JAPAN INTERNATIONAL COOPERATION AGENCY

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

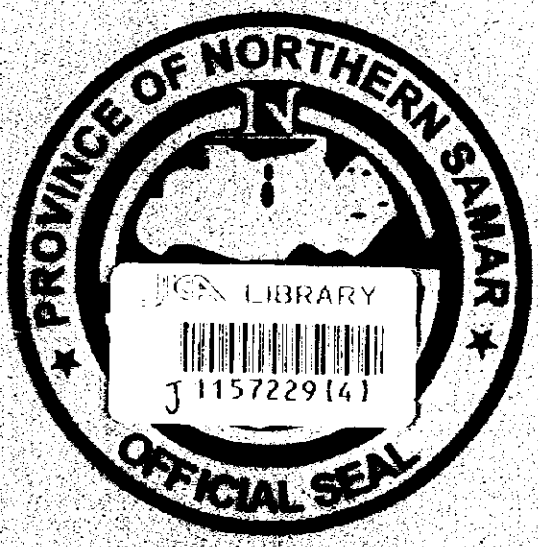
THE STUDY ON THE PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN IN THE REPUBLIC OF THE PHILIPPINES

VOLUME I - [4]

MAIN REPORT

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

NORTHERN SAMAR



DECEMBER 1999

NIPPON JOGESUIDO SEKKEI CO., LTD.

EXCHANGE RATE (As of 29 October 1999)
US $ 1.00 = Peso 40.01 = Yen 104.26

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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 Northern Samar 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 NORTHERN SAMAR
Catarman

MESSAGE

Paramount to human existence is Water, without it, mankind is in peril. This is the basic tenet why the Provincial Government has painstakingly developed this Provincial Water Supply, Sewerage and Sector Plan for the Province of Northern Samar.

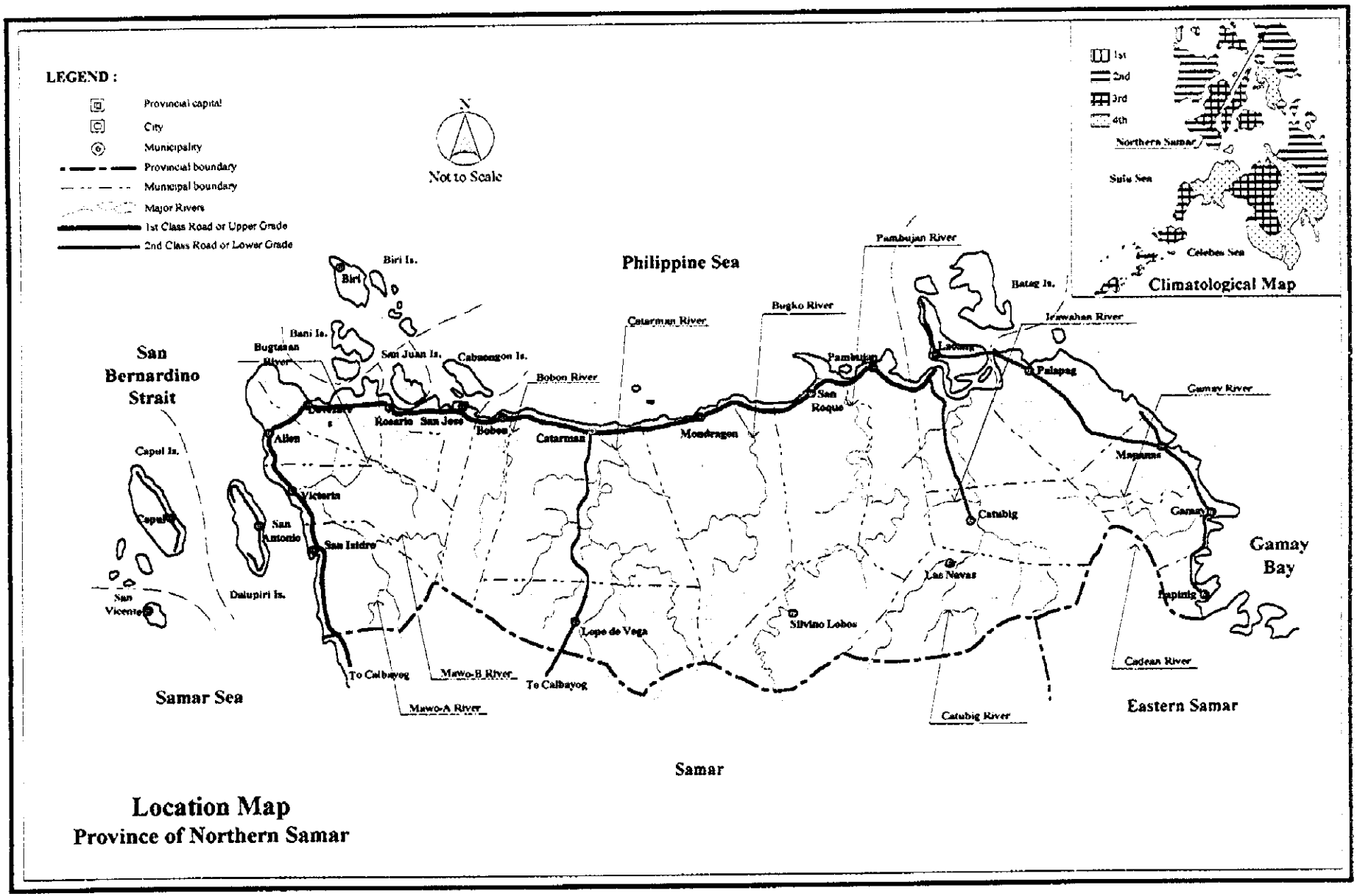
Despite our constraint in resources, the Province has seriously considered the noble task of implementing various water supply and sanitation projects. All of us are cognizant of the fact that our province has been saddled with poor sanitation and all forms of water-borne diseases which aggravate the increasing economic problems of our brothers and sisters in distant and depressed areas.

