. For this purpose Water Supply Project Task

Forces have set up as needed. For the ADB-assisted RW3SP, a WATSAN team was organized. Larger water supply systems are managed by either municipalities or WDs, which have a higher level of management expertise.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently, and will require substantial input and support.

Community Development

There has been limited experience in planning or implementing community development processes for the WATSAN sector projects in the Province of Southern Leyte. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. While the PPDO and the PSWDO both have the structure to undertake or conduct CD work, this is done only as part of or as a component of other projects. As such, there is an apparent lack of the identified major responsible players on CD, particularly on the provincial level. These create a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. The training programs that should update the knowledge and skills of LGUs on community development have also been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector. Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they

are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.

- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

16.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 95.1% of the total income. The provincial government has no economic enterprises, but it receives municipal income, not on a regular basis from fees and charges from small-scale mining as well as from sand and gravel operations.

On the other hand, actual expenditures for the same period were 91.3% of the total revenue. These expenditures are further broken down into personnel (68.3%), capital outlay (9.7%), and operation and maintenance expenses (13.4%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱32.16 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. For the period 1996-1997, the 20% DF of the province were not sufficient to cover the actual expenditures. For 1998, the province had surplus funds due to delays in the release of funds. For 1999, it is projected that the 20% DF will be adequate to cover the capital expenditures of the province, which is projected at ₱28.9 million.

During the period 1995 to 1998, the provincial government had allocated its budget to the relevant sector ranging from ₱200 thousand to ₱600 thousand. In 1998, the disbursed amount was minimal with 1.95% of 20% DF. There has been no fixed percentage of 20% DF being allotted to WATSAN sector, although its average share to IRA is about 1% for the same period of 1995-1998. Given priority in the WATSAN is Level II spring development. For 1999, the provincial government provided the prioritized WATSAN projects with funds under the social services sector.

The sector projects in previous years were implemented by the task force under the Provincial Engineering Office (PEO) and DILG (BWP – Institutional building, UNDP – WATSAN and CIDA – capability building). The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector implementation, the following are the local funding sources and corresponding implementing agencies: funding sources are provincial government, CDF (Congressmen) and the municipal government. The respective implementing agencies are the PEO, DPWH-District Office and the Municipal Governments.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fee for Level I in the active associations ranges from ₱10.00 to ₱50.00 /HH/month. For Level III systems, the O&M cost is basically covered by the user's fees.

The percentage of water fee to median monthly household income is about 1.4% for Level III, 0.9% for Level II and 0.3% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

16.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

In the island of Leyte, four broad lithologic classifications are made: (1) a schist body, (2) an igneous complex with serpentinized faceis of probable Cretaceous period to Oligocene epoch, (3) the sedimentary sequence equivalent to that of Samar Island during early Miocene to Pleistocene epoch, and (4) Quaternary volcanics.

The most extensive exposure of the schist body during Pre-Cretaceous period is found at the west-side of Saint Bernard, the northern Panaon Island, and the east-side of Malitbog and Padre Burugos. The layer that is unconformably overlying on the said rocks in the western side of the province is corraline limestone with marly faceis. There are volcanic cones and associated flows distributed along a northwestern trending belt controlled by a major fault structure that runs parallel to the Philippine Rift Zone. The evolution of Mt. Hugpa is related to this period of volcanism. Recent deposits consist mostly of unconsolidated alluvium; fine sand, silt, clay with minor gravel. In the river mouth area facing Sogod Bay, the deposits are well sorted along the rivers forming varying thickness, width and length.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. The province has no solo shallow well area. Deep well area covers about 60% of Southern Leyte, while difficult area falls on the remaining area. Ironic and acidic water is observed in shallow and deep wells along the Leyte Central Highlands, where the municipalities of Hinunangan, Hinundayan, Saint Bernard, San Juan and Silago are located.

Based on the inventory of water sources prepared through the study, the province has 496 developed springs currently serving the province. Such spring sources are located in the high mountain areas in the western part, the range area in the eastern part and the southern island part of the province. A total of 90 untapped springs for future development is reported in the eastern peninsula of Leyte Central Highlands area. Other municipalities have few untapped springs. In addition to this, copper mining sites are located in Hinundayan and Pintuyan.

Based on the existing well inventory, the depth of potential aquifers occurs between 20 to 60 meters in the Recent alluvium and the Plio-Pleistocene rocks. The development of deep wells

is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. The trend of acid groundwater is examined in the Leyte Central Highlands area. This groundwater characteristic will be caused by pumped water with high iron concentration. In this case, deep well shall be designed with anti-corrosive materials such as PVC and SUS.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are located in Anahawan, Hinunangan, Hinundayan, Pintuyan, Saint Bernard, San Francisco, San Juan, San Ricardo and Silago.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) locations and type of spring sources; ii) fluctuation of discharge rates through the year; iii) distance from spring sources and proposed served areas; and iv) elevation differences between the two points.

16.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage, physical targets of Level I facility for rural water supply under the on-going ADB-assisted project and viable investment using available IRA both in urban and rural water supply as shown in Table 16.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment

Table 16.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*77*	*77*	*95*
	Rural Area	*71*	*83*	*93*
Sanitation	*Urban HH Toilet*	*77*	*90*	*95*
	Rural HH Toilet	*83*	*88*	*93*
	School Toilet	*84*	*90*	*95*
	Public Toilet	*100*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*56*	*60*	*Not applicable*

and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. For rural water supply, Level I facilities to be constructed under the on-going ADB-assisted project are adopted for Phase I requirements. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Household toilets, school and public toilets to be provided under the on-going ADB-assisted project are taken into account for Phase I requirements. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2000. Additional service coverage of the sector by phase is shown in Table 16.6.2.

Table 16.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***Persons***	***15,331***	***48,453***
	Rural Area	***Persons***	***24,300***	***25,753***
Sanitation	***Urban HH Toilet***	***No. of Households***	***1,297***	***10,503***
	Rural HH Toilet	***No. of Households***	***1,968***	***8,754***
	School Toilet	***No. of Students***	***6,131***	***5,224***
	Public Toilet	***No. of Utilities***	***7***	***2***
Sewerage	***Urban Area***	***Persons***	***Not applicable***	***26,847***
Solid Waste	***Urban Area***	***No. of Households***	***3,529***	***Not applicable***

The necessary water supply facilities for Phase I include 13 deep wells/springs for 3,170 house connections in urban area and 270 Level I wells/springs for rural area. These Level I facilities will be constructed under the on-going ADB assisted project. For Phase II, 20 deep wells/springs for additional 12,100 connections and 437 Level I wells/springs are required for urban and rural water supplies, respectively. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. The on-going ADB assisted project will provide three (3) water quality laboratories and four (4) portable water test kits that are considered sufficient for the medium-term requirement.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economic construction.

The following municipalities may be studied for the integration both in physical and management systems.

- Bontoc and Sogod
- Saint Bernard and San Juan

Integration of small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 6,128 household toilets, 10 public school toilets and 7 public toilets for urban area. In rural area, 1,968 household toilets and 17 public school

toilets are necessary. Solid waste disposal will need 14 refuse collection trucks. For Phase II, urban area will require 10,503 household toilets, 6 public school toilets and 2 public toilets. In rural area a total of 8,754 household toilets and 237 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

16.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the water and sanitation sector, the provincial and municipal governments need to adjust their current policies and structures to achieve closer coordination with the overall policies, institutional and regulatory frameworks, and resource-sharing systems of the water sector.

The adjustments would enable the LGUs to avail of opportunities in the sector, specifically:

- To immediately improve the physical infrastructure for water, sanitation, and related environmental services; and
- To acquire permanent capabilities for planning, management, and development of sustainable institutions in the sector.

In line with the proposed adjustments, the Province will adopt the following policies and strategies in relation to the development of the water sector:

- Facilities will be managed with emphasis on sustainability;
- Project selection and prioritization based on beneficiaries' commitment and willingness to pay, on the current water, sanitation and health conditions, and on potential for growth;
- Technology appropriate to local conditions and resources shall be adopted. Facilities will be selected and designed for economy, while construction costs should not compromise quality, reliability, useful life, and provisions for upgrading and expansion;
- An integrated approach shall be used in the provision of potable water supply, sanitation, and hygiene education;
- Water supply and sanitation services shall be made available equally to rural and urban areas, and to wealthy and depressed areas;
- Cost recovery measures consistent with national policies on subsidies and loans to the sector shall be implemented at the local level;
- Private sector participation will be preferred whenever practical in the design, construction, operation, and maintenance of the facilities;

- The province will consider and, if practical, tap potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Environmental protection and management measures will be integrated in all sector development plans and activities;
- Provisions shall be made to ensure water supply and sanitation services under emergency conditions.

To be successfully implemented, these polices and strategies require a common vision to be shared by its officials and by a critical mass of its citizens, that can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of water associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds that, although diminishing, are assumed to continue in the medium-term to be channeled through local offices of central agencies.
- Adoption of this PW4SP as a basis for the Annual Sector Plan which, together with the budgets, will be reviewed by the Governor and passed upon by the legislation as part of the annual provincial budget approval process.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up by the Province, supported by adequate logistics and incentives. The PWSU will implement, assist and monitor all water supply and sanitation services in cooperation with the Municipalities which, for their part, will establish a Municipal Sector Liaison Team (MSLT). The DILG WSS-PMO shall continue to provide technical and managerial assistance in the formative years of the PWSU and MSLT.

For institutional arrangements, the formation of community-based associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems and RWSAs for Level II and III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and

by the provincial and municipal governments. In all cases, women shall have equal opportunities to be trained and involved in all phases of project management (planing, construction and O&M) and in undertaking health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit. A permanent CD Specialist shall be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels. The program will promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

The LGUs and the intended beneficiaries can both participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association/cooperative; Level II – for the formation of a water supply and sanitation association/cooperative or a waterworks; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches. These are: (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, the LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

16.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. Among others, the required cost for Level I facilities and sanitation facilities under the on-going ADB-assisted project was excluded from medium-term development plan. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. Investment cost required by phase for the province is summarized in Table 16.8.1.

Table 16.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*62,350*	*305,002*
	Rural Area	*0*	*110,792*
	Sanitation		
	Household Toilet	*1,095*	*631*
	School Toilet	*4,670*	*56,741*
	Public Toilet	*0*	*737*
	Disinfection of Well	*201*	*2,118*
	Urban Sewerage	*N/A*	*195,983*
	Sub-Total	***68,344***	***659,931***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*190*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,075***	***26,782***
Water quality Laboratory		*0*	*0*
Sector Management	*Engineering Studies*	*8,764*	*60,231*
	Institutional Development	*2,431*	*41,699*
	Sub-Total	***11,195***	***101,930***
Total Direct Cost		*83,358*	*790,129*
Contingencies	*Physical Contingency*	*8,056*	*78,864*
	Price Contingency	*22,520*	*N.A*
	Value-Added Tax (VAT)	*7,813*	*N.A*
Total Investment Cost		***119,005***	***867,507***
Total Investment Cost (excluding Price Contingency)		***96,433***	***867,507***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

Total investment cost for Phase I is estimated at about ₱96.4 million (in 1998 price level). A total of ₱68.3 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and sanitation share 91.5% and 8.5%, respectively. With reference to urban water supply, some cost required would be

managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 14 units of refuse collection truck. The total procurement cost is estimated at approximately ₱56.45 million. The works for Level I facilities and the supporting vehicle/equipment will be managed through ADB-assisted project. However, those for maintenance of facilities will be required through the future. In this connection, one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱20.4 to ₱23.0 million/year during Phase I period.

16.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue Allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector, and effective investments and cost recovery.

The on-going ADB-assisted project for rural water supply (Level I) and sanitation improvement (implementation period: 1999-2001) was fully considered for the financial study as part of the Medium Term Development Plan. In this regard, financial arrangements required are those excluding the components scheduled by ADB-assisted project. Furthermore, sector IRA allocation was discounted (less than 3%) to ensure LGU's contribution (10% of construction cost) to the ADB-assisted project (overlapping period with the project is from 1999 to 2001).

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Provincial allocation to the relevant sector is assumed to be about 2%. This means that approximately 10% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal

IRA to the sector. The fund available for this sector for 5-year implementation period from 2000 to 2004 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱49.7 million (provincial IRA is 1.58% of the total IRA). In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 90.4% or ₱44.9 million. While the share of urban and rural sanitation are 4.0% (₱2.0 million) and 5.6% (₱2.8 million), respectively.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 52% of the requirements as a provincial average. Hence, there is a shortfall of ₱46.7 million in funding. It will become ₱69.3 million in consideration of contingencies and VAT. In the municipal level, more than half of the municipalities of the province will achieve the target needs including Hinunangan, Limasawa, Macrohon, Padre Burgos, Pintuyan, San Francisco and San Ricardo. Maasin is only 19% in achievement. The provincial average is 52% (42% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors except for rural water supply that the service coverage in the year 2004 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Pintuyan, Limasawa, Bontoc and San Juan (Cabalian), which indicates that they are given priority for investments in all sub-sectors. The municipality of Silago is the least priority in terms of investment ranking.

Potential ODA assisted project was additionally studied, to which central government will extend grant. In this connection, Level I rural water supply component was excluded, since the on-going ADB assisted project will cover the requirements for medium-term development target. While some sanitation components beyond the scope of the said ADB assisted project

were studied for limited classes of the municipality to meet the established provincial target in 2004.

For the Project, the DILG is assumed to be the Executing Agency and the province, the Implementing Agency in the meantime. The project may be merged together with those of the 4th batch provinces in the preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are four (4) eligible municipalities in terms of 5th and 6th municipalities for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The sanitation component 12 school toilets to the rural communities. The works for Level I facilities and its supporting vehicle/equipment will be managed through ADB-assisted project.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan of 26% (₱2.2 million) and government counterpart fund (24% or ₱2.0 million). The remaining 50% of the overall cost shall be shared between the LGUs by 47% or ₱3.9 million and BWSAs (beneficiaries) by 3% or ₱0.3 million. Under this case, the IRA to be used by the LGU will increase to ₱5.0 million from ₱3.9 million (1998 price level) considering contingencies and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs and available IRA of LGUs (₱2.6million), it was identified that there is a shortage of about ₱2.4 million, achieving about 50% of the proposed requirements. As an option to solve this financial shortage, the provincial government may utilize sector IRA allotted (concerned municipalities and province) to urban water supply or other sub-sectors without limiting to the available IRA for rural water supply sub-sector, as the possible financial source.

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP is possibly to finance up to ₱6.3 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱2.2million or 26% of the total project cost shall be granted to the LGUs, aside from 24% GOP counterpart fund. The remaining ₱4.1million or 49% of the total project cost shall be utilized

for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the total required cost for the proposed project will be covered without financing from the available IRA.

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱98/HH/month in 2004). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2004, 2.3% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱205/HH/month in 2004, 4.2% of monthly income). Based on the experience that water fee must not exceed 5% of income, the monthly rate seems to be affordable.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

16.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include information collection, tracing the flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. It should be followed through with effective feedback.

The sector monitoring system should reinforce the linkage between water, sanitation and health. It should be reliable and practical, and should involve the beneficiaries and be accepted by all sectors.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked with the national sector monitoring system being developed.

17. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF AKLAN

17.1 Provincial Profile

Aklan is one of the four (4) provinces in Panay Island and belongs to Region VI, the Western Visayas Region. Kalibo is the provincial capital. The province is composed of 17 municipalities with 327 barangays, of which 36 are urban and 291 rural. The province is classified as 3rd class. At the municipal level, 11 municipalities belong to 5th class and the rest has higher classification. Population of the province was 410,539 in 1995 with an annual growth rate of 1.43% between 1990 and 1995.

Physical Features

The province has Type III climate under the Coronas classification. This type is characterized by an absence of very pronounced maximum rain period with a very short dry season lasting only from one to three months. The major geomorphic feature of the province is the western Cordillera consisting of continuous mountain ranges that bounds the western to southern sides of the province with maximum elevation of 1,650 masl at Mt. Nausang.

There are five (5) major rivers that traverse the province. Aklan River with a watershed of 1,688km^2 is the largest. About 59% of the total land area of the province constitutes agricultural land. Forestland is 16%, while built-up area is not recorded. The remaining 25% are either grassland, open land or inland/fishpond/mangrove areas.

