JAPAN INTERNATIONAL COOPERATION AGENCY

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

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

VOLUME I- [1]

MAIN REPORT

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

BILIRAN

DECEMBER 1999

NIPPON JOGESUIDO SEKKEI CO., LTD.

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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 a development 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 selected and dispatched a study team headed by Mr. Masatoshi Momose of Nippon Jogesuido Sekkie Co., LTD. and dispatches to the Philippines, four times between January 1998 and May 2000, and especially to the Biliran province, one time between January 1999 and December 1999. In addition, JICA set up an advisory committee headed by Ms. Keiko Yamamoto, Development Specialist, Institute for International Cooperation, JICA between December 1997 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 prepared this final report.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relationship 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.

December 1999

Kimio Fujita
President
Japan International Cooperation Agency

Letter of Transmittal

December 1999

Mr. Kimio Fujita
President
Japan International Cooperation Agency
Japan

Dear **Mr. Fujita,**

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

The Final Report consists of four volumes: Summary Report which succinctly describes the study and recommendations; Volume I - Main Report which 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; and Volume II - Supporting and Volume III - Data Report including detailed analysis, relevant information and collected data.

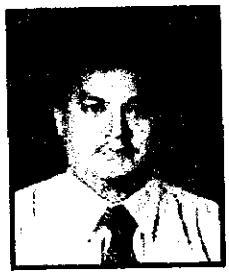
In view of the urgency of water supply and sanitation improvement as well as the need for socio-economic development in the study provinces, we hope that the said plans will be realized in an early stage.

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

Republic of the Philippines
PROVINCE OF BILIRAN
Office of the Governor
2/F Capitol Building, Brgy. Calumpang,
Naval, Biliran Province 6543



MESSAGE

In 1987, the Philippine Water Supply, Sewerage and Sanitation Master Plan (NMP) was formulated as an off-shoot of the declaration of the International Drinking Water Supply and Sanitation Decade (IDWSSD) covering the Year 1980 to 1990. One of the major projects contained in the NMP was the First Water Supply, Sewerage and Sanitation Sector Project (FW4SP), a World Bank - assisted Rural Water Supply (RWS) that was proposed to be implemented from 1990 to 1995.

The herein Provincial Master Plan for Water Supply, Sewerage and Sanitation Sector is an output of a series of orientation and workshops, data collection and validation, and planning conferences/consultations between the months of February and September, 1999, in coordination with NEDA, PSPT, DILG, and JICA Study Team.

As everyone knows, water is an invaluable life-sustaining resource; without it we will all perish. Man can live without food for several days, but without water life is impossible.

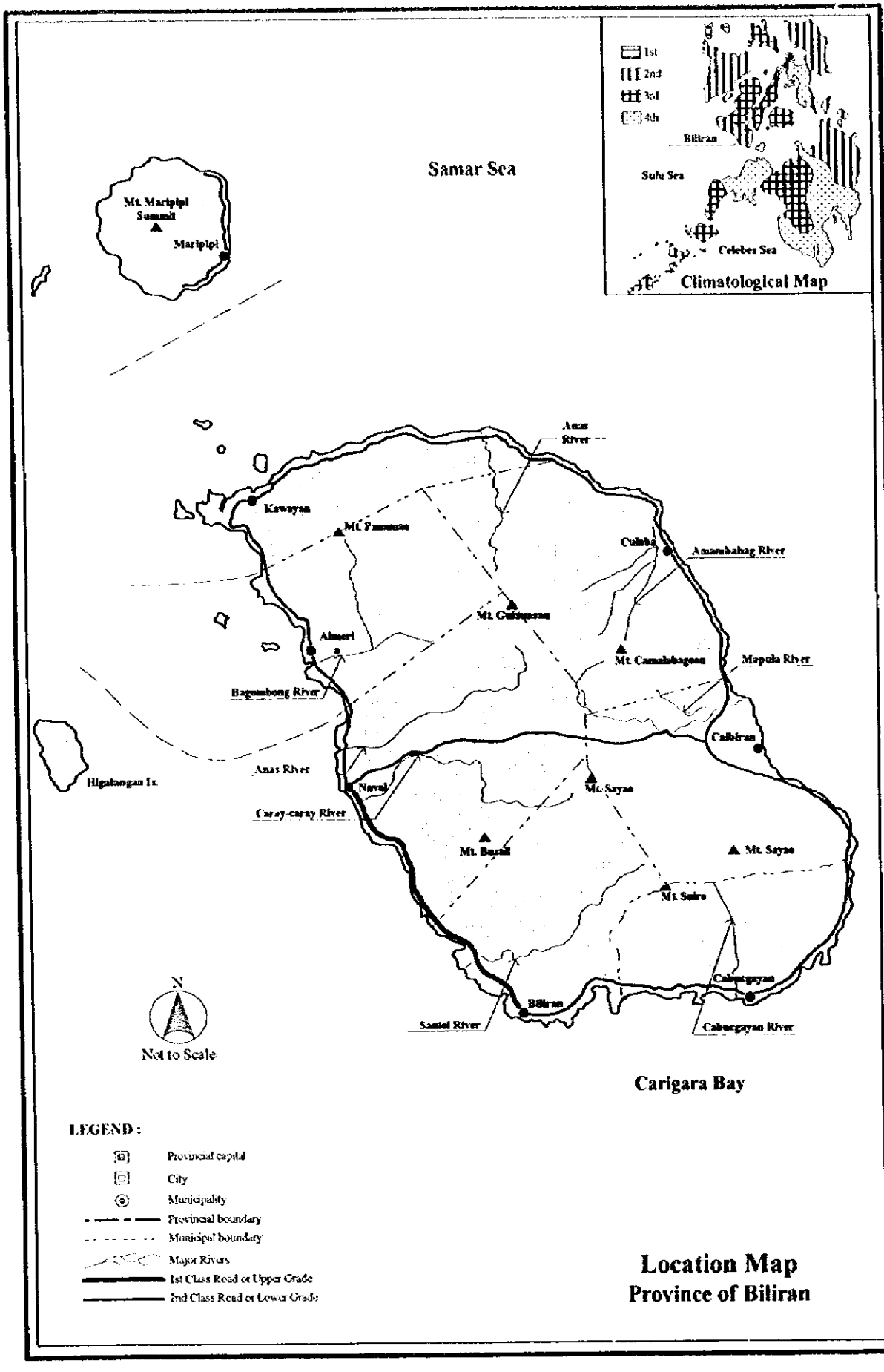
For this reason, we are indebted to the JICA Study Team, NEDA, DILG, PSPT, and the Biliranons who contributed in providing mass-based data and information that led to the production of this humble work for Biliran.

To the planners and local officials, may you find this Master Plan a worthy companion for purposes of promoting and replicating in your areas of jurisdiction, success factors and strategies for total human development.

Congratulations and MABUHAY!

ATTY. DANILO M. PARILLA
Governor

September 21, 1999
Capitol, Naval, Biliran


Samar Sea
Mt. Maripipi Summit
Maripipi
1st
2nd
3rd
4th
Biliran
Sulu Sea
Celebes Sea
Climatological Map
Anas River
Kawayan
Mt. Panumon
Culaba
Amambahag River
Mt. Cabungaan
Almeri
Mt. Camalobagoan
Mapula River
Bagumbong River
Caibiran
Anas River
Higatangan Is.
Naval
Mt. Sayao
Caray-caray River
Mt. Bunal
Mt. Sayao
Mt. Suiro
Cabucgayan
Biliran
Samiel River
Cabucgayan River
N
Not to Scale
Carigara Bay
LEGEND :
Provincial capital
City
Municipality
Provincial boundary
Municipal boundary
Major Rivers
1st Class Road or Upper Grade
2nd Class Road or Lower Grade
Location Map
Province of Biliran

PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN

VOLUME I MAIN REPORT

TABLE OF CONTENTS

CHAPTER Page No.

PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AC-PO	-	Area Coordinator-Project Officer
ADB	-	Asian Development Bank
AIDAB	-	Australian International Development Assistance Bureau
AIM	-	Asian Institute of Management
AIP	-	Annual Investment Plans
BC	-	Barangay Council
BDC	-	Barangay Development Council
BLGF	-	Bureau of Local Government Finance
BMGS	-	Bureau of Mines and Geo-Sciences (defunct), the now Mines and Geo-Sciences Bureau
BOD	-	Biochemical Oxygen Demand
BOD/Officers	-	Board of Director/Officers
BWP	-	Barangay Water Program
BWSA	-	Barangay Waterworks and Sanitation Association
CBO	-	Community-Based Organizations
CD	-	Community Development
CDA	-	Cooperative Development Authority
CDF	-	Countryside Development Fund
CDTS	-	Community Development and Training Specialist
CEO	-	City Engineering Office
CEP	-	Capacity Enhancement Program
CIDA	-	Canadian International Development Agency
CLGOO	-	City Local Government Operations Officer
CO-CD	-	Community Organization-Community Development
CPC	-	Country Program for Children
CPH	-	Census on Population and Housing
CPSO	-	Central Project Support Office
CSC	-	Civil Service Commission
D/D	-	Detailed Design
DA	-	Department of Agriculture
DAP	-	Development Academy of the Philippines
DBM	-	Department of Budget and Management
DECS	-	Department of Education, Culture and Sports
DENR	-	Department of Environment and Natural Resources
DEO	-	District Engineering Office
DF	-	Development Fund
DILG	-	Department of the Interior and Local Government
DOF	-	Department of Finance
DOH	-	Department of Health
DPWH	-	Department of Public Works and Highways
DSWD	-	Department of Social Welfare and Development
DTI	-	Department of Trade and Industry
EVS	-	Environmental Sanitation
F/S	-	Feasibility Study
FHSIS	-	Field Health Service Information System
FW4SP	-	First Water Supply, Sewerage and Sanitation Sector Project
GAD	-	Gender and Development
GFI	-	Government Financial Institution
GO	-	Government Office

GOP	-	Government of the Philippines
GOJ	-	Government of Japan
HH	-	Household
IBRD	-	International Bank for Reconstruction and Development
IEC	-	Information, Education and Communication
IRA	-	Internal Revenue Allotment
IRR	-	Implementing Rules and Regulations
ITN	-	International Training Network
JICA	-	Japan International Cooperation Agency
LBP	-	Land Bank of the Philippines
LGC	-	Local Government Code
LGEF	-	Local Government Empowerment Fund
LGU	-	Local Government Unit
LWUA	-	Local Water Utilities Administration
MDC	-	Municipal Development Council
MDF	-	Municipal Development Fund
MEO	-	Municipal Engineer's Office
MHO	-	Municipal Health Office
MLGOO	-	Municipal Local Government Operations Officer
MOA	-	Memorandum of Agreement
MOOE	-	Maintenance Operating and Overhead Expenses
M/P	-	Master Plan
MPDO	-	Municipal Planning and Development Office
MS	-	Monitoring Specialist
MSL	-	Municipal Sector Liaison
MSLT	-	Municipal Sector Liaison Team
MTPDP	-	Medium-Term Philippine Development Plan
MWSS	-	Metropolitan Waterworks and Sewerage System
MWSTF	-	Municipal Water and Sanitation Task Force
NAMRIA	-	National Mapping and Resource Information Authority
NCRFW	-	National Commission on the Role of Filipino Women
NDCC	-	National Disaster Coordinating Council
NEDA	-	National Economic and Development Authority
NGOs	-	Non-Governmental Organizations
NIA	-	National Irrigation Administration
NMP	-	National Master Plan
NMYC	-	National Manpower Youth Council
NSDW	-	National Standard for Drinking Water
NSO	-	National Statistics Office
NSMP	-	National Sector Master Plan
NWRB	-	National Water Resources Board
O&M	-	Operation and Maintenance
ODA	-	Overseas Development Assistance
OECF	-	Overseas Economic Cooperation Fund
PA	-	Provincial Administrator
PAIASO	-	Provincial Accounting and Internal Audit Service Office
PBO	-	Provincial Budget Office
PD	-	Presidential Decree
PDC	-	Provincial Development Council
PEO	-	Provincial Engineer's Office
PHO	-	Provincial Health Office
PIO	-	Public Information Office
PGSO	-	Provincial General Services Office
PLGOO	-	Provincial Local Government Operations Officer
PMC	-	Project Monitoring Committee

PMO	-	Project Management Office
PMU	-	Provincial Monitoring Unit
POPCOM	-	Population Commission
PoW	-	Program of Work
PPAC	-	Philippine Plan of Action for Children
PPDC	-	Provincial Planning and Development Coordinator
PPDO	-	Provincial Planning and Development Office
PSPT	-	Provincial Sector Planning Team
PST	-	Provincial Sector Team
PTA	-	Parent Teacher Association
PTO	-	Provincial Treasury Office
PW4SP	-	Provincial Water Supply, Sewerage and Sanitation Sector Plan
PWSC	-	Provincial Water Supply and Sanitation Coordinator
PWSO	-	Provincial Water and Sanitation Office
RA	-	Republic Act
RDC	-	Regional Development Council
RDCC	-	Regional Disaster Coordinating Council
RHO	-	Regional Health Office
RHUs	-	Rural Health Units
RPMC	-	Regional Project Monitoring Committee
RSI	-	Rural Sanitary Inspector
RWSA	-	Rural Waterworks and Sanitation Association
SB	-	Sanggunian Bayan
SP	-	Sanggunian Panlalawigan
SSI	-	Supervising Sanitary Inspector
SWL	-	Static Water Level
TESDA	-	Technical Education and Skills Development Authority
TCP	-	Teacher-Child-Parent
UNDP	-	United Nations Development Programme
UNICEF	-	United Nations International Children's Emergency Fund
VIP	-	Ventilated Improved Pit Latrine
WASAMS	-	Water and Sanitation Monitoring System
WATSAN	-	Water and Sanitation
WC	-	WATSAN Center
WD	-	Water District
WHO	-	World Health Organization
WID	-	Women in Development
WSSE	-	Water Supply and Sanitation Engineer
WSS-PMO	-	Water Supply and Sanitation-Programme Management Office

EXECUTIVE SUMMARY ES

EXECUTIVE SUMMARY

1. Introduction

Background and Objectives

The Provincial Water Supply, Sewerage and Sanitation Sector Plan (PW4SP) for the province of Biliran was prepared by the Provincial Sector Planning Team with technical assistance from Japan International Cooperation Agency (JICA). The PW4SP will be the basis for execution of sector development from proceeds of sector loan by foreign donors, LGU's budget including internal revenue allotment from the National Government and private sector investments.

The PW4SP covers a Long-Term Development Plan (2005-2010) and a Medium-Term Investment Plan (2000-2004) to achieve the provincial targets of water supply, sewerage and sanitation sector. The plan includes arrangements and logistics for implementation and measures to strengthen operational frameworks and institutional capabilities that embody community development and gender responsiveness. As an initial step towards capability building, the Study was designed with the end view of strengthening the LGU's capability in sector plan preparation through conduct of series of workshop and hands-on training.

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: the Philippine National Development Plan (1999-2024), the Water Supply, Sewerage and Sanitation Master Plan of the Philippines (1988-2000) and the Updated Medium Term Philippine Development Plan (1996-1998). The GOP recently 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.

A 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.

Report Composition

Three (3) study reports were prepared as follows: i) Main Report (Volume I) which presents the results of the whole study consisting of 12 chapters; ii) Supporting Report (Volume II); and iii) Data Report (Volume III). Supporting materials including alternative studies and detailed calculations, and data/information constitute the last 2 reports.

2. 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 4th class. At the municipal level, six (6) municipalities belong to 5th class, one (1) municipality to 6th class, and the remaining one (1) is 4th 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 constitute 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 P51,042 which was well below the national average of P83,161. Moreover, half of the total number of families lived within and below the established poverty threshold income of P 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.

3. 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, 29% or 40,300 persons are served by Level III systems. About 28% 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.

4. 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 plan-

ning 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, in-

cluding 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.

5. 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 P10.00 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.

6. 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 da-

tabase 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.

7. 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 7.1. 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 7.1 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 7.2.

Table 7.2 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.

8. 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).