I am therefore, imploring all the Municapal Mayors to institute measures to cushion the impact of the foregoing problems in our respective municipalities. A rational allocation of funding and serious attention should be accorded to such basic projects by the Local Chief Executives if we want to be of service to our needy people.

I wish to reiterate that my Administration will continue to pursue this Plan to effectively reduce the prevalence of water diseases in our midst and I am willing to accept any challenges that may come in implementing and sustaining similar projects or activities in the future.

Good luck and Mabuhay!

MADELEINE P. MENDOZA-ONG
Governor



Location Map
Province of Northern Samar

PROVINCIAL WATER SUPPLY, SEWERAGE AND SANITATION SECTOR PLAN

VOLUME I MAIN REPORT

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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 Northern Samar 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

Northern Samar is one of the three (3) provinces in Samar Island and belongs to Region VIII, the Eastern Visayas Region. Catarman is the provincial capital. The province is composed of 24 municipalities with 569 barangays, of which 101 are urban and 468 rural. The province is classified as 2nd class. At the municipal level, 13 municipalities belong to 5th class, 7 municipalities to 6th class, and the rest has higher classification. The population of the province was 454,195 in 1995 with an annual growth rate of 3.21% between 1990 to 1995.

Physical Features

The province has Type II climate. It is characterized by no distinct dry and wet seasons. The two (2) major geomorphic feature of the province are the Samar Central Highlands with minimum elevation of 600 masl and the western mountain system. This system has low rolling hills with elevations of less than 300 masl. The western coastline is very irregular.

The principal river systems commonly flow northward and empty into the Philippine Sea. Catarman River is the largest in the province with a watershed of 772km^2. About 64% of the total land area of the province constitute agricultural land and another 32% as forestland. Built-up area is less than 1%.

Socio-economic Aspects

Agriculture is the major economic activity in the province. The average annual family income in 1994 was ₱45,485 which was well below the national average of ₱83,161. Moreo-

ver, about 56% of the total number of families lived within and below the established poverty threshold income of P 37,053 in Region VIII.

About 92% of the municipalities have electric supply service with only 28% household coverage. Telecommunication service is available to all municipalities. Inter-municipal land transportation can be obtained by means of jeepneys, taxis, cars and buses. There are 10 banking institutions, 967 industrial/commercial establishments, and 11 tourism-related facilities. With regard to social services, there are 561 schools, 8 hospitals, and 136 health units and barangay health stations.