Socio-economic Aspects

The major economic activities of the province are farming and fishing. Principal crops cultivated are palay, coconut and bananas. With the whole stretch of its northern and northwestern coasts facing the rich fishing grounds of Sibuyan Sea and Sulu Sea, respectively, the province also yields commercial marine fishery products. Swampy areas have also been converted into aqua-business ventures. At present, the province is promoting cottage industries and tourism as other income-generating activities.

The average annual family income of the province in 1994 was ₱ 70,376. Based on the established poverty threshold income of ₱ 47,133 per family in Region VI for 1994, about 57% of the total number of families lived within and below the poverty threshold.

All municipalities have electric supply, but with only 51% household coverage. Telephone service is also available in all municipalities. Land transportation is available by means of PUV, bus, taxi, rent-a car and tricycle. There are 1,785 business establishments and another 415 tourism facilities.

Provincial population growth rates had been fluctuating for the last 6 census years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 75%, while the remaining 25% are urban.

The province has a total of 427 schools consisting of 361 elementary schools, 53 high schools and 13 tertiary/technical schools. A large part of the population had attained elementary or high school levels of education.

An indicator of health problems related to water supply and sanitation is the incidence of water-related diseases. The reported cases in the province were typhoid/parathyphoid, intestinal parasitism, diarrhea, conjunctivities, cholera, dengue fever, viral hepatitis, gastroenteritis/colitis, and scabies

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 13% of the total households in the province relied on the municipal refuse collection services.

17.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 11 Level III waterworks operating under different types of ownership (authority or association) together with their service coverage. These are five (5) Water Districts, one (1) Municipal Waterworks and five (5) association/cooperative operated bodies.

Common issues encountered are rationing due to insufficient water pressure caused by limited water source, inadequate capacity of distribution pipes due to inappropriate planning and designing, and insufficient water quality examination. Collection efficiency of water charges is quite high at bigger waterworks, which is in contrast with smaller waterworks that experienced very poor water charge collection due to weak management practices.

There are 61 Level II waterworks operating in the municipalities. The majorities of the waterworks are utilizing spring sources (56 systems), while 5 systems use shallow/deep wells. Utilization of spring source usually leads to less attention to the daily O&M practice, owing to gravity flow of water to the service area. However, expansion of distribution line and installation of additional public faucets are usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity.

It is also common that water quality examination has not been conducted sufficiently. Regarding repair works, some waterworks collect money from beneficiaries and hire local contractor and others request for assistance of MEO, as required.

Level I facilities are common in rural barangays. Of the 21,500 operational Level I facilities, 60 percent are shallow wells. In the course of PW4SP preparation, 20% of the shallow wells were assumed as unsafe water source. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 15% and 85%, respectively. The share of developed springs in public facilities is 7%.

About 63% or 272,200 of the present population (432,400 comprising 25% in urban area and 75% in rural area) are adequately served. Under area classification, 75% of urban population and 59% of rural population have access to safe water sources/facilities. Of the served population, 21% or 57,200 persons are served by Level III systems. About 72% or 194,600 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 70% or 58,706 of the total households, which is well higher than the national coverage of 60%. These toilets consist of

19% flush type, 66% pour-flush type and 25% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Kalibo, New Washington, Mumancia), high sanitation coverage occurs and adversely, in low water supply coverage (Balete, Madalag), low sanitation coverage also occurs. Service coverage in urban area is 86%, while in rural area, the coverage is 65%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 1,585 toilets installed at 352 schools. Only 55% of the students are adequately served by sanitary toilets (57% for public school students). The present average ratio of 70 students per sanitary toilet is over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 86 public utilities; public markets, bus/jeepney terminals, and parks or plazas. Almost all public utilities (98%) are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

17.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code (1991) has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

At the central level, there are three line departments (DILG, DPWH and DOH) and two government owned and controlled corporations (LWUA and MWSS) responsible for planning and implementation of the sector projects. The role and responsibilities of these agencies have been defined by the NEDA Board: DILG's participation will consist of general administration and institution building, such as assistance to LGUs in the formation of Rural and/or Barangay Waterworks and Sanitation Associations (RWSAs/BWSAs) and in the identification of water supply systems; LWUA shall implement only financially viable Level-III water supply projects in areas outside the MWSS jurisdiction; DPWH, together with DILG and DOH, will provide technical assistance to LGUs in the planning, implementation and

operation and maintenance of water supply facilities. Other departments are concerned with macro-planning, national resource allocation decisions, as well as exercise of regulatory powers for tariff setting, environmental protection and management issues.

At the provincial level, the offices involved in WATSAN activities are the Provincial Planning and Development Office (PPDO), the Provincial Engineering Office (PEO), the Provincial Health Office (PHO) and other offices concerned. At the municipal/city level, planning offices, engineering offices and health offices of municipalities/cities are also involved. There are central agency field offices (DPWH and DILG) working on the sector. Water Districts (WD), RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Water Supply and Sanitation Program Management Office (WSS-PMO/DILG at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

LGUs implement WATSAN projects using funds made available for the purpose by their respective legislative bodies. Generally, implementation of level I and II systems are initiated by barangays while level III systems are initiated by municipalities. There has been no large scale WATSAN project implemented in the province since the BWP in 1980s. This was an USAID-assisted water supply project (level I & II). As such, the province's LGUs presently have limited project implementation capability. During the planning and implementation of future water supply projects, the province will still require assistance from national government line-agencies and even NGOs. Majority of level I and II operating bodies (barangays and BWSAs) are not aware of the importance of the maintenance of facilities. They will need to be guided by the province and the DILG. There are a number of WDs operating level III systems that supply water to urban areas. These WDs possess a higher level of management expertise.

Monitoring activities in the province are done on a project basis and are limited to specific projects (such as projects assisted by national and/or external agencies). Moreover, monitoring is done only in terms of physical performance against financial requirements. There is wide dissatisfaction among implementors themselves with the existing monitoring system. Poor monitoring leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance. In addition, it should be conducted periodically in order to develop a more reliable database for the sector.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently. This will require substantial input and support.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects in the Province of Aklan. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which creates a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity have been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- Water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- Operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.

- Barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- Consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

17.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 91% of the total income.

Actual expenditures for the same period were 96.01% of the total revenue. These expenditures are further broken down into personnel (61.14%), capital outlay (12.56%), and operation and maintenance expenses (22.31%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱40.41 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1995-1999, the 20% DFs of the province were sufficient to cover the actual expenditures. For 1999, it is projected that the 20% DF will be more than adequate to cover the capital expenditures of the province, and there will be a surplus of more than ₱13.24 million.

The Provincial government has not given priority to WATSAN sector. In 1995, actual expenditures for WATSAN sector reached 3.57% of the 20% DF. However, this decreased to 2.1% of the 20% DF in 1999.

The sector projects in previous years were funded by UNICEF and were undertaken by PPDO, PEO and PHO. The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector project implementation, funding sources are provincial

government, CDF (Congressmen) and the municipal government, while the implementing agencies are the PEO, DPWH-District Office and the Municipal Government, respectively.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or RWSAs bear the entire cost. Those for Level III are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet are through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱5.00 - ₱30.00 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 5.0% for Level III service. Thus, the current water rates seem to be within the affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

17.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geology of Aklan province located in the northwestern part of Panay Island is complex and attributed mainly to tectonic and magnetic actions generated from Cretaceous to Quaternary time. The high mountains of the province formed by the oldest rocks, largely volcanic origin, are the completely folded and faulted assemblages of igneous and metamorphic rocks. During late Miocene epoch, serpentinized igneous rocks of Cretaceous period to Oligocene epoch are assumed to have intruded through old fractures accompanied by faulting.

Overlying unconformably the basement complex is the Tertiary sequence of volcanic and sedimentary rocks, which forms the lower hills and the rolling areas in the middle portion of the province. The physical geography of the province is characterized by broad lowland thickly covered by shale, sandstone and alluvium with maximum thickness of 150m at Kalibo. This plain is bounded on its western and southern side by continuous mountain ranges. This area extends far from inland until it encounters the foothills of the western highlands. There is one individual and small plain located in Malay. However, the thickness of this alluvium is only about 10m.

The Buruanga Peninsula, located at the northwestern margin of Aklan, is considered to be an uplifted block with a peninsular neck. This narrow N-S trending valley is now mostly covered with Pleistocene sediments, except where erosion has exposed the older rocks. In general, the fault-line structures are observed to be left lateral conforming to general movement of the Philippines. These geologic structures are believed to affect the movement of groundwater in the province.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Solo shallow well areas in the province are limited. Deep well area covers about 55% of Aklan, while difficult area falls on the remaining area. Ironic water is observed in shallow and deep wells along the Aklan River, where the municipalities of Makato, Numancia, Lezo, Banga, Balete and Altavas are located. Groundwater with saline water intrusion is developed in most of northwestern seashore and in the municipality of New Washington. Slight acidic groundwater was reported in the municipalities of Altavas and Batan, due to oxidization within the volcanics vicinity.

Referring to the inventory of water sources prepared during the study, the province has 250 developed springs currently serving the province. Such spring sources come out from the Cordillera and from Buruanga Peninsula areas in the northwestern and western parts of the province. A total of 42 untapped springs for future development is reported in the same location of developed springs. Other municipalities out of the above-mentioned area have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 20 to 56 meters in the recent deposits and the Plio-Pleistocene series. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. Along the Aklan and Hal-o Rivers Valley, groundwater is characterized by slightly higher iron contents and acid pH. Such quality is caused either by groundwater itself,

well materials eluded in acid water, or combination of groundwater and well materials. In this case, deep wells shall be designed with anti-corrosive materials such as PVC and SUS.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the water quality examination and the preparation of groundwater database, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are located in the northeast coastal area.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) relative elevation between the two points.

17.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing existing service coverage and viable investment using available IRA both in urban and rural water supply as shown in Table 17.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for upgrading a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 17.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year*	*Provincial Sector Targets*	
		Service Coverage	*Phase I*	*Phase II*
Water Supply	*Urban Area*	*75*	*76*	*95*
	Rural Area	*59*	*60*	*93*
Sanitation	*Urban HH Toilet*	*87*	*90*	*93*
	Rural HH Toilet	*65*	*78*	*90*
	School Toilet	*57*	*70*	*90*
	Public Toilet	*98*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*54*	*80*	*Not applicable*

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine (dry type) are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2005. Additional service coverage of the sector by phase is shown in Table 17.6.2.

The necessary water supply facilities for Phase I include 18 deep wells/springs for 3,000 house connections in urban area, and 20 Level II systems with spring sources and 226 Level I wells/springs for rural area. For Phase II, 23 deep wells/springs for additional 20,900 connections and 2,440 Level I wells/springs are required for urban and rural water supplies,

Table 17.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*15,564*	*83,592*
	Rural Area	*Persons*	*25,397*	*146,063*
Sanitation	*Urban HH Toilet*	*No. of Households*	*4,079*	*11,637*
	Rural HH Toilet	*No. of Households*	*13,362*	*33,628*
	School Toilet	*No. of Students*	*19,990*	*34,066*
	Public Toilet	*No. of Utilities*	*37*	*36*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*48,838*
Solid Waste	*Urban Area*	*No. of Households*	*10,983*	*Not applicable*

respectively. It is assumed that 50% of Level I facilities will be implemented by the LGUs. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. With regard to water quality examination, one (1) set of water quality test instruments/equipment will be necessary to upgrade the existing laboratory in Kalibo.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there is no Level III system, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective systems of the municipalities.

Currently, 9 out of the total 17 municipalities/city have no Level III system in their urban areas. At present, there are on-going projects (Boracay Water Supply Project and expansion of Kalibo WD) financially assisted by JBIC.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied includes; water source availability, willingness by concerned municipalities and technical study on cost recovery/economic construction. Among them, Kalibo WD, Banga and New Washington were already studied for the integration both in physical and management systems.
Integration of small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 4,079 household toilets, 20 public school toilets and 37 public toilets for urban area. In rural area, 13,362 household toilets and 72 public school toilets are necessary. Solid waste disposal will need 8 refuse collection trucks. For Phase II,

urban area will require 11,637 household toilets, 27 public school toilets and 36 public toilets. In rural area a total of 33,628 household toilets and 401 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

17.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the development of the WATSAN sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who share in the vision, must be identified and harnessed for sector management. LGUs will improve the physical infrastructure for water, sanitation, and related environmental services while acquiring permanent capabilities for planning, management and development of sustainable institutions in the sector. Local planners need to focus on long-term requirements.

In line with the proposed adjustments, the province will adopt the following policies and strategies for the development of the sector:

- Facilities management with emphasis on sustainability through community commitment and increased responsibility;
- Project selection and prioritization based on: i) beneficiaries' commitment and willingness to pay; ii) current water, sanitation and health conditions; and iii) potential for growth;
- Appropriate technology to local conditions and resources; economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach in the provision of potable water supply, sanitation, and hygiene education;
- Equal provisions of water supply and sanitation services for rural and urban areas, and for wealthy and depressed areas;
- Policy and execution on consistent basis for cost recovery and rational cost sharing (subsidy);
- Private sector participation: The LGU will gradually transfer its technical assistance functions to the private sector. The LGU will provide needed incentives and establish the regulatory framework for private sector participation;

- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Broader concerns for environmental protection and management in sector development;
- Provision of water supply and sanitation services under emergency conditions

For the successful implementation of these polices and strategies, it is necessary that a common vision be shared by LGU officials and by a critical mass of its residents, who can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of WATSAN associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds, including MDF, in addition to local taxes and allocation from the IRA 20% Development Fund as a primary source of funds. National and external funds are diminishing but assumed to continue in the medium-term to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities that, for their part, will establish a Municipal Sector Liaison Team (MSLT). The WSS-PMO of DILG shall, however, continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of community-based WATSAN associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems and RWSAs for Level II and III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. The community, especially women, shall have equal opportunities to be trained and involved in all phases of project implementation

(planning, construction, and O&M) and in participating in health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels, to promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

There are three ways that both the LGUs and the intended beneficiaries can participate in sector development: Level I – for the planning and implementation of sector projects and in

the formation and management of a water supply and sanitation association or a waterworks and sanitation cooperative; Level II – for the formation of a water supply and sanitation association or a waterworks and sanitation cooperative; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches, which are (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

17.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 17.8.1.

Table 17.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	Component	Phase I	Phase II
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*64,431*	*330,286*
	Rural Area	*50,858*	*329,430*
	Sanitation		
	Household Toilet	*2,843*	*8,413*
	School Toilet	*21,482*	*99,938*
	Public Toilet	*13,379*	*13,018*
	Disinfection of Well	*1,095*	*179*
	Urban Sewerage	*N/A*	*356,517*
	Sub-Total	***154,089***	***1,137,780***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*170*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,055***	***26,782***
Water quality Laboratory		*478*	*0*
Sector Management	*Engineering Studies*	*19,582*	*100,693*
	Institutional Development	*12,219*	*69,711*
	Sub-Total	***31,801***	***170,404***
Total Direct Cost		*187,423*	*1,334,966*
Contingencies	*Physical Contingency*	*18,736*	*133,497*
	Price Contingency	*66,088*	*N.A*
	Value-Added Tax (VAT)	*17,514*	*N.A*
Total Investment Cost		***289,761***	***1,468,463***
Total Investment Cost (excluding Price Contingency)		***223,611***	***1,468,463***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

The investment cost for Phase I is estimated at about ₱223.6 million (in 1998 price level). A total of ₱154.1 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 42% and 33%, respectively. While, the remaining 25% are required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 8 units of refuse collection truck. The total procurement cost is estimated at approximately ₱44.1 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present. Likewise, annual recurrent cost in 1998 price level is estimated at ₱17.6 to ₱22.4 million/year during Phase I period.

17.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments, and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector is assumed to be about 4%. This means that approximately 20% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2001 to 2005 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector during the period 2001-2005 was estimated at ₱148.13 million. In the overall IRA allocation to the sub-sectors, rural water supply has the largest allotment of 37.3%, followed by urban water supply (35.9%). While, the share of rural sanitation is 14.9%, which is higher than that of urban sanitation of about 12%.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 66% of the requirements as a provincial average. Hence, there is a big shortfall of ₱75.49 million in funding. It will become ₱91.30 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Buruanga, Libacao, and Madalag (100%) are the highest among municipalities. Majority is in

the range between 74% and 90% to the respective requirements, while the provincial average is 66%.