9. 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 9.1.

The total investment cost for Phase I is estimated at about ₱92.4 million. 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.

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 9.1 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.

10. 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, Cabuegayan 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.

11. 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.

Chapter 1

INTRODUCTION

1. INTRODUCTION

1.1 Sector Development in the Philippines

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. Development has covered physical and institutional framework nationwide.

Nevertheless, infrastructure service delivery including this sector during the period 1987 to 1997 has been insufficient to keep pace with the demand, which was magnified by natural calamities and economic status of the country.

About 68% (46.7 M) of the population nationwide enjoyed access to potable water supply in 1995 (66% in 1992). In urban areas outside Manila, 61% (11.6 M) had access to safe water supply services (47% in 1992), while in the rural areas, 70% (26.1 M) was covered by point water sources (80% in 1992). However, from the surveys conducted through the PW4SP, it was found out that about 20-30% of the existing water sources in the rural areas fall on the category of underserved or unserved in terms of safe or unsafe sources, damaged and non-functioning sources. Hence, of the rural population, it was estimated that only about 50-55% was served adequately by safe sources. This implies that around 60% of the total population enjoy water supply services at present.

Private sanitary toilets were available to 66% (45.3 M) of the total household nationwide in 1996 based on the DOH compiled reports. Communal toilet facilities are generally found only at schools, public markets and sometimes in bus terminals and town parks. For sewerage, only portions of the cities of Metro Manila, Cebu and Baguio have sewerage systems. Municipal refuse collection using service trucks is limited to urban areas. In 1996, majority of the households (55%) practiced individual 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. Major initiatives towards this direction in the sector are the current projects being implemented such as the World Bank-assisted Local Government Unit-Urban Water Supply and Sanitation Project and the ADB-funded Rural Water Supply and Sanitation Project. Both projects aim at building/enhancing local level capacity in planning, implementation and management of water and sanitation services.

The GOP has also recently approved the Implementing Rules and Regulations (IRR) of Clause (g) of NEDA Board Resolution No. 4 (series 1994) providing detailed arrangements in accordance with broad reforms aimed at streamlining sectoral activities. The institutional framework therefore, presented in this provincial sector plan considers the direction of the central government agencies and LGUs in the sector.

1.2 Provincial Sector Planning

1.2.1 Objectives of Sector Planning

The main objectives of the provincial sector plan are:

(1) To formulate a Long-Term Provincial Development Plan with a target year of 2010 for the water supply, sewerage and sanitation sector;

(2) To propose a Medium-Term Sector Investment Plan covering the years 2000-2004 to form the basis for implementing foreign and locally funded projects;

(3) To recommend arrangements and logistics for implementation; and

(4) To provide measures to strengthen operational framework and institutional capabilities including community development and gender responsiveness.

1.2.2 Scope of Sector Planning

The study covers the following major elements to achieve the objectives mentioned above.

(1) Collection and Review of Previous Studies and Existing Data, and Establishment of Data Base: Inventories on existing conditions and facilities

1) Natural conditions and geographical features
2) Socio-economic conditions
3) Population
4) Health status
5) Environmental conditions
6) Existing facilities and service coverage
   - Water Supply
   - Sanitation and Sewerage
7) Existing sector arrangements and institutional capacity
   - Sector institution
   - Current community development, gender and training approaches
   - Existing sector monitoring systems
8) Past financial performance in the sector development

(2) Long-Term Development Plan
1) Projection and assumption of planning framework: projection of population and relevant frame values, and targets of the sector plan
2) Service coverage by target year
   - Water Supply
   - Sanitation and Sewerage
3) Water source development
4) Service expansion plan
5) Estimation of project cost
6) Investment program

(3) Medium-Term Investment Plan (5-year)
1) Facilities and equipment, and rehabilitation required meeting target services
2) Identification of priority projects
3) Sector management plan
   - Institutional arrangements
   - Community development, gender and training
   - Procurement, construction and operation and maintenance
   - Sector coordination
4) Estimation of project cost
5) Financial arrangements
   - Sources of fund
   - Additional funding requirements

- Investment needs ranking of municipalities
- Implementation arrangements
- Cost recovery

(4) Monitoring for Evaluation of Provincial Plan Implementation

1.2.3 Financing of Sector Plan

The First Water Supply, Sewerage and Sanitation Sector Project (FW4SP) was implemented with financial assistance from the World Bank (IBRD). With reference to the Project, the technical assistance to help Provincial Governments prepare 37 provincial sector plans in Luzon area was financed by various bilateral and multilateral agencies, such as the United Nations Development Program (UNDP), the Danish International Development Agency (DANIDA) and the Japan International Cooperation Agency (JICA).

In September 1996, the GOP requested the Government of Japan to finance the preparation of the Study for 21 provinces in Visayas and Mindanao areas. Among these was Biliran province, which was assisted by the JICA. The PW4SP will be the basis to permit execution of the sector development from the proceeds of the sector loan by foreign donors, LGUs budget including internal revenue allotment from National Government and private sector investment.

1.3 The Provincial Plan for the Province of Biliran

1.3.1 Preparation of the Plan

The PW4SP for the Province was prepared by a Provincial Sector Planning Team (PSPT) organized by the provincial government. The members consist of the Provincial Planning and Development Coordinator (PPDC), the planning and development officers from PPDO, and the staff members from Provincial Engineers Office (PEO), Provincial Health Office (PHO) and Provincial Local Government Operations Office (PLGOO-DILG). The preparation of the plan was assisted by the Department of the Interior and Local Government (DILG), the Department of Public Works and Highways (DPWH), the Department of Health (DOH), the Local Water Utilities Administration (LWUA), the National Economic and Development Authority (NEDA), other national line agencies and non-government organizations (NGOs) active in the sector. The PSPT was also assisted by the JICA Study Team through technical grant assistance from the Japanese Government (refer to Minutes of Discussions between

DILG and JICA, and Figure 1.3.1 Organization Chart, 1.3.1 Preparation of the Plan, Supporting Report).

The PW4SP has been prepared at municipal level covering all sub-sectors for each municipality of the Province.

The report consists of three (3) volumes: I - Main Report, II - Supporting Report, III - Data Report.