Provincial population growth rates had been increasing for the last 6 censal years. The 1998 population was estimated to provide the planning base for this provincial plan. Considering the 1995 NSO classification of urban and rural barangays, rural population accounts for 72%, while the remaining 28% are urban.

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

Environmental problems related to wastewater discharge and unsanitary solid waste disposals are occurring in parts of the province. Major pollution sources in urban areas are domestic wastewater and dumped garbage. Only 15% of the total households in the province relied on municipal refuse collection services.

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. Aside from household toilets, school toilets and public toilets are included in the sanitation components in view of public hygiene improvement. Preliminary discussions on solid waste management are also considered.

Water Supply

The province has only three (3) Level III systems, namely, Catarman WD, San Isidro WD and privately managed Costa Real WWs. Among them, Catarman WD practices scheduled water supply due to insufficient water source at present.

There are 42 Level II systems operating in the municipalities. Most of these are utilizing spring sources (40 systems), while only 2 systems are using shallow well/surface water. Majority supplies water for 24 hrs, however, minimal discharges are experienced due to the El Nino phenomenon. It is also common that water quality examination is not adequately conducted. About 20% of the waterworks impose a flat rate water charge of 5 to 20 Pesos/HH/month. The rest supplies water free of charge. Repair works are often done with the assistance of the MEO/CEO or DEO.

Level I facilities are common in rural barangays. Of the 5,000 operational Level I facilities, 94% are shallow wells. In the course of PW4SP preparation, 40% of the shallow wells were assumed as unsafe water source. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. Most of these unsafe sources are located in nearby potential pollution sources, hence, for new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic water quality monitoring. Percentage shares between public and private Level I facilities for rural water supplies are 44% and 56%, respectively. The share of developed springs in public facilities is 20%.

About 61% or 291,800 of the present population (477,300 comprising 28% in urban area and 72% in rural area) are adequately served. Under area classification, 65% of the urban population and 60% of the rural population have access to safe water sources/facilities. Of the served population, only 1% or 4,200 persons are served by Level III systems. About 58% or 276,200 persons depend on Level I facilities, while the rest relies on Level II systems.

Sanitation

The service coverage of sanitary toilets in the province is 59% or 52,873 of the total households, which is a bit lower than the national coverage of 60%. Almost all these sanitary toilets are the pour-flush type. In municipalities that have high water service coverage (Laoang, San Antonio), high sanitation coverage occurs and adversely, in low water supply coverage (Victoria, Silvino Lobos), low sanitation coverage also occurs. Service coverage in urban area is 60%, while in rural area, the coverage is 58%. Although high percentage of sanitary toilets is disclosed in urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Sullage management is unheard of. In urban areas, there are no sewerage systems.

The province has a total of 985 toilets installed at 534 schools. Only 34% of the students is adequately served by sanitary toilets. The present average ratio of 115 students per sanitary toilet is very much higher than the service level standard of 40 students per sanitary facility. Some of these facilities are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. Proper operation and maintenance are not usually done. There are 21 public utilities; public markets, bus/jeepney terminals, and parks or plazas. About 86% of these public toilets has sanitary toilets. However, the manner of usage and maintenance are improper rendering the facilities unsanitary. At present, no specific arrangements are made for the operation and maintenance, as well as the collection of fees to cover such cost.

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 the formulation of integrated and sectoral development plans and policies for the consideration of the Provincial Development Council, while the PEO undertakes survey, design of facilities, construction supervision and assistance in O&M of facilities. The PHO is responsible for health, hygiene and sanitary improvement in coordination with MHOs. Normally, projects of Level I/II systems are initiated by BCs, and LGUs implement the projects with funds made available for the purpose. The project implementing capacity of LGUs is still limited and may require assistance from national government line-agencies, NGOs, etc. Water Supply Project Task Forces have set up as

needed. Larger water supply systems are managed by either municipalities or WDs which have a higher level of management expertise.

The current major institutional issues are: managing the transition process, and establishing the LGU's leadership for the sector. Major resource realignments and capacity building initiatives are needed. At the local level, the LGUs' capability to handle sector projects needs to be developed to enable them to address their expanded role sufficiently, and will require substantial input and support.