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors that overall service coverage of the province in the year 2005 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Madalag, Balete, and Kalibo that indicates that they are given priority for investments in all sub-sectors. The municipalities of Malinao and Lezo are the least priority in terms of investment ranking.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province is the Implementing Agency in the meantime. The project may be merged with those of 3rd batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are eight (8) eligible municipalities in terms of 5th and 6th municipalities for GOP-assisted Level I rural water supply in the province, while there are seventeen (17) municipalities to meet the conditions for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 2001-2005 was estimated at ₱89.2 million or ₱65.0 million in 1998 price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGUs will increase to ₱39.2 million from ₱30.5 million (1998-price levels), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱39.2 million) and available IRA of LGUs (₱59.9 million), the required cost is covered by the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs would fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱48.7 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱29.8 million or 46% of the total project cost shall be granted to the LGUs, aside from the 4% GOP counterpart fund. The remaining ₱18.9 million or 29% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGUs will increase to ₱13.7 million from ₱11.6 million (1998 price level), considering price contingency and VAT, which is 23% of available IRA (₱59.9 million).

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱94/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2005, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱266/HH/month in 2005). Based on the experience that water fee must not exceed about 5% of income (average monthly water consumption of 15 m^3), the monthly water rate seems to be affordable.

For sanitation in terms of household toilet, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

17.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include collection of information on the sector, process flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. A sector monitoring system should: i) reinforce the linkage between water supply, sanitation and health; ii) involve the beneficiaries; iii) be accepted by all sectors; iv) be practical and reliable; and v) be followed through with effective feedback.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

The actual situation of the sector will surely change, so that this PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and to an updated sector investment program.

18. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF ANTIQUE

18.1 Provincial Profile

The province of Antique is one of the 6 provinces comprising Western Visayas Region (Region VI) with San Jose de Buenavista as its provincial capital. Occupying the whole length of the western side of Panay Island, the province is composed of 18 municipalities with a total of 590 barangays, of which 72 are urban and 518 are rural. The province is classified as 3rd class. At the municipal level, Ten (10) municipalities belong to 5th class and the rests are higher classification. Population of the province was 431,713 in 1995 with an annual growth rate of 1.14% between 1990 and 1995.

Physical Features

There are 2 types of climate in the province. Type I, which is experienced in the southern part has two pronounced seasons, dry from December to May and wet from June to November. Type III, which is experienced in the northern part, has no very pronounced maximum rain period, with very short dry season lasting only from one to three months. The major geomorphic feature of the province is the eastern Cordillera consisting of continuous mountain ranges that bounds the northeastern to southeastern sides of the province with maximum elevation of 1,650 masl at Mt. Nausang.

There are four (4) major rivers that traverse the province. Sibalom River with a watershed of 719km^2 is the largest. About 47% of the total land area of the province constitutes forestland. Agricultural land is 26%, while grassland or open land area is 24%. The remaining few percent is either built-up or inland/fishpond/mangrove area.

Socio-economic Aspects

Antique is basically an agricultural province with rice and sugarcane as the principal crops. The major economic activities are farming and fishing. Marine and other aquatic resources are the other important commodities because of its relatively long coastline and the presence of several productive fishing grounds, especially along the Cuyo East Pass. At present, the province is promoting cottage industry and tourism as another income-generating activities.

The average annual family income of the province in 1994 was ₱ 42,393. Based on the established poverty threshold income of ₱ 47,133 per family in Region VI for 1994, about 64% of the total number of families lived within and below the poverty threshold.

All municipalities have electric supply, but with only 60% household coverage. Telephone service is also available in all municipalities. Land transportation is available by means of bus, jeepney, taxi and tricycle. Business establishments in the province total to only 33, likewise tourism-related facilities total to 22.

Provincial population growth rates had been fluctuating for the last 6 census years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 74%, while the remaining 26% are urban.

The province has a total of 508 schools consisting of 444 elementary schools, 53 high schools and 11 tertiary/technical schools. A large part of the population had attained elementary or high school levels of education.

An indicator of health problems related to water supply and sanitation is the incidence of water-related diseases. The reported cases in the province were intestinal parasitism, diarrhea, conjunctivities, dengue fever, viral hepatitis, gastroenteritis/colitis, scabies and skin diseases.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 16% of the total households in the province relied on the municipal refuse collection services.

18.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 13 Level III systems operating under different types of ownership (authority or association) together with their service coverage. These are eight (8) Water Districts and five (5) LGU operated waterworks. Among them, Pandan WD and San Jose Rural WWs are

comparatively larger systems, served population of which is more than 10,000. Common issues encountered in some waterworks (Barbaza WD, Bugasong WD) are rationing due to insufficient water pressure caused by limited water source, inadequate capacity of distribution pipes due to inappropriate planning and designing, and insufficient water quality examination. Collection efficiency of water charges is quite high at bigger waterworks, which is in contrast with smaller waterworks that experienced very poor collection due to weak management practice.

There are 214 Level II waterworks operating in the municipalities. The majorities of the waterworks are utilizing spring sources (212 systems), while 2 systems use deep wells. It is common problem that water quality examination is not adequately conducted. Some waterworks impose water charge of 5 to 30 Pesos/HH/month as flat rate, and the rest supplies water free of charge. Regarding repair works, the associations either collect required money from beneficiaries or resort to assistance of barangay. Likewise they request assistance of MEO/PEO case by case.

Level I facilities are common in rural barangays. Of the 16,500 operational Level I facilities, 96 percent are shallow wells. In the course of PW4SP preparation, 30% of the shallow wells were assumed as unsafe water sources. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 17% and 83%, respectively. The share of developed springs in public facilities is only 3%.

About 71% or 324,300 of the present population (455,100 comprising 26% in urban area and 74% in rural area) are adequately served. Under area classification, 80% of urban population and 68% of rural population have access to safe water sources/facilities. Of the served population, 22% or 71,100 persons are served by Level III systems. About 68% or 221,200 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 73% or 64,878 HHs of the total households, which is well higher than the national coverage of 60%. These toilets consist of 4% flush type, 73% pour-flush type and 21% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Sebaste, Belison, San Jose de Buenavista), high sanitation

coverage occurs and adversely, in low water supply coverage (Valderrama, Barbaza), low sanitation coverage also occurs. Service coverage in urban area is 80%, while in rural area, the coverage is 71%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 1,817 toilets installed at 497 schools. Only 54% of the students are adequately served by sanitary toilets (54% also for public school students). The present average ratio of 70 students per sanitary toilet is over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 40 public utilities; public markets, bus/jeepney terminals, and parks or plazas. Out of 48 public toilet facilities in the existing public utilities, 71% are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

18.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code (1991) has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

At the central level, there are three line departments (DILG, DPWH and DOH) and two government owned and controlled corporations (LWUA and MWSS) responsible for planning and implementation of the sector projects. The role and responsibilities of these agencies have been defined by the NEDA Board: DILG's participation will consist of general administration and institution building, such as assistance to LGUs in the formation of waterworks/Rural and/or Barangay Waterworks and Sanitation Associations (RWSAs/BWSAs) and in the identification of water supply systems; LWUA shall implement only financially viable Level-III water supply projects in areas outside the MWSS jurisdiction; DPWH, together with DILG and DOH, will provide technical assistance to LGUs in the planning, implementation and operation and maintenance of water supply

facilities. Other departments are concerned with macro-planning, national resource allocation decisions, as well as exercise of regulatory powers for tariff setting, environmental protection and management issues.

At the provincial level, the offices involved in WATSAN activities are the Provincial Planning and Development Office (PPDO), the Provincial Engineering Office (PEO), the Provincial Health Office (PHO) and other offices concerned. At the municipal/city level, planning offices, engineering offices and health offices of municipalities/cities are also involved. There are central agency field offices (DPWH and DILG) working on the sector. Water Districts (WD)/waterworks, RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Water Supply and Sanitation Program Management Office (WSS-PMO/DILG at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

LGUs implement WATSAN projects using funds maid available by their respective legislative bodies. Generally, implementation of Level I & II systems are initiated by barangays, while Level III facilities are planned at the municipal level. The major WATSAN projects that have been implemented in Antique were the USAID-assisted BWP (Level I & II) in the 1980s and the ADB-assisted RW3SP (Level I). The implementing capacity of LGUs is still limited and needs to be strengthened. LGUs will require assistance from the national government line-agencies and NGOs when future WATSAN projects are implemented. A number of Level I/II systems exist in the province, but majorities of the barangays/BWSAs are not able to maintain these facilities well. These LGUs need to be trained through a joint effort of the province and the DILG. For water supply in the urban areas, there are WDs in the province, which possess a higher level of management expertise.

Monitoring activities in the province are done on a project basis and are limited to specific projects (such as projects assisted by national and/or external agencies). Moreover, monitoring is done only in terms of physical performance against financial requirements. There is wide dissatisfaction among implementors themselves with the existing monitoring system. Poor monitoring leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance. In addition, it should be conducted periodically in order to develop a more reliable database for the sector.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently. This will require substantial input and support.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects in the Province of Antique. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which creates a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity have been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- Water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- Operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.

- Barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- Consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

18.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented 91.45% of the total income.

Actual expenditures for the same period were 93.64% of the total revenue. These expenditures are further broken down into personnel (75.54%), capital outlay (2.10%), and operation and maintenance expenses (16%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱58.26 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1995-1998, the 20% DFs of the province were sufficient to cover the actual expenditures. However, for 1999, it is projected that the 20% DF amounting to ₱47.97 million will not be adequate to cover the capital expenditures of the province, estimated at ₱ 94.03 million,

Previously, the Provincial government had not given priority to WATSAN sector. It was only in 1997 that funds were allotted to the WATSAN sector. In 1999, the situation improved with WATSAN expenditures reaching 4.83% of the 20% DF.

The sector projects in previous years were undertaken by PPDO, PEO and PHO. The PEO-Waterworks implements the provincial government funded projects under the General Fund.

For sector project implementation, funding sources are provincial government, CDF (Congressmen) and the municipal government, while the implementing agencies are the PEO, DPWH-District Office and the Municipal Government, respectively.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or waterworks bear the entire cost. Those for WDs are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet are through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱5.00 - ₱30.00 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 5.23% for Level III service. Current water rates are slightly over the affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

18.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geology of Antique province located in the western portion of Panay Island is complex and mainly attributed to tectonic and magnetic actions generated from Cretaceous to Quaternary period. The high mountains of the province formed by the oldest rocks, largely volcanic origin, are the completely folded and faulted assemblages of igneous and metamorphic rocks. During late Miocene epoch, serpentinized igneous rocks of Cretaceous

period to Oligocene epoch are assumed to have intruded through old fractures accompanied by faulting.

Overlying unconformably the basement complex is the Tertiary sequence of volcanic and sedimentary rocks, which forms the lower hills and the rolling areas in the western-half part of the province. Middle Miocene volcanism intervened with the deposition of the younger Oligocene to middle Miocene sedimentary rocks. Continuous accumulation of sediments in this rolling hills gave rise to the formulation of late Miocene to Pliocene sedimentary sequence, composed of sandstone, shale, limestone, mudstone and conglomerate.

Physiographic configuration is an expression of structures that are formed throughout the complex geologic evolution of the province and the whole of Panay Island. The main structures trend more or less, N-S, NE and NW. Tertiary rocks are generally folded. Normal or gravity faulting affected the Tertiary and Quaternary systems. In general, the structural trend of the province is attributed to steeply sloping terrains and moderate to steep dips.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Solo shallow well areas in the province are limited. Deep well area covers about 30% of Antique, while difficult area falls on the remaining area. Ironic water problem is extended to most of the areas in the municipalities of Sibalom and Laua-an. Slight acidic groundwater is confirmed mainly in the municipality of Anini-y.

Referring to the inventory of water sources prepared during the study, the province has 280 developed springs currently serving the province. Such spring sources come out from the western slopes of the Cordillera. A total of 48 untapped springs for future development is reported in the same location of developed springs. Other municipalities out of the above-mentioned area have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 20 to 96 meters in the recent deposits and the Plio-Pleistocene series. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. In the southern part of the province, groundwater is characterized by slightly higher iron contents and acid pH. Such quality is caused either by groundwater itself, well materials eluded in acid water, or combination of groundwater and well materials. In this case, deep wells shall be designed with anti-corrosive materials such as PVC and SUS.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the water quality examination and the preparation of database, prior to the detailed design or in the pre-construction stage. The entire province falls on this investigation area.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) relative elevation between the two points.

18.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established to secure the existing service coverage in consideration of viable investment using available IRA for water supply sub-sector. In rural water supply, physical targets of Level I facility under on-going ADB-assisted project are adopted as shown in Table 18.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Table 18.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*80*	*80*	*95*
	Rural Area	*68*	*68*	*93*
Sanitation	*Urban HH Toilet*	*80*	*90*	*93*
	Rural HH Toilet	*71*	*85*	*90*
	School Toilet	*54*	*80*	*90*
	Public Toilet	*71*	*90*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*60*	*80*	*Not applicable*

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. For rural water supply, Level I facilities to be constructed under the on-going ADB-assisted project are employed for Phase I requirements. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Household toilets (limited to toilet bowl), school and public toilets to be provided under the on-going ADB-assisted project are taken into account for Phase I requirements. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2005. Additional service coverage of the sector by phase is shown in Table 18.6.2.

The necessary water supply facilities for Phase I include 13 deep wells/springs for 2,180 house connections in urban area and 336 Level I wells/springs for rural area. These Level I facilities will be constructed under the on-going ADB-assisted project. For Phase II, 23 deep wells/springs for additional 21,900 connections and 2,060 Level I wells/springs are required for urban and rural water supplies, respectively. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. The on-going ADB-assisted project will provide three (3) new laboratories for the municipalities of ADB-

Table 18.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*11,219*	*87,602*
	Rural Area	*Persons*	*30,240*	*123,238*
Sanitation	*Urban HH Toilet*	*No. of Households*	*4,863*	*13,387*
	Rural HH Toilet	*No. of Households*	*16,574*	*29,269*
	School Toilet	*No. of Students*	*38,985*	*21,637*
	Public Toilet	*No. of Utilities*	*32*	*12*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*37,078*
Solid Waste	*Urban Area*	*No. of Households*	*9,880*	*Not applicable*

assisted project will provide three (3) new laboratories for the municipalities of Bugasong, Culasi and T. Fornier. Aside from this, the Province made a plan to establish another laboratory at district hospital in Pandan for the medium term requirement.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there is no Level III system, a new system was recommended. Currently, 7 out of the total 18 municipalities/city have no Level III systems in their urban areas. Existing plan/s on the development of waterworks/WD are also taken into account to determine respective systems of the municipalities.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economic construction.

Integration of small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 4,860 household toilets, 41 public school toilets and 32 public toilets for urban area. In rural area, 16,570 household toilets and 152 public school toilets are necessary. Solid waste disposal will need 13 refuse collection trucks. For Phase II, urban area will require 13,400 household toilets, 14 public school toilets and 12 public toilets. In rural area a total of 29,300 household toilets and 449 public school toilets are necessary.

18.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the development of the WATSAN sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who share in the vision, must be identified and harnessed for sector management. LGUs will improve the physical infrastructure for water, sanitation, and related environmental services while acquiring permanent capabilities for planning, management and development of sustainable institutions in the sector. Local planners need to focus on long-term requirements.

In line with the proposed adjustments, the province will adopt the following policies and strategies for the development of the sector:

- Facilities management with emphasis on sustainability through community commitment and increased responsibility;
- Project selection and prioritization based on: i) beneficiaries' commitment and willingness to pay; ii) current water, sanitation and health conditions; and iii) potential for growth;
- Appropriate technology to local conditions and resources; economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach in the provision of potable water supply, sanitation, and hygiene education;
- Equal provisions of water supply and sanitation services for rural and urban areas, and for wealthy and depressed areas;
- Policy and execution on consistent basis for cost recovery and rational cost sharing (subsidy);
- Private sector participation: The LGU will gradually transfer its technical assistance functions to the private sector. The LGU will provide needed incentives and establish the regulatory framework for private sector participation;
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Broader concerns for environmental protection and management in sector development;
- Provision of water supply and sanitation services under emergency conditions

For the successful implementation of these polices and strategies, it is necessary that a common vision be shared by LGU officials and by a critical mass of its residents, who can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should

give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of WATSAN associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds, including MDF, in addition to local taxes and allocation from the IRA 20% Development Fund as a primary source of funds. National and external funds are diminishing but assumed to continue in the medium-term to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities that, for their part, will establish a Municipal Sector Liaison Team (MSLT). The WSS-PMO of DILG shall, however, continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of community-based WATSAN associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems, RWSAs for Level II and waterworks/WD for III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. The community, especially women, shall have equal opportunities to be trained and involved in all phases of project implementation (planning, construction, and O&M) and in participating in health and hygiene education programs.