1.3.2 Outline of the Report

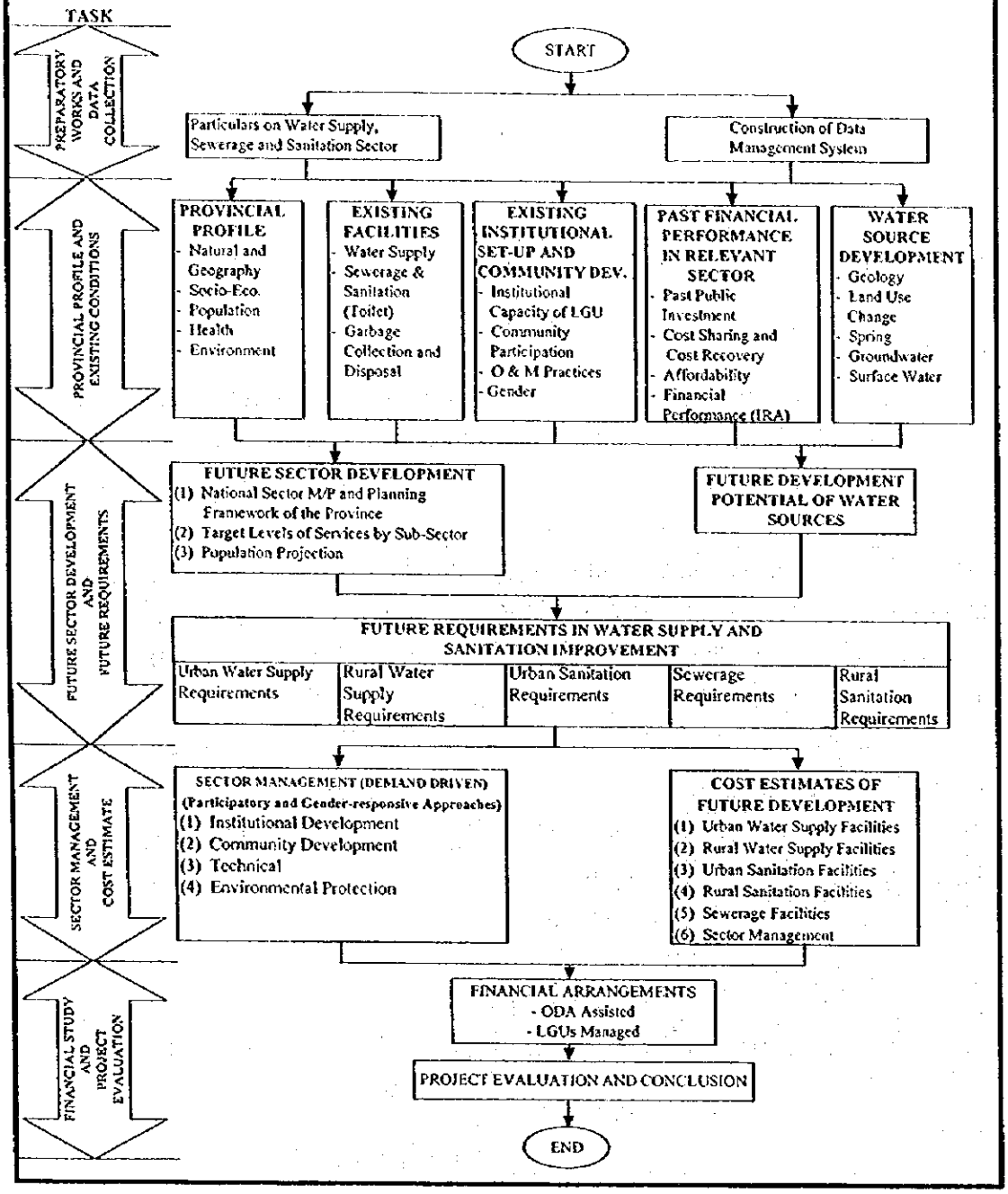
The PW4SP is a framework plan that would serve as the basis for the future implementation work in the sector. It will be carried out either as large-scale projects funded by international agencies or as a small size project carried out by local parties. It should be noted that the PW4SP is a sector development plan for the entire province and that it does not include detailed planning of individual projects. The individual projects will commonly cover selected sub-sector/s for limited areas and detailed planning/design work has to be conducted for the respective projects before start of construction work. The planning process is presented in Figure 1.3.1. The following are the contents of the Main Report (List of data and information collected is included in 1.3.2 Outline of the Report, Data Report).

Chapter 2 describes the planning approach for the sector development, which guides the preparation of the plan: the background and rationale for provincial planning; as well as the planning tool that relies heavily on local participation and gender responsiveness, and flexible enough to improve planning and implementation.

Chapter 3 provides the provincial profile with reference to current sector conditions: natural conditions and geographical features, socio-economic conditions, demographic trends, health status and environmental conditions as the planning environment.

Chapters 4, 5, and 6 provide existing sector conditions in physical, managerial and financial aspects: existing water supply and sanitation facilities by service level and service coverage; sector institutions, community development, gender and training, as well as monitoring systems; and financial performances entailing cost recovery and affordability and new fiscal policies that are the basis and references to come up with future development plan.

Figure1.3.1
Flow Diagram of Sector Planning



Chapter 7 analyzes the possibility of water source development for the water supply component: geological and hydrological conditions in the province, and future development potential of different water sources. Furthermore, water source availability by concerned municipality was presented with well specifications for the medium-term development.

Chapters 8, 9 and 10 develop the long-term Development Plan and the medium-term Investment Plan both for physical and sector management requirements. Emphasis is placed on the sector management for the medium-term development plan entailing institutional arrangements and operational framework, community development, gender and training and project implementation needs. Required costs for physical and institutional elements are also presented according to the implementation arrangements.

Chapter 11 presents the financial arrangements based on identified sources of funds. The financial shortfall is shown to meet provincial targets established for the Medium-Term Investment Plan. The manner of national budget allocation (IRA) to municipalities by sub-sector is illustrated and trial calculation is made for the target year considering the new cost sharing policy between the central government, the LGUs and the beneficiaries. Investment need ranking of municipalities as a factor of financial allotment is also considered based on synthetic evaluation of sector components. The financial viability study of Level I water supply and sanitation projects is highlighted with reference to ODA assisted projects for eligible municipalities. Finally, cost recovery by the beneficiaries and the LGUs is discussed.

Chapter 12 provides recommendations on monitoring of implemented projects covering procedures and responsibilities in different administrative levels. Periodic monitoring will allow for the updating of the PW4SP and modification of respective projects both in quality and quantity.

1.4 Acknowledgment

The Provincial Sector Planning Team (PSPT) which was responsible in the preparation of the PW4SP, acknowledges the cooperation, support and assistance of the Department of the Interior and Local Government (DILG), and other national, regional, provincial, municipal, city, and barangay institutions. These institutions had shared essential data and planning principles (The list of individuals and their corresponding offices that directly participated in the preparation of the plan is included in 1.4 Acknowledgment, Data Report). The Japanese Government through JICA has generously provided technical assistance to the PSPT throughout the course of the planning work.

Chapter 2

PLANNING APPROACH FOR FUTURE SECTOR DEVELOPMENT

2. PLANNING APPROACH FOR FUTURE SECTOR DEVELOPMENT

2.1 General

The primary basis of the PW4SP is summarized with reference to the national sector policy and strategies as well as the major legislation and regulations relevant to the sector. Planning framework is also discussed with reference to key measurable targets. Guiding principles for preparation of the plan are described in application of computer-aided planning approach.

2.2 Planning Framework

The GOP, through the Water Supply, Sewerage and Sanitation Master Plan of the Philippines: 1988-2000, the Philippine National Development Plan: 1999-2025, and the Updated Medium Term Philippine Development Plan (MTPDP): 1996-1998, has manifested its commitment to the development of safe and dependable water supply and sanitation facilities. Policies and investment programs are compiled in these documents which lay out the basis of a strategy to accelerate sector development through the equitable mobilization of resources between urban and rural areas and institutional reforms at all government levels. Guiding principles set in the aforementioned national development plans are sustained decentralization; private sector-led development; environmental protection; people participation; full cost recovery; social equity; accelerated information technology applications and macro-economic stability.

According to the Updated MTPDP targets for the year 1998, the population served with potable water shall be increased up to 76.4% (52.4 M). This corresponds to 81.6% (9.9M) of the Metro Manila population, 68.8% (16.3 M) in other urban areas, and 79% (29.5 M) in the rural areas. Sewerage facilities in Metro Manila and other highly urbanized areas will be constructed. About 1.8 million toilets will be built nationwide.

Given these updated MTPDP targets, as well as the goals set in the 1988 NSMP, the current indications and the planning cycle adopted for this provincial sector planning, the national targets as shown in Table 2.2.1 will be used as the basis for setting the provincial targets.

Table 2.2.1 National Sector Coverage Targets

Sub-Sector	Year 1995	Year 2003 [1]	Year 2010 [2]
Urban Water Supply [3]	61%	69%	95%
Rural Water Supply	70% [4]	79%	93%
Sanitation	60% [5]	68%	93%

Notes:
[1] Based on the Updated MTPDP targets for 1998.
[2] Based on the long-term targets set in the previous National Sector Master Plan (NSMP).
[3] Excluding Metro Manila and its outlying areas.
[4] Includes only point sources.
[5] Service coverage for 1996.

2.3 Sector Objectives

The objectives of the sector are:

(1) To provide safe and adequate water supply and sanitation to meet basic needs;

(2) To pursue proper O & M of facilities for sustainable water supply;

(3) To undertake the phased construction and installation of sewerage facilities; and

(4) To develop the capabilities of LGUs to implement water supply, sewerage and sanitation programs with the national government providing assistance in the areas of community participation, sub-sector planning, program management, regulation of development, selection of technologies, financial management, construction supervision, monitoring and reporting.