Community Development

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

Gender Consideration

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

Key informant surveys and group interviews were conducted to determine the degree of community participation on the sector of barangay officials and their constituents, with emphasis on gender-related issues. . In general, there is no gender bias in the manner by which WATSAN activities are being practiced:

- water fetching responsibility – Most men claimed that they or their sons fetch water. But according to women, there is no designated gender responsible for fetching water. The responsibility lies on whoever is available.
- operation and maintenance activities – Men were more involved in WATSAN activities, particularly in repair and maintenance of the facilities. But some women claimed that

they are also responsible for minor repairs. However, they expressed that both women and men can participate in operating and maintaining WATSAN facilities.

- barangay organizations - These are still male-dominated. Most chairpersons/heads are males, while women occupy the traditional roles, such as secretary or treasurer. This is due to being traditionally patriarchal especially for indigenous communities.
- consultation and project participation – Both women and men were consulted and briefed on their roles and responsibilities in the planning, design and construction of WATSAN facilities. Actual participation during construction came mostly from men.
- WATSAN training – Most men received sector-related training. Both women and men have access to training and are interested to learn new skills.
- Health and hygiene – Both women and men equally recognized the importance of good health and hygiene practices. But women mostly attend health and sanitation training.

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 96.53% of the total income. The provincial government has no economic enterprises but it receives municipal income, not on a regular basis from the fees and charges from small-scale mining and sand and gravel operations.

On the other hand, actual expenditures for the same period were 72.58% of the total revenue. These expenditures are further broken down into personnel (53.13%), capital outlay (7.86%), and operation and maintenance expenses (11.59%).

The funds for the development are part of the capital outlay of the province. The amount of debt servicing capacity of the provincial government is computed to be ₱ 47.39 million for the year 1999, which represents the maximum loanable amount through the MDF.

Funds for the capital outlay is mainly derived from 20% DF of the IRA. During the period 1995-1999, the 20% DF of the province was sufficient to cover the actual expenditures except in 1998 when the province incurred a deficit of ₱4.7 million. For 1999, it is projected that the 20% DF is adequate to cover the capital expenditures of the province. Projected amount is ₱52.1 million.

The provincial government provides the prioritized WATSAN projects with funds under the social services sector. In the AIP of the province, a total investment cost of ₱12.05 million was planned for WATSAN sector during the period of 1995-1998. But, the actual expenditure for the sector out of the 20% DF of the province was ₱3.186 million or only 26.44% of the required investments. Further, there is a need to clarify which of the planned investments were implemented and funded from any of the available sources, e.g., local funds (provincial and municipal government) and foreign funds.

In 1997, disbursed amount to WATSAN sector was only ₱1.01 million (2.68% of the actual total disbursements from 20% DF). Likewise, in 1998, the WATSAN sector is allocated a smaller amount of ₱0.97 million which is equivalent to only 2.06% of the planned 20% DF and the actual disbursed amount of the 20% DF. Priority components in the WATSAN sector are construction of DW, SW, tank, etc., for which a total amount of ₱10.89 million was appropriated (equivalent to 90.36% of the WATSAN allotment) for the period 1995-1998, and funded mainly by the National Government.

The financial assistance was obtained from foreign donors such as UNICEF, OECF (Level I) and PAF2 (DILG). The PEO-Waterworks implements the provincial government funded projects under the General Fund. For sector implementation, funding sources are provincial government, CDF (Congressmen) and the municipal governments, while implementing agencies on the above mentioned are the PEO and PPDO (for monitoring), DPWH-District Office and the Municipal Governments, respectively.

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

The O&M cost for Level I and II water supply systems is the responsibility of the users. It is mandatory that the community shall organize themselves into an association, which handles collection of water charges as well as O&M of the facility. However, most of the RWSAs and BWSAs reportedly face difficulty to manage the systems, since the beneficiaries do not recognize the cost requirements. The monthly fee for Level I in the active association is

about P10 /household /month. For Level III systems, the O&M cost is basically covered by the user's fees.

The percentage of water fee to median monthly household income is about 0.87% for Level III, 0.29% for Level II and less than 0.14% for Level I. Thus, the current water rates in all service levels are within an affordable range. On the other hand, construction cost of household toilet seems to be expensive comparing with the family income.