Community Development

To ensure, therefore, that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be

established within the proposed Provincial Water Supply and Sanitation Office and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels, to promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

There are three ways that both the LGUs and the intended beneficiaries can participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association or a waterworks and sanitation cooperative; Level 2 – for the formation of a water supply and sanitation association or a waterworks and sanitation cooperative; while Level 3 – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches, which are (1) sharing relevant information on the project with the

beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

18.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. Of the total requirements for Phase I, the required cost for Level I facilities and sanitation facilities undertaken by on-going ADB assisted project was excluded. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution

of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 18.8.1.

Table 18.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	Component	Phase I	Phase II
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*47,982*	*352,992*
	Rural Area	*0*	*414,920*
	Sanitation		
	Household Toilet	*2,830*	*5,945*
	School Toilet	*44,132*	*108,111*
	Public Toilet	*10,486*	*4,339*
	Disinfection of Well	*1,167*	*172*
	Urban Sewerage	*N/A*	*270,669*
	Sub-Total	***106,597***	***1,157,147***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*180*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,065***	***26,782***
Water quality Laboratory		*478*	*0*
Sector Management	*Engineering Studies*	*13,408*	*114,469*
	Institutional Development	*7,994*	*79,248*
	Sub-Total	***21,402***	***193,717***
Total Direct Cost		***129,542***	***1,377,647***
Contingencies	*Physical Contingency*	*12,947*	*137,765*
	Price Contingency	*48,078*	*N.A*
	Value-Added Tax (VAT)	*12,148*	*N.A*
Total Investment Cost		***202,715***	***1,515,411***
Total Investment Cost (excluding Price Contingency)		***154,567***	***1,515,411***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

Total investment cost for Phase I is estimated at about ₱154.6 million (in 1998 price level). A total of ₱106.6 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and sanitation share 45% and 55%, respectively. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 13 units of refuse collection truck. The total procurement cost is estimated at approximately ₱54.4 million. The works for Level I facilities and its supporting vehicle/equipment will be managed through the ADB-assisted project. However, those for

maintenance of facilities will be required through the future. In this connection, one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱20.1 to ₱25.5 million/year during Phase I period.

18.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector is assumed to be about 3%. This means that approximately 15% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2001 to 2005 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector for the period 2001-2005 was estimated at ₱118.02 million. In the overall IRA allocation to the sub-sectors, rural sanitation has the largest allotment of 40.11%, followed by urban water supply (38.7%). The share of urban sanitation is 21.2%. Rural sanitation was not allotted IRA funding since it is assumed that ADB assistance/financing will cover 100% of the requirements.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 76% of the requirements as a provincial average. Hence, there is a shortfall of ₱36.55 million in funding. It will become ₱46.1 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Anini-y, Caluya, Pandan, San Remigo, Sebaste, Tibiao, and Tobias Fornier (100%) are the highest among municipalities. Majority is in the range between 76% and 96% to the respective

requirements, while the provincial average is 76% (58% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors, excepting the rural water supply component which will be funded by ADB-assisted project, that the service coverage in the year 2005 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Laua-an, Valderrama, Bugasong, and Caluya, which indicates that they are given priority for investments in all sub-sectors. The municipalities of Belison, Pandan, and San Jose de Buenavista are the least priority in terms of investment ranking.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 3rd batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components, public/school toilet facilities, were identified to meet the conditions in provision of GOP-assisted project. There are eighteen (18) eligible municipalities to meet the conditions for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 2001-2005 was estimated at ₱96.1 million or ₱69.6 million in 1998 price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGUs will increase to ₱41.9 million from ₱32.7 million (1998-price levels), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to

be shared by the LGUs (₱41.9 million) and available IRA of LGUs (₱71.3 million), the required cost is covered by the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs would fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱52.2 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱32.9 million or 47.2% of the total project cost shall be granted to the LGUs, aside from the 2.8% GOP counterpart fund. The remaining ₱19.3 million or 27.8% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGUs will increase to ₱16.0 million from ₱13.4 million (1998 price level), considering price contingency and VAT, which is 22% of available IRA (₱71.3 million).

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱68/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2005, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱269/HH/month in 2005). Based on the experience that water fee must not exceed about 5% of income (average monthly water consumption of 15 m^3), the monthly water rate seems to be affordable.

For sanitation in terms of household toilet, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

18.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include collection of information on the sector, process flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. A sector monitoring system should: i) reinforce

the linkage between water supply, sanitation and health; ii) involve the beneficiaries; iii) be accepted by all sectors; iv) be practical and reliable; and v) be followed through with effective feedback.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

The actual situation of the sector will surely change, so that this PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and to an updated sector investment program.

19. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF CAPIZ

19.1 Provincial Profile

Capiz is one of the four (4) provinces in Panay island and belongs to Region VI, the Western Visayas Region. Roxaz City is the provincial capital. The province is composed of 16 municipalities and one chartered city (Roxaz City), with 473 barangays, of which 79 are urban and 394 rural. The province is classified as 2nd class. At the municipal level, 5 municipalities belong to 5th class and the rest has higher classification. Population of the province was 624,469 in 1995 with an annual growth rate of 1.26% between 1990 and 1995.

Physical Features

The province has Type III climate under the Coronas classification. This type is characterized by an absence of very pronounced maximum rain period with a very short dry season lasting only from one to three months. The major geomorphic feature of the province is the western rolling hills descending gradually from the western highlands with peaks of 2,049 masl at Mt. Nangtud command the western terrain, while on the east are rolling hills along the coast dotted by small basins.

There is only one (1) major river with several tributaries in the province that traverse the province. Panay River with a watershed of 1,843km^2 is the largest in the Panay Island. About 71% of the total land area of the province constitutes agricultural land. Open land is 11%, while forest land area is 8%. The remaining 10% are either inland/fishpond/mangrove or built-up areas.

Socio-economic Aspects

The major economic activities of the province are farming and fishing. Principal crops cultivated are palay, corn, sugarcane and coconut. Bounded by a major fishing ground, the province has high commercial and municipal fishery production. At present, the province is promoting cottage industry and value added activities as an income-generating activities both coastal and farming areas.

The average annual family income in 1994 was ₱ 46,880. Based on the established poverty threshold income of ₱ 47,133 per family in Region VI for 1994, about 56% of the total number of families lived within and below the poverty threshold.

All municipalities have electric supply, but with only 54% household coverage. Telephone service is also available in all municipalities. Land transportation is available by means of PUV, bus, taxi, rent-a car and tricycle. There are 560 business establishments and another 50 tourism facilities.

Provincial population growth rates had been fluctuating for the last 6 census years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 81%, while the remaining 19% are urban.

The province has a total of 531 schools consisting of 461 elementary schools, 53 high schools and 17 tertiary/technical schools. A large part of the population had attained elementary or high school levels of education.

An indicator of health problems related to water supply and sanitation is the incidence of water-related diseases. The reported cases in the province were diarrhea, dengue fever and typhoid/paratyphoid.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 29% of the total households in the province relied on the municipal refuse collection services.

19.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 7 Level III systems operating under different types of ownership (authority or association) together with their service coverage. These are six (6) Water Districts and one (1) Municipal Waterworks. Among them, Metro Roxas WD is serving 3 municipalities/city. Common issues encountered are rationing due to insufficient water pressure caused by limited

water source, inadequate capacity of distribution pipes due to inappropriate planning and designing, and insufficient water quality examination. Collection efficiency of water charges is quite high at bigger waterworks, which is in contrast with smaller waterworks that experienced very poor collection due to weak management practice.

There are 23 Level II systems operating in the municipalities and component city. The majorities of the waterworks are utilizing spring sources (22 systems), while one system in Panitan is using deep well. Most of them practice scheduled water supply due to insufficient water source/insufficient capacity of the facilities. Such problems are mainly caused by order-less expansion or tapping of individual connections without due considerations, resulted in insufficient water flow/ reduction of water pressure. It is also common that water quality examination is not adequately conducted. Most of the systems supply water free of charge. Repair works are often done with the assistance of the MEO/PEO.

Level I facilities are common in rural barangays. Of the 20,500 operational Level I facilities, 28 percent are shallow wells. In the course of PW4SP preparation, 20% of the shallow wells were assumed as unsafe water sources. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 13% and 87%, respectively. The share of developed springs in public facilities is 2%.

About 58% or 381,500 of the present population (658,000 comprising 19% in urban area and 81% in rural area) are adequately served. Under area classification, 75% of urban population and 54% of rural population have access to safe water sources/facilities. Of the served population, 20% or 75,700 persons are served by Level III systems. About 77% or 294,800 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 78% or 98,408 of the total households, which is well higher than the national coverage of 60%. These toilets consist of 8% flush type, 57% pour-flush type and 35% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Roxas City, Pilar, Dumarao), high sanitation coverage occurs and adversely, in low water supply coverage (Tapaz, Cuartero), low sanitation coverage also occurs. Service coverage in urban area is 93%, while in rural area, the coverage is 74%. Although high percentage of sanitary toilets is disclosed in urban areas,

problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 1,112 toilets installed at 514 schools. Only 24% of the students is adequately served by sanitary toilets (23% for public school students). The present average ratio of 165 students per sanitary toilet is over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 29 public utilities; public markets, bus/jeepney terminals, and parks or plazas. Almost all public utilities (92%) are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

19.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code (1991) has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

At the central level, there are three line departments (DILG, DPWH and DOH) and two government owned and controlled corporations (LWUA and MWSS) responsible for planning and implementation of the sector projects. The role and responsibilities of these agencies have been defined by the NEDA Board: DILG's participation will consist of general administration and institution building, such as assistance to LGUs in the formation of Rural and/or Barangay Waterworks and Sanitation Associations (RWSAs/BWSAs) and in the identification of water supply systems; LWUA shall implement only financially viable Level-III water supply projects in areas outside the MWSS jurisdiction; DPWH, together with DILG and DOH, will provide technical assistance to LGUs in the planning, implementation and operation and maintenance of water supply facilities. Other departments are concerned with macro-planning, national resource allocation decisions, as well as exercise of regulatory powers for tariff setting, environmental protection and management issues.

At the provincial level, the offices involved in WATSAN activities are the Provincial Planning and Development Office (PPDO), the Provincial Engineering Office (PEO), the Provincial Health Office (PHO) and other offices concerned. At the municipal/city level, planning offices, engineering offices and health offices of municipalities/cities are also involved. There are central agency field offices (DPWH and DILG) working on the sector. Water Districts (WD), RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Water Supply and Sanitation Program Management Office (WSS-PMO/DILG at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

LGUs are able to implement WATSAN projects using internally generated funds. Barangays generally request for Level I/II systems while municipalities desire Level III facilities. The major foreign funded WATSAN project that the province participated in was the USAID-assisted BWP (Level I & II) in the 1980s. LGUs have limited and weak implementing capability when it comes to WATSAN projects. For future projects, the province will still need the assistance of national government line-agencies and NGOs. There are only a few functional BWSAs. Majorities of these BWSAs are poor in the O&M of facilities and they will need to be strengthened in this area through a joint effort of the province and the DILG. WDs with a higher level of management expertise supply water to the urban areas.

Monitoring activities in the province are done on a project basis and are limited to specific projects (projects assisted by national and/or external agencies). Moreover, monitoring is done only in terms of physical performance against financial requirements. There is wide dissatisfaction among implementors themselves with the existing monitoring system. Poor monitoring leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance. In addition, it should be conducted periodically in order to develop a more reliable database for the sector.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently. This will require substantial input and support.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects in the Province of Capiz. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which creates a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity have been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- Water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- Operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.
- Barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- Consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.

- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

19.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 94% of the total income.

Actual expenditures for the same period were 93.87% of the total revenue. These expenditures are further broken down into personnel (64.80%), capital outlay (0.93%), and operation and maintenance expenses (28.14%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱47.38 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1995-1998, the 20% DFs of the province were sufficient to cover the actual expenditures.

The Provincial government has not given priority to WATSAN sector. Actual expenditure for the WATSAN sector in 1995 was 6.57% of the 20% DF, but decreased to 1.02% in 1999.

The sector projects in previous years were funded by UNICEF and were undertaken by PPDO, PEO and PHO. The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector project implementation, funding sources are provincial government, CDF (Congressmen) and the municipal government, while the implementing agencies are the PEO, DPWH-District Office and the Municipal Government, respectively.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or waterworks bear the entire cost. Those for WDs are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet are through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱5.00 – ₱20.00 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 7.21% for Level III service. Thus, the current water rates are above the affordable range. Likewise, construction cost of household toilet seems to be expensive comparing with the family income.

19.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

In the province of Capiz, various rocks such as basalt, coralline limestone, sandstone, slate, shale, igneous and sedimentary rocks form the parent materials of the soils. The metamorphic rocks are either igneous or sedimentary rocks, the physical properties of which have been altered by pressure, tempt or both. These are found in the western mountains.

Basaltic rocks are the parent materials of pyroclastics in the basins, facies of that are dark brown, while the pyroclastic sediments are brown to reddish brown. These are found as outcrops in Ivisan, Sapi-an, Roxas City, Pilar, Maayon, Cuartero and Dumarao. Shale and sandstone are dominant rocks in the province, which are found in most of the upland, rolling and hilly regions. These sedimentary rocks appear in thin, yellowish brown to gray plates in horizontal layers and stratification. Sometimes the sandstone is in massive boulders, which is one of the parent materials of the Iloilo Plain.

Coralline limestone rocks are found in the central part of the province consisting of Dumalag and Dumarao along the national highway. These inland plateaus are transected by crisscross joints and faults. The major movement formed a sort of vertical arc that trends in N-W direction dips. In general, faults are observed as the left lateral, which conform to the general

movement of the Philippine fault. These clastics are rough rocks with many sharp and irregular edges with general facies of black clay and very sticky.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. The province has no solo shallow well area. Deep well area covers about 70% of Capiz, while difficult area falls on the remaining area. Ironic water problem is extended to the inland plain area, where the municipalities of Dao, Cuartero, Dumarao, Dumalag, Sigma, Mambusao, Jamindan and Tapaz are located. Groundwater with saline water intrusion is prevalent in most of seashore of the province, extensively distributed in Panay. Slight potassium nitrate in groundwater was reported in the central town of Tapaz that may be caused by fertilizers commonly used in rice fields.

Based on the inventory of water sources prepared during the study, the province has 79 developed springs currently serving the province. Such spring sources come out from the Cordillera and from the rolling hills in the western and eastern parts of the province. A total of 63 untapped springs for future development is reported in the same location of developed springs. Other municipalities out of the above-mentioned area have few untapped springs.

Referring to the existing well inventory, the depth of potential aquifers occurs between 20 to 95 meters in the recent deposits and the Plio-Pleistocene series. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. In the inland plain, groundwater is characterized by slightly higher iron contents. Such quality is caused either by groundwater itself, well materials eluded in acid water, or combination of groundwater and well materials. In areas with acidic groundwater, deep wells shall be designed with anti-corrosive materials such as PVC and SUS.

Two water supply projects in use of surface water source are planned and arranged, due to limited groundwater availability. These projects are: (1) Capiz Inter-Municipal Water Supply System (CIMWSS) Project studied by the province and (2) Provincial City Water Supply Project-III (PCWSP-III), Metro Roxas Water Districts (MRWD). The intake points at Panay River for the both projects will be selected among several options in the near future. Except for the parameters of turbidity and color, examined water quality of the River meets the Class A limitation of “DENR Fresh Water Quality Criteria” in the upstream areas, while the Class B/C limitation in the downstream areas.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells and the preparation of groundwater database, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are located in the inland plain area and the basaltic lava flow area.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) relative elevation between the two points.

19.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage and viable investment using available IRA both in urban and rural water supply as shown in Table 19.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Table 19.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*75*	*75*	*95*
	Rural Area	*54*	*54*	*93*
Sanitation	*Urban HH Toilet*	*93*	*93*	*93*
	Rural HH Toilet	*74*	*80*	*93*
	School Toilet	*23*	*40*	*90*
	Public Toilet	*92*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*100*	*100*	*Not Applicable*

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2005. Additional service coverage of the sector by phase is shown in Table 19.6.2.