2.4 Current Sector Policies and Strategies

(1) One clear policy shift has been towards the **promotion of self-reliance** and **local community management** of services. Since the seventies, formation of local water districts in provincial urban areas has been aggressively pursued. During the eighties, this shift was further induced with the establishment of community-run BWSAs and RWSAs to provide services in smaller rural and peri-urban areas. Recently, more comprehensive **demand-driven** participatory approach and **gender sensitive** participation initiatives are given impetus to ensure success and sustainability of the sector's projects especially in rather small rural and urban fringe areas.

(2) An **integrated approach to water, sanitation and hygiene education** has been prescribed in order to achieve full health benefits of improved services. The GOP promotes intensified health education and information programs to improve hygiene practices at the household level.

(3) **Cost sharing arrangement** is enforced. In line with devolving the central government's functions and responsibilities, particularly those that have social and/or environmental objectives, projects/activities are implemented through a cost sharing arrangement between the central government agency and LGUs. As for the sector, national (central) government's (NG's) grant is to be extended only to Level I systems for eligible municipalities, and its share is within a range of 0 to 50% of the total capital cost. The remaining are managed by LGUs, communities, or BWSAs/RWSAs. No subsidies from the central government are to be provided for Levels II and III systems. For public toilets in public markets, the share of the NG is within 50 to 70%.

(4) **Cost recovery of capital and O & M costs** of all water supply service levels by beneficiaries is to be encouraged. This is a distinct switch from subsidies, which characterized previous strategies. Current priorities also stress the need to promote the collection of such costs, especially in Levels I and II.

(5) **Private sector participation** is encouraged to bring into the sector business principles and practices and private capital to accelerate social and economic development; to improve sector efficiencies; and to ease the burden on the GOP's budget and foreign borrowing. Public-private partnership is to be pursued through any of these mechanisms: build-operate-transfer, concession arrangements, privatization of WDs, LGU-private sector MOA, LGU-WDs collaboration and others.

(6) **An integrated water resources strategy** has been adopted in areas combining irrigation, power, flood control, and domestic and industrial water supply. Small and medium-scale water resources projects through the active participation of the people are encouraged. **Watershed management**; water conservation and erosion and sediment control are deemed critical.

2.5 Major Legislation and Regulations Affecting the Sector

(1) The **Local Government Code of 1991** (RA 7160) provides for a more responsive and accountable local government structure. Local government units now exercise more authority and responsibilities and provide resources to accelerate the provision of basic services and facilities, including water supply, sanitation and sewerage. The **Implementing Rules and Regulations (IRR)** to effect the devolution of water and sanitation responsibilities and resources was recently approved. The IRR integrates the common

definition of terms for water supply and sanitation and defines the roles and functions of central government agencies and LGUs for the sector (details are referred to 5.2, Data Report).

(2) The **Water Code of the Philippines (PD 1067)** consolidates legislation relating to the ownership, development, utilization, exploitation and conservation of water resources. The Code established the basic principles and framework on the appropriation, control and conservation of water resources to achieve their optimum economic efficiency and rational development. In addition, PD 424 declares that the National Water Resources Board (NWRB) shall be responsible for coordinating and integrating all activities related to water resources. PD 1067 also pertains to the grant of water right privileges (water permits) to appropriate and use water. Water permit applications are reviewed and granted by the NWRB.

(3) The **Provincial Water Utilities Act of 1973** (PD 198) authorizes the formation of local water districts in the provincial areas outside the Metropolitan Manila area, and provides for their administration and operation. It also created the Local Water Utilities Administration (LWUA) as a specialized lending institution for the promotion, development and financing of local water districts.

(4) The **Metropolitan Waterworks and Sewerage System (MWSS) Charter** (RA 6234) was enacted in 1971. The utility was formed to take over the facilities of NAWASA in 1971. The Charter was amended by virtue of PD 1046 expanding further its territorial jurisdiction to include areas that may be included in the growing metropolis.

(5) The **Philippine Environmental Policy** (PD 1151) requires all public and private entities to undertake an environmental impact assessment of all projects, which significantly affect the quality of the environment. The **Philippine Environmental Code** (PD 1152) established standards for air and water quality, and guidelines for land use management, natural resource management and conservation, utilization of surface and groundwater, and waste management.

(6) The **Sanitation Code (1975)** was promulgated to deal with water supply, excreta disposal, sewerage and drainage issues. The Sanitation Code and the **National Building Code (1977)** require that new buildings be connected to a water-borne sewerage system. Where such systems do not exist, sewage must be disposed of onto Imhoff tanks or septic

tanks with a subsurface absorption field. In addition, the facilities are required to conform to the **1959 National Plumbing Code.**

(7) The **1981 Rules and Regulations for Domestic Wastewater Disposal** require all subdivisions and condominiums, etc. to have adequate sewage collection, conveyance, treatment and disposal facilities. A permit must be obtained prior to commissioning a new system.

2.6 Planning Principles and Data Management

2.6.1 Planning Principles

The PW4SP shall be prepared to ensure that the sector investments are optimized under the constraints of funds and water source availability as well as planning capability. Furthermore, the plan shall ensure its sustainability at the provincial level. The overviews of the plan will be progressively adjusted and refined at different detailed implementation stages. Accordingly, the demarcation is a prerequisite between a sector plan and succeeding detailed plan/s. Specifically, the following are required as planning principles.

(1) The plan is conceived to be flexible, consistent and as simple as possible to respond to the changing socio-economic conditions of the province, accumulated technical information and updated policy of local governments allowing for periodic upgrading.

(2) The plan is arranged to allow planners to run different scenarios for project implementation, especially with reference to the interface between the provincial plan and project proposals from municipalities (bottom-up).

(3) The plan is conceived to be adaptable to the local planning capacity and to ensure its full "ownership" by LGUs.

In addition, the following shall be taken into account to help the provincial planners perform their tasks.

(1) The plan follows existing provincial and municipal planning routines to minimize duplicated planning activities. It is essential to maintain and extend the involvement of local officials for data collection.

(2) The plan, as a comprehensive tool, considers the consistency to derive the next level of planning.

(3) The plan entails monitoring and evaluation of actual implementation progress, as investments are undertaken.

The guideline for preparation of the PW4SP is included in the Planning Approach for Future Sector Development, Data Report. It identifies all tables and figures with respective forms by main, supporting and data reports.

2.6.2 Data Management

The data management system was established to come up with the basic outputs commensurate to the objectives of the provincial plan and at the same time reflect the planning approach mentioned above. It will provide a map of relative needs in the province allowing for adjustment and updating when further information becomes available. Monitoring and evaluation are to be done using the tool, thereby serving as baseline information for the improvement of planning and implementation. Different scenarios maybe worked out by planners using the program in application of variable parameters.

The need for full and continuous involvement of local officials is indispensable to establish a reliable database.

(1) Computer-based system

Data management system is designed to perform simple and direct interfaces in data processing. Since a limited number of municipalities is the planning level entailing data collection from the administrative units, EXCEL was selected to facilitate data storage, retrieval, updating and processing.

The data storage system was arranged to parallel the structure of questionnaires and contain the same system of logical categories under institutional hierarchical system of the Philippines as shown in Figures 2.6.1 and 2.6.2. Data are encoded by hierarchical level.

A series of EXCEL routines was established to allow summaries and consolidation of data into the forms required for analysis and presentation. Details together with User's Guide for computer-aided planning are included in 2.6.2 Data Management, Supporting Report.

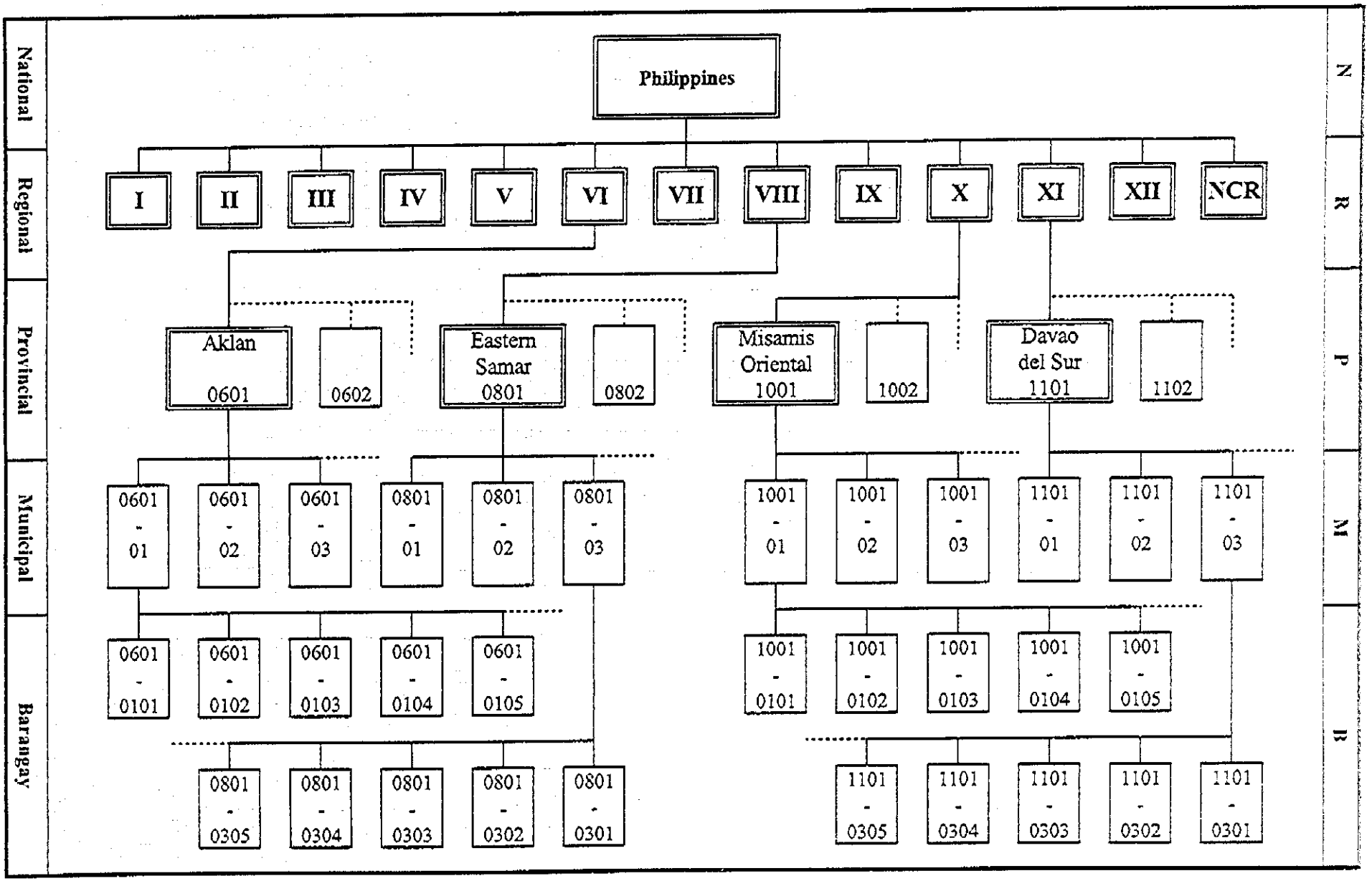


Figure 2.6.1 Institutional Hierarchical System by the NEDA Coding

Table 2.6.2 Structure of Questionnaire

Grouping of Questionnaire	Questionnaire to be addressed						
	National	Regional	Provincial	Municipal	Barangay	System	Independent
	N	R	P	M	B	S	I
1. Socio economic Data							
1.1 Mun./City Status and no. of Brgy.			P.1.1				
1.2 Past Population			P.1.2	M.1.2			
1.3 Projected Population			P.1.3.1	M.1.3.1			
			P1.3.2	M.1.3.2			
1.4 Number of Households			P.1.4	M.1.4			
1.5 Services			P.1.5	M.1.5			
1.6 Occupation			P.1.6	M.1.6			
1.7 Family Income			P.1.7	M.1.7			
1.8 Family Expenditure Pattern			P.1.8	M.1.8			
1.9 Education and Literacy			P.1.9	M.1.9			
2. Land Use Data							
2.1 Existing Land Use			P.2.1				
2.2 Future Land Use			P.2.2				
3. Health Data							
3.1 Morbidity and Mortality			P.3.1	M.3.1			
3.2 Health Facility			P.3.2	M.3.2			
3.3 Medical Practitioner			P.3.3	M.3.3			
4. Water Sources Data							
4.1 Water Source General Information			P.4.1				
4.2 Water Source Technical Information			P.4.2				
4.3 Untapped Spring Information				M.4.3			
4.4 Well Information				M.4.4			
4.5 Surface Water Sample Point for Water Quality Analysis				M.4.5			
5. Water Supply Data							
5.1 Level I Facility			P.5.1	M.5.1			
5.2 Level II System						S.5.2.1	
						S.5.2.2	
5.3 Level III System						S.5.3.1	
						S.5.3.2	
						S.5.3.3	
						S.5.3.4	
6. Environmental Sanitation							
6.1 Household Toilet			P.6.1	M.6.1			
6.2 School and Student			P.6.2	M.6.2			
6.3 School Toilets			P.6.3	M.6.3			
6.4 Public Toilets			P.6.4.1	M.6.4.1			
			P.6.4.2	M.6.4.2			
			P.6.4.3	M.6.4.3			
6.5 Drainage Facilities			P.6.5	M.6.5			
6.6 Solid Waste Collection and Disposal			P.6.6	M.6.6			
7. Investment Data							
7.1 Income Expenditures			P.7.1				
7.2 Past IRA			P.7.2				
7.3 Available Funds for Capital Expenditures			P.7.3				
7.4 Sector Previous Invest. to the Prov. By Concerned Agency			P.7.4				
7.5 Sector Allocation in the AIP			P.7.5				
7.6 Allocation of the 20% DF			P.7.6				
7.7 Financial Indicators of WDr Waterworks			P.7.7				
7.8 Loan Status of Water District			P.7.8				
7.9 Affordability in Water and Sanitation Services			P.7.9				
8. Model Study							
8.1 Barangay Group Information					MS.8.1		
8.2 Key Informant Questionnaire				MS.8.2			
8.3 Community Development, Training, Gender and			MS.8.3	MS.8.3		MS.8.3	
8.4 Institutional Development Questionnaire			MS.8.4	MS.8.4		MS.8.4	
8.5 Model Study			MS.8.5	MS.8.5		MS.8.5	
8.6 Data Information Checklist on Beneficiaries Participation and Assistance Extended in the			MS.8.6	MS.8.6	MS.8.6		
8.7 Guide Questions/Pointers for Discussion with Provincial, Municipal and Barangay LGUs			MS.8.7	MS.8.7			

(2) Key Parameters

Establishment of criteria and assumptions are requisites in the planning process. In this connection, key parameters are identified to allow for preparation of alternative plans and updating in accordance with sector improvement policy in the future. The parameters for relevant sub-sectors are assumed on an urban and rural basis for respective municipalities referring to current conditions and practices on national and provincial levels. The following are the selected parameters.

1) Number of households to be served by a Level I facility
2) Safe and unsafe percentages of Level I facilities
3) Standard number of students to be served by a unit of sanitary toilet
4) Standard number of toilets for a public utility
5) Provincial sector targets by sub-sector
6) Composition of different types of toilets
7) Per capita water consumption for Level III system
8) Composition of different types of well sources and their specifications
9) Percentage of Level I wells to be rehabilitated
10) Unit construction cost of different facilities per person/household/facility/system
11) Percentage of sector management cost to construction cost
12) Physical and price contingencies
13) Unit recurrent cost of different systems/facilities
14) Allocation factors/percentages of IRA
15) Share of public investment
16) Funding levels/percentages for different financing scenarios
17) Scoring factors for municipal investment ranking
18) Annual distribution of investment cost (medium-term development)

The above-mentioned parameters are not included in the database program, since they are to be established through sensitivity analysis. Assumed figures are directly entered into a separate spreadsheet that is linked to the output files.

(3) Data Processing

Collected data are entered into the forms constructed in EXCEL database. The data are consolidated into final forms in application of small programs prepared for this planning. Linked outputs in tables and graphics are prepared in EXCEL spreadsheets for final

analysis and presentation. Key parameters are entered in a key parameter table linked to the output tables (refer to 2.6.2 Data Management, Supporting Report).