The necessary water supply facilities for Phase I include 14 deep wells/springs for 2,900 house connections in urban area, and 19 Level II systems with spring sources and 328 Level I facilities for rural area. For Phase II, 25 deep wells/springs for additional 29,300 connections and 4,170 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 30% of Level I facilities will be implemented by the LGUs. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. With regard to strengthening water quality examination, one (1) set of water

Table 19.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*15,151*	*117,307*
	Rural Area	*Persons*	*35,312*	*249,538*
Sanitation	*Urban HH Toilet*	*No. of Households*	*3,728*	*18,606*
	Rural HH Toilet	*No. of Households*	*16,355*	*51,960*
	School Toilet	*No. of Students*	*35,531*	*110,266*
	Public Toilet	*No. of Utilities*	*42*	*19*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*51,444*
Solid Waste	*Urban Area*	*No. of Households*	*4,342*	*Not applicable*

quality test instruments/equipment will be necessary to upgrade the existing laboratory in Roxas City

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III systems, a new system was recommended. Existing plan/s on the development of waterworks/WD are also taken into account to determine respective systems of the municipalities.

Currently, 7 out of the total 17 municipalities/city have no Level III system in their urban areas. At present, there is planned project (expansion of Metro Roxas WD) financially assisted by JBIC. In addition to this, the province is planning to establish integrated water supply system for nine (9) municipalities of 2nd district.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied includes; water source availability, willingness by concerned municipalities and technical study on cost recovery/economic construction.

Following municipalities were already studied for the integration both in physical and management systems:

- Metro Roxas WD (Ivisan, Panay and Roxas City) and Panitan
- Cuartero, Dao, Dumalag, Dumarao, Jamidan, Mambusao, Sapi-an, Sigma and Tapaz

Integration of other small Level III systems for operation and management shall be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 3,700 household toilets, 27 public school toilets and 42 public toilets for urban area. In rural area, 16,400 household toilets and 142 public school toilets are necessary. Solid waste disposal will need 10 refuse collection trucks. For Phase II, urban area will require 18,600 household toilets, 130 public school toilets and 19 public toilets. In rural area a total of 52,000 household toilets and 699 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

19.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the development of the WATSAN sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who share in the vision, must be identified and harnessed for sector management. LGUs will improve the physical infrastructure for water, sanitation, and related environmental services while acquiring permanent capabilities for planning, management and development of sustainable institutions in the sector. Local planners need to focus on long-term requirements.

In line with the proposed adjustments, the province will adopt the following policies and strategies for the development of the sector:

- Facilities management with emphasis on sustainability through community commitment and increased responsibility;
- Project selection and prioritization based on: i) beneficiaries' commitment and willingness to pay; ii) current water, sanitation and health conditions; and iii) potential for growth;
- Appropriate technology to local conditions and resources; economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach in the provision of potable water supply, sanitation, and hygiene education;
- Equal provisions of water supply and sanitation services for rural and urban areas, and for wealthy and depressed areas;
- Policy and execution on consistent basis for cost recovery and rational cost sharing (subsidy);

- Private sector participation: The LGU will gradually transfer its technical assistance functions to the private sector. The LGU will provide needed incentives and establish the regulatory framework for private sector participation;
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Broader concerns for environmental protection and management in sector development;
- Provision of water supply and sanitation services under emergency conditions

For the successful implementation of these polices and strategies, it is necessary that a common vision be shared by LGU officials and by a critical mass of its residents, who can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of WATSAN associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds, including MDF, in addition to local taxes and allocation from the IRA 20% Development Fund as a primary source of funds. National and external funds are diminishing but assumed to continue in the medium-term to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities that, for their part, will establish a Municipal Sector Liaison Team (MSLT). The WSS-PMO of DILG shall, however, continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of community-based WATSAN associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems, RWSAs for Level II and waterworks for Level III systems. To provide

the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. The community, especially women, shall have equal opportunities to be trained and involved in all phases of project implementation (planning, construction, and O&M) and in participating in health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Office and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels, to promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

There are three ways that both the LGUs and the intended beneficiaries can participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association or a waterworks and sanitation cooperative; Level II – for the formation of a water supply and sanitation association or a waterworks and sanitation cooperative; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches, which are (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

19.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 19.8.1.

The investment cost for Phase I is estimated at about ₱271.9 million (in 1998 price level). A total of ₱187.0 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 40% and 30%, respectively. While, the remaining 30% is required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Table 19.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*74,067*	*471,028*
	Rural Area	*55,264*	*1,181,633*
	Sanitation		
	Household Toilet	*2,510*	*11,373*
	School Toilet	*39,462*	*193,572*
	Public Toilet	*15,187*	*6,870*
	Disinfection of Well	*500*	*299*
	Urban Sewerage	*N/A*	*375,541*
	Sub-Total	***186,989***	***2,240,316***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*170*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,055***	***26,782***
Water quality Laboratory		*478*	*0*
Sector Management	*Engineering Studies*	*23,956*	*241,026*
	Institutional Development	*15,412*	*166,864*
	Sub-Total	***39,368***	***407,891***
Total Direct Cost		*227,890*	*2,674,988*
Contingencies	*Physical Contingency*	*22,785*	*267,499*
	Price Contingency	*80,112*	*N.A*
	Value-Added Tax (VAT)	*21,244*	*N.A*
Total Investment Cost		***352,031***	***2,942,487***
Total Investment Cost (excluding Price Contingency)		***271,880***	***2,942,487***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 10 units of refuse collection truck. The total procurement cost is estimated at approximately ₱48.2 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱20.0 to ₱26.1 million/year during Phase I period.

19.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector is assumed to be about 3%. This means that approximately 15% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2001 to 2005 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱149.46 million. In the overall IRA allocation to the sub-sectors, urban water supply has the largest allotment of 36.1%, followed by rural water supply (25.6%). While, the share of rural sanitation is 22.7%, which is higher than that of urban sanitation of about 15.6%.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 55% of the requirements as a provincial average. Hence, there is a big shortfall of ₱122.42 million in funding. It will become ₱148.97 million in consideration of price

escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Dumalag and Roxas City (100%) are the highest among municipalities. Majority is in the range between 40% and 60% to the respective requirements, while the provincial average is 55% (42% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2005 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Cuartero, Panitan and President Roxas, which indicates that they are given priority for investments in all sub-sectors. The capital, Roxas City, is the least priority in terms of investment ranking.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province is the Implementing Agency in the meantime. The project may be merged with those of 3rd batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are two (2) eligible municipalities in terms of 5th and 6th municipalities for GOP-assisted Level I rural water supply in the province, while there are seventeen (17) municipalities to meet the conditions for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 2001-2005 was estimated at ₱99.9 million or ₱72.6 million in 1998-price levels.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGUs will increase to ₱43.8 million from ₱34.1 million (1998-price levels), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱43.8 million) and available IRA of LGUs (₱64.6 million). The required cost is covered by the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs would fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱54.5 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱34.2 million or 47% of the total project cost shall be granted to the LGUs, aside from the 3% GOP counterpart fund. The remaining ₱20.3 million or 28% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGUs will increase to ₱16.4 million from ₱13.9 million (1998 price level), considering price contingency and VAT, which is 25% of available IRA (₱64.6 million).

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱88/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2005, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱298/HH/month in 2005). Based on the experience that water fee must not exceed about 5% of income (average monthly water consumption of 15 m^3), the monthly water rate seems to be more than the affordable levels.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

19.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include collection of information on the sector, process flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. A sector monitoring system should: i) reinforce the linkage between water supply, sanitation and health; ii) involve the beneficiaries; iii) be accepted by all sectors; iv) be practical and reliable; and v) be followed through with effective feedback.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

The actual situation of the sector will surely change, so that this PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and to an updated sector investment program.

20. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF ILOILO

20.1 Provincial Profile

Iloilo Province occupies the southern and northeastern portion of Panay Island and belongs to Region VI, the Western Visayas Region. Iloilo City, a highly urbanized independent city is the provincial capital as well as the designated regional center. The province is composed of 42 municipalities and 1 component city (Passi City), with a total of 1,721 barangays, of which 266 are urban and 1,455 are rural. The province is classified as 1st class. At the municipal level, thirteen (13) municipalities belong to 5^{th} class and the rest has higher classification. Population of the province was 1,415,022 in 1995 with an annual growth rate of 1.22% between 1990 and 1995.

Physical Features

There are 2 types of climate in the province. Type I, which is experienced in the southern part has two pronounced seasons, dry from December to May and wet from June to November. Type III, which is experienced in the northern part, has no very pronounced maximum rain period, with a short dry season lasting only from one to three months. The relief of the province varies from level plains to rolling lands in the eastern part and hills to mountain peaks in the western part. Level areas are not extensive and are found mostly in the southeastern part as broad level bottoms along the rivers. On the west are rugged highlands commonly known as the western cordillera, while on the east are rolling hills along the coast dotted by small basins.

There are three (3) major rivers that traverse the province. Jalaur River with a watershed of 1,503km^2 is the largest. About 74% of the total land area of the province constitutes agricultural land including built-up area. Forestland is 15%, while open land area is 8%. The remaining 3% are either inland, fishpond or mangrove areas.

Socio-economic Aspects

The province is basically an agricultural province, although the establishment of the Regional Agro-Industrial Center will serve as another stimulus to the economic growth of the province. The major economic activity is still farming. Principal crops cultivated are palay, corn, coconut and sugarcane. Agri-based industries are the production of refined sugar, feeds and processing of marine products.

The average annual family income in 1994 was ₱ 58,883. Based on the established poverty threshold income of P 47,133 per family in Region VI for 1994, about 47% of the total number of families lived within and below the poverty threshold.

All municipalities have electric supply, but with only 52% household coverage. Telephone service is also available in all municipalities. Land transportation is available by means of bus, jeepney, taxi and tricycle. Industrial/business and commercial establishments in the province total to 2,474, while tourism-related facilities total to 47.

Provincial population growth rates had been declining for the last 6 census years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 79%, while the remaining 21% are urban.

The province has a total of 1,149 schools consisting of 981 elementary schools, 140 high schools and 28 tertiary/technical schools. A large part of the population had attained elementary or high school levels of education.

An indicator of health problems related to water supply and sanitation is the incidence of water-related diseases. The reported cases in the province were diarrhea, typhoid, dysentery, intestinal parasitism, conjunctivities, viral hepatitis, gastroenteritis, skin disease, scabies and dengue fever.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 21% of the total households in the province relied on the municipal refuse collection services.

20.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 29 Level III systems operating under different types of ownership (authority or association) together with their service coverage. These are fifteen (15) Water Districts, five (5) Municipal Waterworks and nine (9) association operated systems. Among them, Metro Iloilo WD covers neighboring 6 municipalities and Iloilo City. Common issues encountered in some waterworks are rationing due to insufficient water pressure caused by limited water source, inadequate capacity of distribution pipes due to inappropriate planning and designing, and insufficient water quality examination. Collection efficiency of water charges is quite high at bigger waterworks, which is in contrast with smaller waterworks that experienced very poor charge collection due to weak management practice.

There are 163 Level II systems operating in the municipalities. The majorities of which are utilizing spring sources (140 systems), while 23 systems use shallow/deep wells. Most of them practice scheduled water supply (2 to 8 hours a day) due to insufficient water source/insufficient capacity of the facilities. Such problems are mainly caused by order-less expansion or tapping of individual connections without due considerations, resulted in insufficient water flow/ reduction of water pressure. It is also common that water quality examination is not adequately conducted. The waterworks using electric pumps impose water rates ranging from ₱10 to 75/HH/month as flat rate, while the rest using spring sources supplies water with flat rate (₱5 to 10/HH/month) or free of charge. Regarding repair works, some waterworks collects required money from beneficiaries and hire local contractor. Others request to barangay officials for assistance.

Level I facilities are common in rural barangays. Of the 60,980 operational Level I facilities, 57 percent are shallow wells. In the course of PW4SP preparation, 30% of the shallow wells were assumed as unsafe water source. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 39% and 61%, respectively. The share of developed springs in public facilities is 4%.

About 63% or 945,000 of the present population (1,489,600 comprising 21% in urban area and 79% in rural area) are adequately served. Under area classification, 69% of urban population and 62% of rural population have access to safe water sources/facilities. Of the

served population, 11% or 106,700 persons are served by Level III systems. About 85% or 806,400 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 67% or 187,452 of the total households, which is well higher than the national coverage of 60%. These toilets consist of 6% flush type, 75% pour-flush type and 19% VIP/sanitary pit latrine. In municipalities that have high water service coverage (San Miguel, Dingle, Badiangan), high sanitation coverage occurs and adversely, in low water supply coverage (Anilao, San Dionisio, San Joaquin), low sanitation coverage also occurs. Service coverage in urban area is 86%, while in rural area, the coverage is 62%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 4,144 toilets installed at 1,142 schools. Only 47% of the students is adequately served by sanitary toilets (47% also for public school students). The present average ratio of 81 students per sanitary toilet is over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 154 public utilities; public markets, bus/jeepney terminals, and parks or plazas. Almost all public utilities (97%) are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

20.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code (1991) has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

At the central level, there are three line departments (DILG, DPWH and DOH) and two government owned and controlled corporations (LWUA and MWSS) responsible for planning

and implementation of the sector projects. The role and responsibilities of these agencies have been defined by the NEDA Board: DILG's participation will consist of general administration and institution building, such as assistance to LGUs in the formation of Rural and/or Barangay Waterworks and Sanitation Associations (RWSAs/BWSAs) and in the identification of water supply systems; LWUA shall implement only financially viable Level-III water supply projects in areas outside the MWSS jurisdiction; DPWH, together with DILG and DOH, will provide technical assistance to LGUs in the planning, implementation and operation and maintenance of water supply facilities. Other departments are concerned with macro-planning, national resource allocation decisions, as well as exercise of regulatory powers for tariff setting, environmental protection and management issues.

At the provincial level, the offices involved in WATSAN activities are the Provincial Planning and Development Office (PPDO), the Provincial Engineering Office (PEO), the Provincial Health Office (PHO) and other offices concerned. At the municipal/city level, planning offices, engineering offices and health offices of municipalities/cities are also involved. There are central agency field offices (DPWH and DILG) working on the sector. Water Districts (WD), RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Water Supply and Sanitation Program Management Office (WSS-PMO/DILG at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

LGUs are able to implement WATSAN projects using locally generated funds maid available by their respective legislative bodies. Most of the Level I and II systems have been implemented by the barangays themselves, while the Level III systems for urban areas have been implemented by WDs/waterworks. The province's implementing capacity is limited and weak, although it has had some experience in implementing Level II & III projects. For future WATSAN projects, the LGUs will still require assistance from national government line-agencies.

Most of the level I/II facilities are operated/managed by barangays or communities. Although there are a few remaining operational BWSAs, many of them need assistance in institutional strengthening. Minor repair of the facilities is done by barangays or communities, but major repair works require assistance from the municipalities and the province. For the urban areas, the province has the Metro Iloilo WD which covers multiple municipalities around the metro area, while other WDs supply water through level III systems to their designated areas. These WDs possess a high level of management expertise.

Monitoring activities in the province are done on a project basis and are limited to specific projects (such as projects assisted by national and/or external agencies). Moreover, monitoring is done only in terms of physical performance against financial requirements. There is wide dissatisfaction among implementors themselves with the existing monitoring system. Poor monitoring leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance. In addition, it should be conducted periodically in order to develop a more reliable database for the sector.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently. This will require substantial input and support.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects in the Province of Iloilo. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs, which creates a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity have been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- Water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- Operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.
- Barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- Consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

20.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 88% of the total income.

Actual expenditures for the same period were 65.79% of the total revenue. These expenditures are further broken down into personnel (39.77%), capital outlay (14.25%), and operation and maintenance expenses (11.77%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱97.6 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1995-1999, the 20% DFs of the province were sufficient to cover the actual expenditures. For 1999, surplus is expected to reach around ₱53.83 million.

The Provincial government has not given priority to WATSAN sector. For the period 1995-1999, out of a total ₱368 million (20% DF), less than a million was actually disbursed to the WATSAN sector.