Data in the questionnaire forms (database) are transferred to the output tables for final calculations. Adjustments are made through manipulation of the key parameter table.

Chapter 3

PROVINCIAL PROFILE

3. PROVINCIAL PROFILE

3.1 General

Biliran is one of the 6 provinces comprising the Eastern Visayas Region (Region VIII), with Naval as the provincial capital. The province is composed of the main island off the northern tip of Leyte and one island municipality with several isles and inlets. It is about 123km north of Tacloban City, the regional center. As an island province, it bounds the vast Visayan Sea on the north, the Samar Sea on the east, the strait of Biliran on the west and the bay of Carigara on the south as shown in the Location Map.

The province is classified as 4th class and has a total land area of 555.42km^2 that is 0.19% of the Philippine total land area of about 300,000km^2. It is composed of 8 municipalities. Based on the 1995 NSO records, the province has 132 barangays, of which 20 are urban and 112 rural. Provincial total population was 132,209 in 1995. About 68% of the population reside in rural areas, while the remaining 32% in urban areas. At present, there are 27 LGU/association managed Level III water supply systems and a water district operating in the province. Table 3.1.1 presents the breakdown per municipality of the land area, population and density, as well as administrative composition.

Table 3.1.1 Outline of Municipalities

Municipality		Land Area (km^2)	1995 Population		Number of Barangay		
Name	Class		Number	Density (person/km^2)	Urban	Rural	Total
Almeria	5th	66.04	13,420	203	1	12	13
Biliran	5th	87.03	13,775	158	2	9	11
Cabucgayan	5th	49.82	16,498	331	4	9	13
Caibiran	5th	91.48	18,582	203	3	14	17
Culaba	5th	76.04	12,703	167	3	14	17
Kawayan	5th	45.10	16,424	364	2	18	20
Maripipi	6th	31.94	7,853	246	2	13	15
Naval	4th	107.97	32,954	305	3	23	26
Provincial Total	4th	555.42	132,209	238	20	112	132

3.2 Natural Conditions and Geographical Features

3.2.1 Meteorology

The province has Type II climate under the Coronas classification and is characterized by an absence of dry season with a very pronounced maximum rain period as reflected in the Loca-

tion Map. Maximum rainfall usually occurs in December and January, while the minimum is in April.

The average annual temperature is 27.00°C with a range of 23°C to 30.9°C. The prevailing winds are the northers and trade winds. The province ranks third as to the frequency of the most number of tropical cyclones that enter into the country.

3.2.2 Land Use

Forest area constitutes about 23% of the total area of the province located mostly in Mt. Maripipi and in the main island mountain ranges (Mts. Panamao and Sayao). Grassland and agricultural land occupy 17% and 56%, respectively. Built-up area is limited to about 3%. Primary settlements are concentrated along the coastal areas of the main island and in Maripipi. The existing land use pattern as presented in Table 3.2.1 must be enhanced by rehabilitation of watersheds in order to pursue a sustainable growth of the province. The remaining forest cover must be conserved to primarily serve as watershed rather than as source of timber. An efficiently managed watershed collects and regulates flow of water, controls soil erosion and minimizes water pollution. Conversion of the remaining forestland to other uses will restrict its function as a watershed. Correspondingly, a significant increase in agricultural area will result in a high demand of water use.

Table 3.2.1 Current Land Use

Land Use	Area (km^2)	Percentage over Total Land Area
Forest Land	130.25	23
Grassland	91.59	17
Built-up	18.72	3
Agricultural	308.81	56
Fishponds, Mangrove, Inland Water Area	6.05	1
Provincial Total	555.42	100

3.2.3 Topography and Drainage

The province of Biliran is composed of islands, which lies on the northern extension of a mountain range that is a major geomorphic feature. A range of rugged mountains bisects the entire length of Leyte Island - the Leyte Central Highlands Range. In Biliran Island, there are several inactive volcanoes reaching a maximum height of 1,340 masl.

Maripipi Island is on line with the Leyte Central Range and is a volcanic island. Mt. Maripipi Summit with a height of 924 masl formed this island. Higatagan Island, on the other hand, lies on the northern extension of the western mountain system of Leyte Island. In both the eastern and the western seashore sides of Biliran Island are two small plains; the eastern alluvial fan in the municipality of Culaba, and the western alluvial plain in Naval.

There are seven (7) major rivers, namely: Anas, Amabahag, Mapula, Cabucgayan, Santol, Caray-caray and Bagombong Rivers. The Caray-caray River is the largest in the province with a watershed of 85 km^2 and drains to Biliran Strait passing through Naval.

Figure 3.2.1 shows the natural drainage systems in the province. At present, all these rivers have no gauging station. Table 3.2.2 is a list of the main rivers and their corresponding drainage areas.

Table 3.2.2 Drainage Areas & Flow Rates of Major Rivers

Major River	Drainage Area (km^2)	Flow Rate (m^3/sec)			Water District (using river water)
		Peak	Maximum	Minimum	
Anas	23.8	No gauging station			None
Amanibahag	24.5	No gauging station			None
Mapula	32.7	No gauging station			None
Cabucgayan	10.2	No gauging station			None
Santol	33.6	No gauging station			None
Caray-caray	85.1	No gauging station			None
Bagombong	43.0	No gauging station			None

Source: Philippine Water Resources Summary Data, established January 1980 by NWRC
Notes: Peak - Peak discharge of Daily Maximum Discharge
Maximum - Maximum Daily Discharge of Weighted Daily Discharge
Minimum - Minimum Daily Discharge of Weighted Daily Discharge
Inc. - Incomplete/Lacks record

Seven (7) typical rivers in the province were selected for water quality examination, namely: Anas, Amabahag, Mapula, Cabucgayan, Santol, Caray-caray and Bagombong. Analyzed river waters were clean in the upstream area, but turbid downstream (refer to 7.5, Data Report).