The sector projects in previous years were funded by UNICEF and were undertaken by PPDO, PEO and PHO. The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector project implementation, funding sources are provincial government, CDF (Congressmen) and the municipal government, while the implementing agencies are the PEO, DPWH-District Office and the Municipal Government, respectively.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or waterworks bear the entire cost. Those for WDs are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱5.00 - ₱20.00 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 2.54% for Level III services. Thus, the current water rates seem to be within the affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

20.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geology of Iloilo province located in the southeastern part of Panay islands is complex and is mainly attributed to tectonic and magnetic actions generated from Cretaceous to Quaternary period. Based on stratigraphic correlation, the oldest rocks in the area are the completely folded and faulted assemblage of igneous and metamorphic rocks. During late Miocene epoch, serpentinized igneous rocks of Cretaceous period to Oligocene epoch are assumed to have intruded through old fractures accompanied by faulting.

Overlying unconformably the basement complex is the Tertiary sequence of volcanic and sedimentary rocks. Middle Miocene volcanism intervened with the deposition of the younger Oligocene to middle Miocene sedimentary rocks. Continuous accumulation of sediments in this subsiding basin gave rise to the formulation of late Miocene to Pliocene sedimentary sequence, composed of sandstone, shale, limestone, mudstone and conglomerate. Last to be deposited before upliftment to the area are the Plio-Pleistocene claystone, sandstone, siltstone, conglomerate lenses, limestone and calcarenite lenses.

Physiographic configuration is an expression of structures that are formed throughout the complex geologic evolution of the province and the whole of Panay and Guimaras Island. The main structures trend more or less, N-S, NE and NW. The Tertiary systems are generally affected by folding and faulting, while Quaternary systems are affected by normal or gravity faulting. In general, the structural trend of the province is attributed to steeply sloping terrains and moderate to steep dips.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Solo shallow well areas in the province are limited in the eastern islets. Deep well area covers about 75% of Iloilo, while difficult area falls on the remaining area. Ironic water problem is extended to most of the Iloilo Plain and eastern rolling hills. The municipalities fall on this problem are Bingawan, Passi City, San Enrique, Duenas, Dingle, Mina, Pototan, New Lucena, Zarraga, Dumangas and Leganes in the Iloilo Plain, and Batad, San Dionisio, Sara, Lemery, San Rafael and Ajuy in the rolling hills. Acidic groundwater is confirmed in the western Iloilo Plain and San Dionisio. Groundwater with saline water intrusion is reported in southern seashore facing to Panay Gulf from Barotac Nuevo to San Joaquin. High chloride content in groundwater was also reported in the municipality of Lambunao, which is believed as the cause of fossil water.

Referring to the inventory of water sources prepared during the study, the province has 911 developed springs currently serving the province. Such spring sources come out from the mountain range and rolling hills areas in the western and eastern parts of the province. A

total of 36 untapped springs for future development is reported in the same location of developed springs. Other municipalities out of the above-mentioned area have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 20 to 118 meters in the recent deposits and the Plio-Pleistocene series. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. In the western part of the Iloilo Plain, groundwater is characterized by slightly higher iron contents and acid pH. Such quality is caused either by groundwater itself, well materials eluded in acid water, or combination of groundwater and well materials. In this case, deep wells shall be designed with anti-corrosive materials such as PVC and SUS.

The Metro Iloilo Water District has a plan to develop additional water source with about 30,000 m^3/day for the expansion of its franchise service area by the year 2010. Water source to be developed is surface water from Tigum River and supplemental source during dry season is groundwater at Santa Barbara well field. The river waters in the Iloilo Plain are turbid and colored because of limy formation in the upstream and clayey topsoil in the downstream areas.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells and the preparation of groundwater database, prior to the detailed design or in the pre-construction stage. The municipalities that fall on this group are located in the central Iloilo Plain and the eastern rolling hills.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) relative elevation between the two points.

20.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage and viable investment using available IRA both in urban and rural water supply as shown in Table 20.6.1.

Table 20.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***69***	***70***	***95***
	Rural Area	***62***	***65***	***93***
Sanitation	***Urban HH Toilet***	***86***	***93***	***93***
	Rural HH Toilet	***62***	***75***	***93***
	School Toilet	***47***	***70***	***90***
	Public Toilet	***97***	***100***	***100***
Sewerage	***Urban Area***	***0***	***Not applicable***	***50***
Solid Waste	***Urban Area***	***98***	***100***	***Not applicable***

Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water

supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2005. Additional service coverage of the sector by phase is shown in Table 20.6.2.

The necessary water supply facilities for Phase I include 27 deep wells/springs for 5,970 house connections in urban area, and 23 Level II systems with spring sources and 1,470 Level I wells/springs for rural area. For Phase II, 60 deep wells/springs for additional 66,000 connections and 7,510 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 50% of Level I facilities will be implemented by the LGUs. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. Two new laboratories shall be established at the building of the existing hospitals in Calinog and Sara to strengthen water quality examination. For these laboratories, each one (1) set of water quality test instruments/equipment shall be provided.

Table 20.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***Persons***	***31,467***	***263,920***
	Rural Area	***Persons***	***127,272***	***461,804***
Sanitation	***Urban HH Toilet***	***No. of Households***	***11,221***	***34,400***
	Rural HH Toilet	***No. of Households***	***50,486***	***145,701***
	School Toilet	***No. of Students***	***111,438***	***120,121***
	Public Toilet	***No. of Utilities***	***158***	***210***
Sewerage	***Urban Area***	***Persons***	***Not applicable***	***108,599***
Solid Waste	***Urban Area***	***No. of Households***	***29,227***	***Not applicable***

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of

the existing system/s was first considered. In case there are no Level III systems, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Currently, 15 out of the total 43 municipalities/city have no Level III systems in their urban areas. At present, Metro Ilolo Water District has an expansion plan to meet future needs in the service area applying BOT scheme. WDs in Ajuy, Anilao and Passi City have respective plans of expansion/water source augmentation. Miagao WD has been undertaking expansion of pipelines. Lemery and Tubungan have respective plans for a new Level III system.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economic construction.

Among them, the possibility of integration for Metro Iloilo WD, Alimodian and Leganes may be studied both in physical and management systems. Integration of small Level III systems for operation and management shall also be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 11,200 household toilets, 109 public school toilets and 158 public toilets for urban area. In rural area, 50,500 household toilets and 438 public school toilets are necessary. Solid waste disposal will need 25 refuse collection trucks. For Phase II, urban area will require 34,400 household toilets, 124 public school toilets and 210 public toilets. In rural area a total of 145,700 household toilets and 1,515 public school toilets are necessary.

20.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the development of the WATSAN sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who share in the vision, must be identified and harnessed for sector management. LGUs will improve the physical infrastructure for water, sanitation, and related environmental services while acquiring

permanent capabilities for planning, management and development of sustainable institutions in the sector. Local planners need to focus on long-term requirements.

In line with the proposed adjustments, the province will adopt the following policies and strategies for the development of the sector:

- Facilities management with emphasis on sustainability through community commitment and increased responsibility;
- Project selection and prioritization based on: i) beneficiaries' commitment and willingness to pay; ii) current water, sanitation and health conditions; and iii) potential for growth;
- Appropriate technology to local conditions and resources; economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach in the provision of potable water supply, sanitation, and hygiene education;
- Equal provisions of water supply and sanitation services for rural and urban areas, and for wealthy and depressed areas;
- Policy and execution on consistent basis for cost recovery and rational cost sharing (subsidy);
- Private sector participation: The LGU will gradually transfer its technical assistance functions to the private sector. The LGU will provide needed incentives and establish the regulatory framework for private sector participation;
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Broader concerns for environmental protection and management in sector development;
- Provision of water supply and sanitation services under emergency conditions

For the successful implementation of these polices and strategies, it is necessary that a common vision be shared by LGU officials and by a critical mass of its residents, who can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of WATSAN associations; water quality assurance; and the protection of water resources and enhancement of watersheds.

- Measures to avail of national and external funds, including MDF, in addition to local taxes and allocation from the IRA 20% Development Fund as a primary source of funds. National and external funds are diminishing but assumed to continue in the medium-term to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and incentives are provided for the Unit. In the long term, the unit may be promoted to the same level as the PPDO. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with the municipalities that, for their part, will establish a Municipal Sector Liaison Team (MSLT). The WSS-PMO of DILG shall, however, continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of community-based WATSAN associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems, RWSAs for Level II and waterworks for Level III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. The community, especially women, shall have equal opportunities to be trained and involved in all phases of project implementation (planning, construction, and O&M) and in participating in health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Office and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels, to promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

There are three ways that both the LGUs and the intended beneficiaries can participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association or a waterworks and sanitation cooperative; Level II – for the formation of a water supply and sanitation association or a waterworks and sanitation cooperative; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches, which are (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

20.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 20.8.1.

The investment cost for Phase I is estimated at about ₱882.7 million (in 1998 price level). A total of ₱602.4 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 22% and 45%, respectively. While, the remaining 33% are required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle;

Table 20.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*133,090*	*1,037,914*
	Rural Area	*273,137*	*1,232,236*
	Sanitation		
	Household Toilet	*8,152*	*30,057*
	School Toilet	*127,725*	*382,707*
	Public Toilet	*57,133*	*75,936*
	Disinfection of Well	*3,169*	*576*
	Urban Sewerage	*N/A*	*792,773*
	Sub-Total	***602,406***	***3,552,198***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*430*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,315***	***26,782***
Water quality Laboratory		*956*	*0*
Sector Management	*Engineering Studies*	*77,006*	*354,832*
	Institutional Development	*58,952*	*245,653*
	Sub-Total	***135,958***	***600,484***
Total Direct Cost		***740,635***	***4,179,464***
Contingencies	*Physical Contingency*	*74,047*	*417,946*
	Price Contingency	*270,534*	*N.A*
	Value-Added Tax (VAT)	*68,152*	*N.A*
Total Investment Cost		***1,153,368***	***4,597,410***
Total Investment Cost (excluding Price Contingency)		***882,669***	***4,597,410***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. Water quality surveillance, and 5. Administrative support.

and 25 units of refuse collection truck. The total procurement cost is estimated at approximately ₱44.1 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱46.0 to ₱63.0 million/year during Phase I period.

20.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector is assumed to be about 4%. This means that approximately 20% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2001 to 2005 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱415.24 million. In the overall IRA allocation to the sub-sectors, rural water supply has the largest allotment of 41.3%, followed by rural sanitation (22.6%). The share of urban water supply is 18.3%, while that of urban sanitation is around 17.80%.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 47% of the requirements as a provincial average. Hence, there is a big shortfall of ₱467.4 million in funding. It will become ₱581.5 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Ajuy, Badiangan, Barotac Nuevo, Dingle, Lemery, Passi City, San Miguel, and Santa Barbara (100%) are the highest among municipalities. Majority is in the range between 40% and 60% to the respective requirements, while the provincial average is 47% (36% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2005 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Carles, Oton, and Anilao. The municipality of San Miguel is the least priority in terms of investment ranking.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province is the Implementing Agency in the meantime. The project may be merged with those of 3rd batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are nine (9) eligible municipalities in terms of 5th and 6th municipalities for GOP-assisted Level I rural water supply in the province, while there are forty two (42) municipalities to meet the conditions for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 2001-2005 was estimated at ₱360.7 million or ₱259.9 million in 1998 price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGUs will increase to ₱156.7 million from ₱122.2 million (1998-price levels), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱156.7 million) and available IRA of LGUs (₱186.4 million). The required cost is covered by the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs would fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱194.9 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱126.4 million or 48% of the total project cost shall be granted to the LGUs, aside from the 1.4% GOP counterpart fund. The remaining ₱68.6 million or 26.4% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGUs will increase to ₱64.1 million from ₱53.6 million (1998 price level), considering price contingency and VAT, which is 34% of available IRA (₱186.4 million).

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱92/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2005, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱269/HH/month in 2005). Based on the experience that water fee must not exceed about 5% of income (average monthly water consumption of 15 m^3), the monthly water rate seems to be affordable.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

20.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include collection of information on the sector, process flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. A sector monitoring system should: i) reinforce the linkage between water supply, sanitation and health; ii) involve the beneficiaries; iii) be accepted by all sectors; iv) be practical and reliable; and v) be followed through with effective feedback.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

The actual situation of the sector will surely change, so that this PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the

reformulation of objectives, strategies, new policies and policy revisions, and to an updated sector investment program.

21. PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN FOR THE PROVINCE OF NEGROS OCCIDENTAL

21.1 Provincial Profile

Negros Occidental Province is located in the western portion of Negros Island. It is one of the six provinces that compose Region VI, the Western Visayas Region. Bacolod City, a highly urbanized independent city is the provincial capital. The province is composed of 22 municipalities and 10 cities including Bacolod City. The province (excluding Bacolod City) has 600 barangays, of which 195 are urban and 405 are rural. The province is classified as 1st class. At the municipal level, three (3) municipalities belong to 5^{th} class and the rest has higher classification. Population of the province was 2,031,841 in 1995 with an annual growth rate of 1.52% between 1990 and 1995.

Physical Features

There are 2 types of climate in the province. Type I, which is experienced in the southern part of the province has two pronounced seasons, dry from December to May and wet from June to November. Type III in northern and central parts of the province, which has no very pronounced maximum rain period, has a short dry season lasting only from one to three months. The major geomorphic feature of the province is the chain of volcanic peaks consisting of Mt. Canla-on (2,450 m), Mt. Mandalagan (1,879 m) and Mt. Silay (1,535). Mt. Canla-on, which is considered active and had a last phreatic explosion in July 1997, is rather isolated from the two extinct volcanoes.

There are eight (8) major rivers that traverse the province. Hilabangan River with a watershed of 1,945km^2 is the largest. About 67% of the total land area of the province constitutes agricultural land. Forestland is 31%, while the remaining 2% are either inland, fishpond or mangrove areas.

Socio-economic Aspects

The province is basically an agricultural province. Sugarcane, rice and coconut are its principal crops, although the province is presently promoting crop diversification especially for high value crops. A number of families also depend on commercial fishery and fishpond production for their livelihood. Agri-based industries are the production of refined sugar and the processing of fishery and other aquatic products that are being exported to other countries. These industries are major generators of employment in Negros Occidental. Currently, the

province is actively supporting the development of small-scale and cottage industries as well as tourism.

The average annual family income in 1994 was ₱ 56,601. Based on the established poverty threshold income of ₱ 47,133 per family in Region VI for 1994, about 44% of the total number of families lived within and below the poverty threshold.

All municipalities have electric supply, but with only 55% household coverage. Telephone service is also available in all municipalities. Land transportation is available by means of bus, jeepney, taxi, tricycle, pedicab and motorcycle. Industrial/business and commercial establishments in the province total to 9,507, while tourism-related facilities total to 78.

Provincial population growth rates had been fluctuating for the last 6 census years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 65%, while the remaining 35% are urban.

The province has a total of 1,217 schools consisting of 944 elementary schools, 224 high schools and 49 tertiary/technical schools. A large part of the population had attained elementary or high school levels of education.

An indicator of health problems related to water supply and sanitation is the incidence of water-related diseases. The reported cases in the province were diarrhea, typhoid/parathyphoid, dysentery, viral hepatitis, gastroenteritis, skin disease, scabies, dengue fever, malaria and schistosomiasis.

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 24% of the total households in the province relied on the municipal refuse collection services.

21.2 Existing Facilities and Service Coverage

The service coverage of each sub-sector is estimated as percentages of served population/ households/utilities against the total number. In water supply, safe classification of Level I facilities is introduced and further categorized into public or private. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of

public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has 32 Level III systems operating under different types of ownership (authority or association) together with their service coverage. These are seventeen (17) Water Districts, eight (8) Municipal Waterworks and seven (7) RWSAs operated systems. Common issues encountered are rationing due to insufficient water pressure caused by limited water source, inadequate capacity of distribution pipes due to inappropriate planning and designing, and insufficient water quality examination. Collection efficiency of water charges is quite high at bigger waterworks, which is in contrast with smaller waterworks that experienced very poor charge collection due to weak management practice.

There are 230 Level II systems operating in the municipalities and a component city. The majorities of the waterworks are utilizing spring sources (198 systems), while 32 systems use deep/dug wells. Most of them practice scheduled water supply (2-12 hours a day) due to insufficient water source/insufficient capacity of the facilities. It is also common that water quality examination is not adequately conducted. Level II systems using electric pump impose water rates ranging from ₱60 to 200/HH/month, while the rest using spring sources supplies water with flat rate (₱5 to 10/HH/month) or free of charge. Regarding repair works, some waterworks collects required money from beneficiaries and hire local contractor. Others request to barangay officials for assistance.

Level I facilities are common in rural barangays. Of the 30,800 operational Level I facilities, 39 percent are shallow wells. In the course of PW4SP preparation, 30% of the shallow wells were assumed as unsafe water sources. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 53% and 47%, respectively. The share of developed springs in public facilities is 7%.

About 76% or 1,611,300 of the present population (2,127,800 comprising 35.5% in urban area and 64.5% in rural area) are adequately served. Under area classification, 81% of urban population and 73% of rural population have access to safe water sources/facilities. Of the

served population, 16% or 252,100 persons are served by Level III systems. About 79% or 1,269,800 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 75% or 305,772 of the total households, which is well higher than the national coverage of 60%. These toilets consist of 5% flush type, 52% pour-flush type and 43% VIP/sanitary pit latrine. In municipalities that have high water service coverage (Salvador Benedicto, La Carlota City, Pulupandan), high sanitation coverage occurs and adversely, in low water supply coverage (La Castellana, Silay City, Toboso), low sanitation coverage also occurs. Service coverage in urban area is 80%, while in rural area, the coverage is 73%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 5,868 toilets installed at 1,172 schools. Only 40% of the students are adequately served by sanitary toilets (39% for public school students). The present average ratio of 92 students per sanitary toilet is over the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 216 public utilities; public markets, bus/jeepney terminals, and parks or plazas. Almost all public utilities (92%) are served with sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

21.3 Existing Sector Arrangements and Institutional Capacity

Institutional Framework

The Local Government Code (1991) has essentially re-defined the roles, relationships, and linkages of central, provincial, municipal and barangay institutions in the provision of basic social services, including water and sanitation. The new direction mandates the LGUs to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

At the central level, there are three line departments (DILG, DPWH and DOH) and two government owned and controlled corporations (LWUA and MWSS) responsible for planning

and implementation of the sector projects. The role and responsibilities of these agencies have been defined by the NEDA Board: DILG's participation will consist of general administration and institution building, such as assistance to LGUs in the formation of Rural and/or Barangay Waterworks and Sanitation Associations (RWSAs/BWSAs) and in the identification of water supply systems; LWUA shall implement only financially viable Level-III water supply projects in areas outside the MWSS jurisdiction; DPWH, together with DILG and DOH, will provide technical assistance to LGUs in the planning, implementation and operation and maintenance of water supply facilities. Other departments are concerned with macro-planning, national resource allocation decisions, as well as exercise of regulatory powers for tariff setting, environmental protection and management issues.

At the provincial level, the offices involved in WATSAN activities are the Provincial Planning and Development Office (PPDO), the Provincial Engineering Office (PEO), the Provincial Health Office (PHO) and other offices concerned. At the municipal/city level, planning offices, engineering offices and health offices of municipalities/cities are also involved. There are central agency field offices (DPWH and DILG) working on the sector. Water Districts (WD), RWSAs and BWSAs have been organized to deal with the actual delivery of services. Some LGUs implement and operate municipal or provincial water and sanitation systems. Water Supply and Sanitation Program Management Office (WSS-PMO/DILG at the central level), ad hoc inter-agency committees, and task forces have been organized to address coordination issues.

LGUs implement WATSAN projects using funds made available for the purpose by their respective legislative bodies. Generally, Level I & II systems are implemented by barangays using funds provided by congressmen, while Level III systems are initiated by municipalities. The implementing capacity of the LGUs in the province is limited and weak. During the planning and implementation of future water supply projects, the province will still require assistance from national government line-agencies and even NGOs. There are a number of WDs in the province, which possess high level of management expertise. There are a few functioning BWSAs, but most of them have poor records in O&M of facilities. Their operating capacity will need to be strengthened through a joint effort between the province and the DILG.

Monitoring activities in the province are done on a project basis and are limited to specific projects (such as projects assisted by national and/or external agencies). Moreover, monitoring is done only in terms of physical performance against financial requirements. There is wide dissatisfaction among implementors themselves with the existing monitoring

system. Poor monitoring leads to the problem of reliability of information coming from the field. There is a need to establish a system similar to project-based monitoring which will have a direct link to performance. In addition, it should be conducted periodically in order to develop a more reliable database for the sector.

The current major institutional issues are: managing the transition process and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently. This will require substantial input and support.

Community Development

There has been very limited experience in the province in planning or implementing community development processes for the WATSAN sector projects in the Province of Negros Occidental. The manner by which CD/CO work is done is how it was done in past sector projects, particularly the Barangay Water Program. As such, there is an apparent lack of a permanent structure and of the identified major responsible players on CD in the LGUs which creates a serious gap to the critical linkage and support of sector projects, from the provincial to the municipal and as far down as the barangay levels. Also, training programs that should update the knowledge and skills of LGUs on this important activity have been very few and far between.

Gender Consideration

For some time now, the Province has been implementing gender-sensitive projects. Those that relate to the WATSAN sector, however, have been limited to health and sanitation, as well as hygiene projects. Gender and development, as a whole, has still to be fully integrated in the mainstream of projects planned and implemented for the province and its LGUs, including the WATSAN sector.

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- Water-fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.

- Operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.
- Barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- Consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

21.4 Past Financial Performance in Water Supply and Sanitation

Since the devolution of the water supply and sanitation project to the LGUs in 1992, the LGUs have been dependent on the Internal Revenue Allotment (IRA) for their financial requirements. For the period 1995-1998, the IRA of the province represented about 70% of the total income.

Actual expenditures for the same period were 75.79% of the total revenue. These expenditures are further broken down into personnel (41.51%), capital outlay (5.38%), and operation and maintenance expenses (28.90%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱135.95 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1996-1997, the 20% DFs of the province were not sufficient to cover the actual expenditures. However, for 1999, the 20% DF covered 100% of actual expenditures.

The Provincial government has given relatively higher priority to WATSAN sector than other provinces in the subject region. For the period 1995-1999, around 14% of total capital expenditures was allotted to the WATSAN sector.

The sector projects in previous years were funded by UNICEF and were undertaken by PPDO, PEO and PHO. The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector project implementation, funding sources are provincial government, CDF (Congressmen) and the municipal government, while the implementing agencies are the PEO, DPWH-District Office and the Municipal Government, respectively.

With regard to the capital cost recovery for Level I water supply, it was free to the community in the past. For Level II systems, the capital cost is shouldered by the RWSAs through a loan or grant, while for Level III, the WDs or waterworks bear the entire cost. Those for WDs are usually financed by the LWUA for a period of up to thirty (30) years with interests ranging from 8.5-12.5 %. For less capable WDs, soft loans without interest for the first 5 years of operations are available. Regarding sanitation sector, construction of the superstructure and the depository of household toilet is through self-help.

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association that handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since beneficiaries do not recognize the cost requirements. The monthly fees for Level I in the active association range from ₱5.00 - ₱30.00 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees. LWUA's policy is to make WDs financially viable, self-sufficient and be able to repay their loans obtained to improve water supply services.

The percentage of water fee to median monthly household income is about 4.95% for Level III services. Thus, current water rates seem to be within the affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

21.5 Water Source Development

The study on water source development covers the entire province. It gives an emphasis on groundwater availability rather than surface water considering its economic advantages and current practices in potable water use.

The geographic features of Negros Occidental are represented by the volcanoes in the northwestern part, the alluvial fans in the western central plain and the undulating and rolling

lands in the southern part. In the northwestern part of the province, volcanoes are prominent, namely Mt. Silay, Mt. Mandalagan and Mt. Canlaon. The first 2 mountains are classified as inactive volcanoes, while the remaining one is an active volcano. In the southern part of the province, the oldest geologic region is extensively distributed. Same geologic rock units are abruptly found in the northeastern and the southern sides of the volcanoes.

The geology and topography of the province are considerably affected by volcanic activity. Mt. Canlaon had undoubtedly played a leading role for the activity with several times of the phreatic explosion in July 1997. The erosion of sediments from the higher lands and the violent eruptions had filled up the portions of the western and southern parts of the province. The mudflow carried much soil materials into the Guimaras Strait.

The present hills in the vicinity of La Castellana to San Carlos City are remnants of another volcanic activity. The rolling of heavy and coarse angular stones mixed with volcanic ash has formed such short and steep hills. The river water crossing the eastern alluvial fans carried volcanics with pre-deposited materials.

The upliftment of the western portion of the province within Recent times is indicated by the raised beaches near Pontevedra, the bluffs of Bacolod and the incised meandering stream in the volcanic and littoral plains. The remains of limestone formations are found at the summit and slopes of the hills and mountains of the province. Subsequently, mountain-making movements of tremendous force raised the rocks to great heights.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Solo shallow well areas in the province are limited. Deep well area covers about 75% of Negros Occidental, while difficult area falls on the remaining area. Ironic water problem is extended to the northern piedmont area from the municipality of Calatrava to Bago City in the counterclockwise order. Groundwater with saline water intrusion is prevalent in most of western seashore of the province, extensively distributed in the central part.

Referring to the inventory of water sources prepared during the study, the province has 997 developed springs currently serving the province. Such spring sources come out from the volcanoes and from the mountain system area in the northwestern and southern parts of the province. A total of 25 untapped springs for future development is reported in the same location of developed springs. Other municipalities out of the above-mentioned area have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 20 to 150 meters in the recent deposits and the Plio-Pleistocene series. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. In piedmont areas of the northern volcanoes, groundwater is characterized by slightly higher iron contents. Such quality is caused either by groundwater itself, well materials eluded in acid water, or combination of groundwater and well materials. In this case, deep wells shall be designed with anti-corrosive materials such as PVC and SUS.

For the preparation of the medium-term development plan in terms of water source development, utilization of spring sources was given first priority, with special attention to the development of Level III systems. Groundwater source availability as second priority was presented by municipality with standard specifications of wells, including parameters such as well depth, static water level and specific capacity.

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to conduct detailed groundwater investigations entailing the construction of test wells including groundwater database and electric prospecting, prior to the detailed design or in the pre-construction stage. The cities that fall on this group are located in the northwestern area from Talisay to Bago.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) relative elevation between the two points.

21.6 Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage and viable investment using available IRA both in urban and rural water supply as shown in Table 21.6.1. Sanitation sector target is applied in order to attain sufficiency and balanced distribution of the facilities in urban and rural area as embodied in the PNDP. Sewerage target is set for only part of urban centers in the long-term development, while solid waste management considered the medium-term household requirements. Logistic support is considered as a minimum requirement of LGUs for the

implementation of PW4SP. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 21.6.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	***Urban Area***	***81***	***85***	***95***
	Rural Area	***73***	***78***	***93***
Sanitation	***Urban HH Toilet***	***80***	***80***	***93***
	Rural HH Toilet	***73***	***80***	***90***
	School Toilet	***39***	***60***	***90***
	Public Toilet	***92***	***100***	***100***
Sewerage	***Urban Area***	***0***	***Not applicable***	***50***
Solid Waste	***Urban Area***	***70***	***80***	***Not applicable***

Frame values are projected by municipality for respective sub-sectors; future population by urban and rural area, the number of students in public schools and the number of public utilities.

Required Facilities to Meet Target Services

Types of required facilities and their implementation criteria are determined according to service level standards as adopted by the NSMP and NEDA Board Resolutions. Urban population is planned to be served by Level III systems, however, existing Level I and II facilities are to be used during Phase I period. Level I facilities are adopted for rural water supply with limited application of Level II system where houses are clustered and suitable untapped springs are confirmed. However, it does not exclude from being implemented Level I and II facilities in urban area as individual cases in the future as well as Level III systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2005. Additional service coverage of the sector by phase is shown in Table 21.6.2.

Table 21.6.2 Additional Service Coverage by Phase

Sub-Sector	*Area/Type*	*Unit*	*Additional Service Coverage*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*Persons*	*99,537*	*589,524*
	Rural Area	*Persons*	*182,846*	*289,440*
Sanitation	*Urban HH Toilet*	*No. of Households*	*13,383*	*89,030*
	Rural HH Toilet	*No. of Households*	*41,168*	*149,682*
	School Toilet	*No. of Students*	*138,700*	*214,541*
	Public Toilet	*No. of Utilities*	*62*	*47*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*453,137*
Solid Waste	*Urban Area*	*No. of Households*	*45,695*	*Not applicable*

The necessary water supply facilities for Phase I include 28 deep wells/springs for 19,000 house connections in urban area, and 16 Level II systems with spring sources and 2,210 Level I wells/springs for rural area. For Phase II, 89 deep wells/springs for additional 147,000 connections and 4,950 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 50% of Level I facilities will be implemented by the LGUs and 10% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. Three (3) sets of water quality test instruments/equipment shall be provided to establish new laboratories at the existing district hospitals in Escalante, Kabankalan City and La Carlota City.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there are no Level III systems, a new system was recommended. Existing plan/s on the development of Level III/WD are also taken into account to determine respective system of the municipalities.

Currently, 6 out of the total 31 municipalities/cities have no Level III systems in their urban areas. At present, Three WDs (Bago, Cadiz and Talisay) undertake expansion/water source development projects financially assisted by DANIDA. The municipalities of Escalante and Salvador Benedicto have plans of expansion/new creation of Level III systems assisted by CDF. Calatrava has on-going expansion project using Land Bank loan. Other municipalities/city such as Cauayan, Himamaylan, Hinoba-an, Isabela, Toboso and Victorias have plans of expansion/creation of Level III systems as locally funded projects.

Merging of municipal systems (physical arrangement) in long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost

recovery/economic construction. Following WD/municipalities/cities may be studied for the integration both in physical and management systems:

- Kabankalan City WD, Cauayan, Himamaylan and Ilog
- Bago City WD, Pontevedra, Pulupandan, San Enrique and Valladolid
- La Carlota City WD and San Enrique
- Bacolod City WD, Silay, Talisay and Victorias
- Murcia and Bacolod CWD

Integration of small Level III systems for operation and management shall also be sought, although these systems are currently managed individually.

Moreover, Phase I sanitation will require 13,400 household toilets, 248 public school toilets and 62 public toilets for urban area. In rural area, 41,200 household toilets and 444 public school toilets are necessary. Solid waste disposal will need 23 refuse collection trucks. For Phase II, urban area will require 89,000 household toilets, 387 public school toilets and 37 public toilets. In rural area a total of 149,700 household toilets and 1,725 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

21.7 Sector Management for Medium-Term Development Plan

Institutional Framework

To effectively manage the development of the WATSAN sector, the provincial and municipal governments will have to make some adjustments in their current policies and structures. One glaring basic institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people with resources, who share in the vision, must be identified and harnessed for sector management. LGUs will improve the physical infrastructure for water, sanitation, and related environmental services while acquiring permanent capabilities for planning, management and development of sustainable institutions in the sector. Local planners need to focus on long-term requirements.

In line with the proposed adjustments, the province will adopt the following policies and strategies for the development of the sector:

- Facilities management with emphasis on sustainability through community commitment and increased responsibility;

- Project selection and prioritization based on: i) beneficiaries' commitment and willingness to pay; ii) current water, sanitation and health conditions; and iii) potential for growth;
- Appropriate technology to local conditions and resources; economical facilities, not necessarily insisting on low-cost construction.
- An integrated approach in the provision of potable water supply, sanitation, and hygiene education;
- Equal provisions of water supply and sanitation services for rural and urban areas, and for wealthy and depressed areas;
- Policy and execution on consistent basis for cost recovery and rational cost sharing (subsidy);
- Private sector participation: The LGU will gradually transfer its technical assistance functions to the private sector. The LGU will provide needed incentives and establish the regulatory framework for private sector participation;
- Seeking potential sources of local and external funds (loans and grants) to finance the capital requirements of the sector;
- Broader concerns for environmental protection and management in sector development;
- Provision of water supply and sanitation services under emergency conditions

For the successful implementation of these polices and strategies, it is necessary that a common vision be shared by LGU officials and by a critical mass of its residents, who can focus their efforts and resources to achieve sectoral goals. For this purpose, the LGU should give priority to an "Information, Education and Communication Program" aimed at creating safe water and sanitation values in communities throughout the province.

Also to be given priority by the LGU are the following:

- Measures to set up, in coordination with appropriate national and local agencies, a coordinated regulatory framework considering, among others, the following: policies on water allocation and water rights (resolution of priorities and conflicts); setting and review of water rates; registration of WATSAN associations; water quality assurance; and the protection of water resources and enhancement of watersheds.
- Measures to avail of national and external funds, including MDF, in addition to local taxes and allocation from the IRA 20% Development Fund as a primary source of funds. National and external funds are diminishing, but assumed to continue in the medium-term to be channeled through local offices of central agencies.