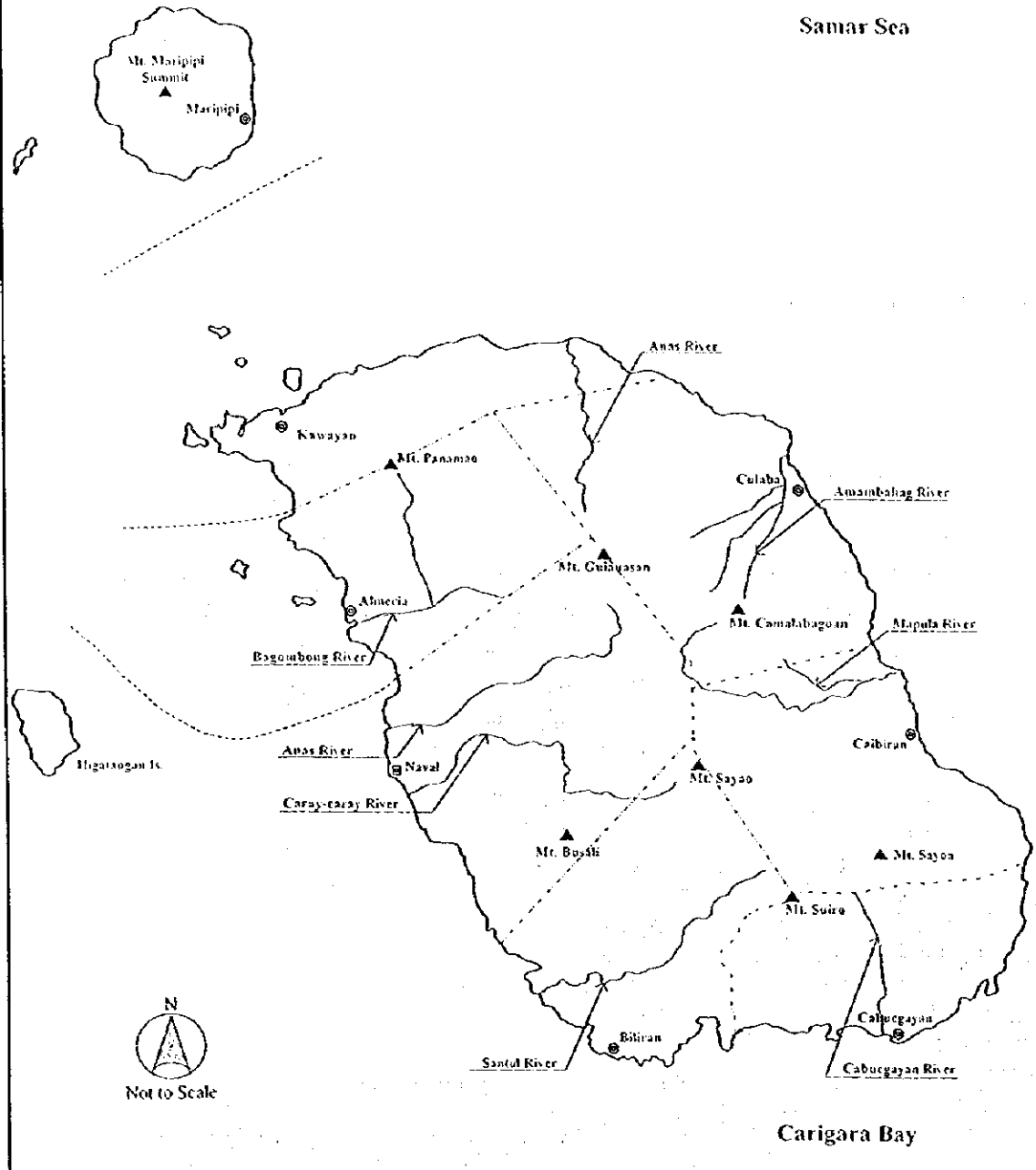


Figure 3.2.1 Major River Network Map
Province of Biliran

3.3 Socio-economic Conditions

3.3.1 Economic Activities and Household Income

Biliran is predominantly an agricultural province. The major economic activities are farming and fishing. Principal crops cultivated are coconut, palay, corn, vegetables, root crops and fruits. Fishery involves deep sea and municipal fishing, marine culture, inland fishery and aqua-culture. At present, the province is promoting micro-enterprise and eco-tourism as another income-generating activities.

The NSO Family Income and Expenditures Survey in 1994 showed that the average annual family income of the province (figures adopted from Leyte province) was ₱ 51,042 while the expenditure was at ₱ 39,454 or a net saving of ₱ 11,588. Distribution of households by income class in the region and province is shown in Figure 3.3.1 (refer to Table 3.3.1, Supporting Report). Percentages of households of lower income levels were greater than the average figures in the region. Based on the established poverty threshold income of ₱ 37,053 in Region VIII for 1994, about half or 50% of the total number of families lived within and below the poverty threshold.

As to the number of workers by major industry group, agriculture, fishery and forestry had the dominant share followed by social and personal services (refer to Table 3.3.2, Supporting Report). By class of worker, those who are self-employed without any paid employee had the highest share of 36% as shown in Figure 3.3.2.

3.3.2 Basic Infrastructure

All municipalities have electric supply, although the service coverage at household level is quite low at 49%. Telephone service is available only in 1 municipality. There are 8 post offices in the province. Land transportation is available by means of jeepney, bus, rent-a car/van and tricycle. There are 617 business establishments and 9 tourism-related facilities. Table 3.3.1 presents a provincial outline of public services and Table 3.3.2 reflects the number of public facilities and services by municipality (refer to Table 3.3.1, Data Report).

3.3.3 Education

The province has a total of 139 schools consisting of 119 elementary schools, 19 high schools and 5 tertiary/technical schools. The 1990 NSO census indicated that the province had 92.29% literacy rate of household population 5 years old and over. A large part of the popu-

lation had attained elementary or high school levels of education as reflected in Figure 3.3.3 (refer to Table 3.3.3, Supporting Report).

Table 3.3.1 Provincial Outline on Public Services

Item	Unit	Value	Item	Unit	Value
(1) Roads			(8) Tourism facilities	Number	9
a) Total length	Km	438.83	(Lodges, recreational facilities, etc.)		
b) Barangay roads	Percent	51			
(2) Electricity service coverage			(9) Schools		
a) Municipality	Percent	100	a) Elementary level	Number	119
b) Barangay	Percent	76	b) Secondary level	Number	19
c) Household	Percent	49	c) Tertiary level/Technical	Number	5
(3) Telecommunication Services			(10) Health Facilities		
a) Availability in municipality	Percent	12 5	a) Hospital	Number	1
b) Telegraph station	Number	8	b) Main health centers, rural health	Number	47
c) Telephone station	Number	2	units, barangay health center, etc		
(4) Post Office	Number	8	(11) Labor		
			a) Labor force participation ratio	Percent	31
(5) Transportation services	Mode	Bus, Jeep,	b) Employment rate	Percent	89.6
	(ex. Bus,	Ferry Boat			
	jeep, taxi,.)	Pumpboat	(12) Average family income		
			a) Monthly income	Pesos/Month	4,254
(6) Banking Facilities	Number		b) Monthly expenditure	Pesos/Month	3,288
a) Private bank	(by Private	2			
b) Public bank	and public)	1			
(7) Industrial/business/commercial					
establishment	Number	617			

Sources: PSPT, Provincial Socioeconomic Profile Development Plan, 1995Population Census, 1994 Family Income and Expenditures Survey by NSO

Table 3.3.2 Public Facilities and Services by Municipality

Municipality	High School			Vocational School	College	Hospital	Public Market	Bank and Financing Institution
	Public	Private	Total					
	nos.	nos.	nos.	nos.	nos.	nos.	nos.	nos.
Almeria	2		2				1	
Biliran	2		2	1	1		1	
Cabucgayan	2		2	1			1	
Caibiran	1		1				1	
Culaba	2		2				1	
Kawayan	2		2				1	
Maripipi	2		2	1				
Naval	5	1	6		1	1	1	3
Provincial Total	18	1	19	3	2	1	7	3

Figure 3.3.1 Distribution of Families by Income Class

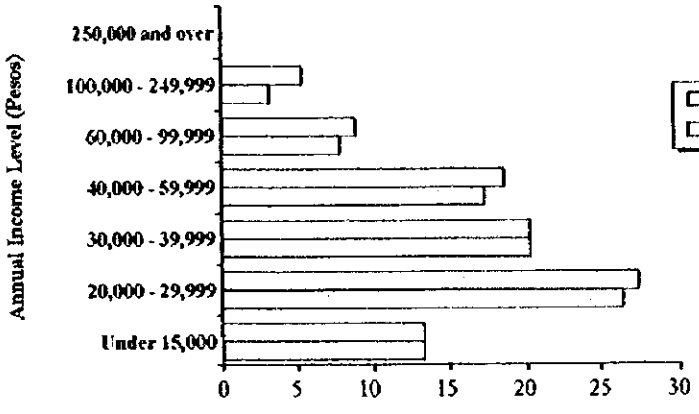


Figure 3.3.2 Employment Distribution by Major Industry and Class of Worker

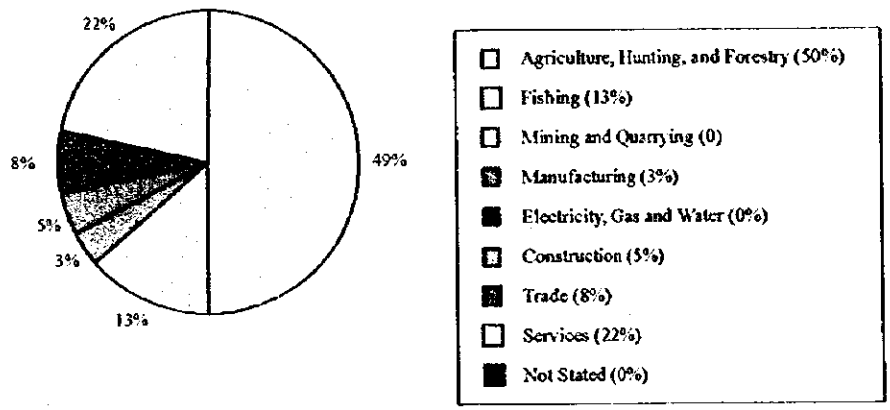


Figure 3.3.3 Population Distribution by Highest Attainment of Education