In the medium-term, a full-time Provincial Water Supply and Sanitation Unit (PWSU) shall be set up possibly under the PPDO. The LGU should ensure that adequate logistics and

incentives are provided for the Unit. The PWSU will continue to implement, assist and monitor all water supply and sanitation services in cooperation with other concerned provincial offices and the municipalities that, for their part, will establish a Municipal Sector Liaison Team (MSLT). The WSS-PMO of DILG shall, however, continue to provide technical and managerial assistance in the formative years of the PWSU.

For institutional arrangements, the formation of community-based WATSAN associations to decide on and participate in the establishment, operation and maintenance of water systems shall be a prerequisite to availment of project support. These may be in the form of BWSAs for Level I systems, RWSAs for Level II and waterworks for Level III systems. To provide the members with the necessary skills, training programs will be implemented by concerned national agencies and by the provincial and municipal governments. The community, especially women, shall have equal opportunities to be trained and involved in all phases of project implementation (planning, construction, and O&M) and in participating in health and hygiene education programs.

Community Development

To ensure that the full participation of the beneficiary community in sustaining sector projects is realized, it is recommended that the LGUs provide the needed human, financial and other material resources for community development work to take-off. To institute the linkage among all the actors in sector development, a CD Unit should be established within the proposed Provincial Water Supply and Sanitation Unit and a permanent CD Specialist be appointed to take charge of promoting, developing and coordinating CD and IEC programs of the province, even looking into how it can harness the participation of the private sector and train project beneficiaries. It is also recommended that a CD Specialist be assigned to the existing Municipal WATSAN Liaison Task Force to coordinate and implement all CD/CO and IEC work at the municipal level. At the barangay level, it is recommended that each Barangay Development Council (BDC) establish a WATSAN Committee that will coordinate all sector projects in the barangay as well as designate one person who can be trained on CD work.

The power of information, education and communication as a necessary foundation activity for CD has not been fully realized and maximized. It is, therefore, recommended that a comprehensive IEC program be conceptualized and implemented on the national, provincial and municipal levels, to promote a better awareness and understanding of the responsibilities of sector planners as well as the benefits due to the project beneficiaries so that the gains of the sector can be sustained on a long term basis.

It shall be the DILG who shall retain the central role as the national government agency that promotes and develops the capacities of the province and the municipalities in participatory CD approaches and IEC programs for the sector. It shall also encourage and institutionalize the participation of national NGOs, with local networks or offices that specialize in community management program and utilize these to enhance and assist the LGUs in organizing project beneficiaries. Another national agency, the LWUA, shall on the other hand, continue to promote community participation in the formation of LGU-WS into water districts and to provide regular CD assistance particularly in consultation with the community on projects, loans, and water rates adjustments.

There are three ways that both the LGUs and the intended beneficiaries can participate in sector development: Level I – for the planning and implementation of sector projects and in the formation and management of a water supply and sanitation association or a waterworks and sanitation cooperative; Level II – for the formation of a water supply and sanitation association or a waterworks and sanitation cooperative; while Level III – for the formation of water districts or LGU-operated waterworks. Thus, it is important that the LGUs make the decision on the projects it can afford to implement.

To achieve this, the LGU must encourage active community participation and involvement through four approaches, which are (1) sharing relevant information on the project with the beneficiaries, (2) consulting with users on all phases of project development; (3) giving ample room to the beneficiaries to make project-related decisions; and (4) providing opportunities to the community to initiate actions for their own benefit.

On the other hand, recommended are four ways that beneficiaries themselves can participate in sector projects, some of which have been tried in the province. These are: (1) the provision of free labor and/or materials by community members; (2) the sharing of costs between project proponent and the users; (3) expressed participation of all parties through MOAs and, (4) the participation through a firm involvement and commitment of the community in the management, operation, maintenance of the system itself.

For Levels I and II, the WATSAN Unit should utilize the recommended Community Development Framework (modified from the UNDP-WATSAN Project) consisting of three phases of activities: Phase 1 is Formation of Organization; Phase 2 is Development of Organization; and, Phase 3 is Consolidation of Organization.

Gender Consideration

Since sustainability of WATSAN services depends on responding to the demands of men and women in the community, LGUs must recognize and give vital emphasis on the role of gender sensitive participation because the use, maintenance and financing of WATSAN systems require the participation of both the men and women. Thus, they should be given equal voice and opportunities in serving the community as well as in the planning, implementation and monitoring and evaluation of sector projects. To ensure the gender responsiveness of WATSAN projects, the LGUs should be trained through a Trainor's Training Program on Gender Responsive Planning as envisioned by the Philippine Plan for Gender Responsive Development (1995-2025).

21.8 Cost Estimates for Future Sector Development

The investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 21.8.1.

The investment cost for Phase I is estimated at about ₱1,499.7 million (in 1998 price level). A total of ₱1,034.9 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 40% and 42%, respectively. While, the remaining 18% are required for urban and rural sanitation. With reference to urban water supply, some cost required would be managed by newly created WD/s, which is out of public investment to be undertaken by LGUs.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 23 units of refuse collection truck. The total procurement cost is estimated at approximately ₱75.0 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is incorporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present. Likewise, annual recurrent cost in 1998 price level is estimated at ₱81.8 to ₱109.9 million/year during Phase I period.

Table 21.8.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	*Component*	*Phase I*	*Phase II*
Construction/ Rehabilitation	***Water Supply***		
	Urban Area	*411,273*	*2,082,416*
	Rural Area	*430,163*	*892,312*
	Sanitation		
	Household Toilet	*7,997*	*31,878*
	School Toilet	*161,582*	*493,152*
	Public Toilet	*22,419*	*16,995*
	Disinfection of Well	*1,499*	*416*
	Urban Sewerage	*N/A*	*3,307,900*
	Sub-Total	***1,034,934***	***6,825,069***
Procurement of Vehicle/ Equipment/Maintenance Tools	*Well Drilling Rig & Service Truck*	*0*	*26,782*
	Support Vehicle	*590*	*0*
	Well Rehabilitation Equipment	*280*	*0*
	Maintenance Tools	*310*	*0*
	Water Quality Testing Kits	*15*	*0*
	Sub-Total	***1,195***	***26,782***
Water quality Laboratory		*1,434*	*0*
Sector Management	*Engineering Studies*	*133,391*	*453,338*
	Institutional Development	*86,038*	*313,849*
	Sub-Total	***219,428***	***767,187***
Total Direct Cost		*1,256,991*	*7,619,038*
Contingencies	*Physical Contingency*	*125,691*	*761,904*
	Price Contingency	*464,738*	*N.A*
	Value-Added Tax (VAT)	*117,087*	*N.A*
Total Investment Cost		***1,964,507***	***8,380,941***
Total Investment Cost (excluding Price Contingency)		***1,499,685***	***8,380,941***

Note: Institutional development includes;
1. Capacity enhancement program, 2. Community management program, 3. Health and hygiene education, 4. ater quality surveillance, and 5. Administrative support.

21.9 Financial Arrangements for Medium-Term Development Plan

Financial arrangements to attain medium-term (Phase I) targets were sought focusing on available Internal Revenue allotment (IRA). The financial shortfall was first identified for this sector and recommendations were made to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in Government assistance to this sector and effective investments and cost recovery.

The projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Referring to the experience in other provinces, provincial allocation to the relevant sector is assumed to be about 4%. This means that approximately 20% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2001 to 2005 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱790.79 million. In the overall IRA allocation to the sub-sectors, rural water supply has the largest allotment of 40.6%, followed by urban water supply (37%). While, the share of rural sanitation is 13.13%, which is higher than that of urban sanitation share of about 9.27%.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 53% of the requirements as a provincial average. Hence, there is a big shortfall of ₱708.89 million in funding. It will become ₱886.52 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Cadiz City, Calatrava, Himalayan, La Carlota City, Salvador Benedicto, and Valladolid (100%) are the highest among municipalities. Majority is in the range between 30% and 60% to the respective requirements, while the provincial average is 53% (40% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is common to all sub-sectors that the service coverage in the year 2005 would not sustain even the present levels in the provision of only projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Isabela, La Castellana, and Enrique B. Magalona, which indicates that they are given priority for investments in all sub-sectors. La Carlota City is the least priority in terms of investment ranking.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province is the Implementing Agency in the meantime. The project may be merged with those of 3rd batch provinces in preparation of the PW4SP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are two (2)

eligible municipalities in terms of 5th and 6th municipalities for GOP-assisted Level I rural water supply in the province, while there are twenty (20) municipalities to meet the conditions for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector. The required services will cover technical and institutional/community development aspects of the project. The overall project cost for the implementation period 2001-2005 was estimated at ₱191.1 million or ₱138.1 million in 1998 price level.

Two alternatives for the financial arrangements were studied, these are: i) Case 1-Utilization of IRA only; and ii) Case 2-Utilization of IRA and MDF.

For Case 1, GOP shall share 50% of the overall project cost in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGUs will increase to ₱83.2 million from ₱64.9 million (1998-price levels), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱83.2 million) and available IRA of LGUs (₱92.5 million). The required cost is covered by the available IRA.

For Case 2, the utilization of the MDF is considered in case the LGUs would fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱103.5 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱66.9 million or 48% of the total project cost shall be granted to the LGUs, aside from the 1.5% GOP counterpart fund. The remaining ₱36.6 million or 27% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGUs will increase to ₱33.8 million from ₱28.3 million (1998 price level), considering price contingency and VAT, which is 37% of available IRA (₱92.5 million).

Cost recovery and cost sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum ₱96/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (₱114HH/month in 2005, less than 2% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (₱269/HH/month in 2005). Based on the experience that water fee must not exceed

about 5% of income (average monthly water consumption of 15 m^3), the monthly water rate seems to be affordable.

For sanitation, LGU's support is limited to the provision of toilet bowl for pour-flush toilets as an incentive to increase the distribution of water-sealed toilets. To expedite the sanitation sector improvement, introduction of specific loans with low interest rate and longer repayment period may be effective. For urban sanitation, to cover the construction cost of sanitary toilets, a linkage with existing housing loan may be established.

21.10 Monitoring of the Medium-Term Development Plan

The sector monitoring system must support a well-defined and accepted sector development process-model. This will include collection of information on the sector, process flow of raw data from the field to the central level, information analysis, and data feedback. With the sector monitoring system in place, planners should be able to take a fresh objective view of the way current strategies are implemented. A sector monitoring system should: i) reinforce the linkage between water supply, sanitation and health; ii) involve the beneficiaries; iii) be accepted by all sectors; iv) be practical and reliable; and v) be followed through with effective feedback.

A three-phased monitoring system is proposed with each phase progressively increasing the number and complexity of indicators to be used. Detailed implementation of the first phase requirements is presented in this PW4SP, including institutional arrangements. It is envisaged that this will be linked up with the national sector monitoring system being developed.

The actual situation of the sector will surely change, so that this PW4SP should be updated at least every five years. Based on the monitoring reports, an annual review of sector accomplishments compared with objectives and efficiency will be done. This will lead to the reformulation of objectives, strategies, new policies and policy revisions, and to an updated sector investment program.

LGUs implement WATSAN projects using funds made available for the purpose by their respective legislative bodies. Generally, Level I & II systems are implemented by barangays using funds provided by congressmen while Level III systems are initiated by municipalities. The implementing capacity of the LGUs in the province is limited and weak. During the planning and implementation of future water supply projects, the province will still require assistance from national government line-agencies and even NGOs. There are a number of

WDs in the province which possess high level of management expertise. There are a few functioning BWSAs but most of them have poor records in O&M of facilities. Their operating capacity will need to be strengthened through a joint effort between the province and the DILG.

22. CONCLUSIONS AND RECOMMENDATIONS

22.1 Conclusions

The PW4SP is provincial long- and medium-term sector development plan in line with national sector development plan (Updated Medium Term Development Plan and Sector Master Plan). The Plan was prepared by respective PSPTs with special emphasis on the improvement/strengthening of LGUs in terms of capacity building, financial management and community development for the implementation of sector projects under the government's decentralization.

Targets of service coverage for the relevant sector in Phase I development were established in consideration of present service percentage and experience in financial arrangements in use of IRA, under the suggestions and recommendations rendered by the JICA Study Team. Accordingly, physical requirements for Phase I seem to be realistic to meet current capacity of LGUs. The prioritization of concerned municipalities/cities, suggested in the Plan, will be common basis of future individual projects to be undertaken by different authorities/financial sources.

The PW4SP will be authorized at the Sangguniang Panlalawigan as the base plan of the Province and be paid due attention to the ownership of the Plan. Under the above arrangements and development, an implementation of the medium-term development plan by LGUs will be realized by staged strengthening of their capacity buildings and financial managements. The DILG prepared a packaged program for JBIC-assisted project (Level I water supply and sanitation project for limited class municipalities) that will be managed through cost sharing between National Government and LGUs. The DILG started required actions to get concurrence from NEDA and DFA.

22.2 Recommendations

Due to one of major purposes of this Study, "the assistance and technology transfer to the PSPT by JICA Study Team", the PSPT presented development policy and methodology in the Plan in full consideration of the Team's recommendations. Thus, countermeasures required urgently and/or re-confirmed are enumerated as follows:

(1) Sector Management and Institutional Strengthening

- LGUs must clearly define their roles in the investment, operation, and maintenance of water service utilities and re-establish leadership in the implementation of WATSAN projects.
- Establishment of the PWSU in the Province and MSLT in the municipalities, as the permanent sector organizations, ensuring manpower and budgetary arrangements
- Water charges, estimated to recover costs both for capital and O&M of facilities, seem to be reasonable in comparison with average household income in any water supply service levels. However, "willingness to pay" by users is a big problem without proper idea on variable drinking water. Accordingly, the change of people's idea is a pre-requisite promoting people's participation from planning stage. Level I water supply project shall not be commenced without commitment by beneficiaries on the project (willingness to pay and to participate in).
- Organization of association shall be ensured for O&M of the facilities. Community participation, especially, a greater participation of women is required. In this regard, CD and gender specialists shall be trained and designated.

(2) Technical Requirements

- Survey/Investigation/Feasibility Study/Detailed Design shall be conducted for individual projects based on the PW4SP.
- Spring development shall be given priority in water source development. In case of deep well development needed, geo-electric survey, pumping test at test wells, etc. shall be done, before construction work starts, in the area where well data are limited and development difficulty is projected.
- Consideration to material type of well casing and riser pipe in the area with high iron concentration
- Periodic water quality examination must be practiced covering all provincial area to ensure water quality for drinking purpose. Water quality examination equipment shall be provided to the place for this purpose, such as at the existing hospital.
- Preparation of Barangay Map to know sector conditions as the minimum needs before project implementation. People's participation is a requisite for this work.
- Adjustment between LGUs and DECS is necessary to decide the type of school toilet, classroom toilet/toilet building, entailing cost sharing between them.

(3) Financial Arrangements (Government Agencies and Private Sector Utilization)

- About 3-4%/year of IRA and local tax shall be ensured for sector development.

- Sufficient budget shall be allotted to sanitation sector, since target service coverage is set on a higher level.
- Private sector shall be utilized to reduce LGUs' financial burden and to ensure sustainability of the projects. Introduction of WD in urban area will also help reduce LGUs' budgetary requirements
- With reference to the implementation of ODA assisted WATSAN projects, LGUs shall start required procedure to use IRA properly.

(4) Training Needs

- Increase of training opportunity for LGU staff members supported by DILG
- CD and gender specialist shall be fostered utilizing NGOs.
- Conduct of required training to WATSAN association members

(5) Creation of Monitoring System and its Operation

- PWSU and MSLT proposed in the PW4SP shall undertake sector monitoring and establish database.
- Involvement of beneficiaries in the monitoring activity
- Interrelationship between national and local government agencies concerned shall be clarified.

(6) Promotion of Required Procedure for the Authorization of PW4SP and its Updating

- Common use of PW4SP among national and local government agencies
- Early completion of authorization process for PW4SP by LGUs
- Collaboration work by province and municipalities, especially, for the preparation of ODA assisted project
- Data collection in consideration of gender and accumulation of water source data
- Updating sector related data collecting those from Barangay level and reflecting completed projects. Sector plan shall be updated using such data and information.