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.

Northern Samar shares common geologic features and history with the other two provinces comprising the Island of Samar. The lithologic units can be classed under two general rock suites: (1) the suite of igneous rocks of Cretaceous-Paleogene periods, comprising the core of Samar Island, and (2) the clastic and non-clastic sequence of rocks dated from Early Miocene to Pleistocene epochs found surrounding the core.

The Samar Central Highlands is a NNW-SSE trending mountain system of moderate to high relief extending from Catarman to Leyte Gulf. The youngest rock units are marine and terrestrial sediments of Oligocene to Miocene epoch in surrounding area of the mountain range, and volcanic rocks as andesite flow of Oligocene epoch. The western mountains were formed by submarine andesite and basalt flow. Presently, the islets formed by volcanic and pyroclastic rocks are in the northern and western sides of the mountains. The alluvial deposits are very limited along the seashore.

For planning purposes in the development of groundwater sources, the provincial area is divided into solo shallow well, deep well and difficult areas. Some solo shallow well areas are defined in the province. Deep well area covers about 85% of Northern Samar, while difficult area falls on the remaining area. Ironic water are observed in shallow and deep wells belonging to the Samar Central Highlands, where the municipalities of Catubig, Las Navas, Lope de Vega and Silvino Lobos are located. On the other hand, saline water intrusion areas are found in the northern coastal belts made of alluvial plains in the province.

Based on the general information of water sources gathered during the study, the province has numerous developed springs currently serving the province. Such spring sources are located at the mountain area on the western part and from the highland area on the central to eastern parts of the province. Untapped springs for future development shall be investigated in Allen, Lavezares, San Isidro, Victoria and the western islets. Other municipalities out of above mentioned area have few untapped springs.

Based on the existing well inventory, the depth of potential aquifers occurs between 22 to 120 meters in the recent alluvium, fluviatile deposits and the Plio-Pleistocene rocks. The development of deep wells is more advantageous than shallow wells considering the safe quality and invariable yield of deeper aquifers. In the mountainous area, water tables are reported at 60 mbgs to 100mbgs. There are two kinds of groundwater quality problems in the province; one is ironic water distributed in the Samar Central Highlands area, and the other is salt water intrusion along the seashore alluvial plains.

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

For the furtherance to design the concrete specifications of the planned wells, recommendations are made to prepare groundwater database and conduct detailed groundwater investigations entailing the construction of test wells, prior to the detailed design or in the pre-construction stage. Groundwater database study shall cover the entire province, while test well investigations shall be conducted in Catarman, Mondragon and San Roque.

Untapped springs shall also be surveyed to confirm the development possibility in the detailed groundwater investigation. This will include items on the following: i) location and type of spring source; ii) fluctuation of discharge rate through the year; iii) distance from spring source and proposed served area; and iv) elevation difference between two points. Additionally, spring water quality in the Samar Central Highlands area shall be examined to confirm the existence of pollutants from mining sites.

7. Future Requirements in Water Supply and Sanitation Improvement

Physical Targets and Service Coverage

Phased requirements for the sector development in the province are assessed to meet the provincial targets established as percentages of beneficiaries or utilities to be served by sub-sector. Targets of service coverage for water supply in Phase I development were established in consideration of securing the existing service coverage and viable investment using available IRA both in urban and rural water supply as shown in Table 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. The types and number of well drilling/rehabilitation equipment and supporting vehicle for Level I facilities are identified as reference information. Also, minimum requirements for setting up a provincial laboratory to support drinking water quality surveillance and monitoring activities are described.

Table 7.1 Present Service Coverage and Sector Targets

Sub-Sector	*Area/Type*	*Base Year Service Coverage*	*Provincial Sector Targets*	
			Phase I	*Phase II*
Water Supply	*Urban Area*	*65*	*65*	*95*
	Rural Area	*60*	*60*	*93*
Sanitation	*Urban HH Toilet*	*60*	*68*	*93*
	Rural HH Toilet	*58*	*65*	*90*
	School Toilet	*34*	*50*	*90*
	Public Toilet	*86*	*100*	*100*
Sewerage	*Urban Area*	*0*	*Not applicable*	*50*
Solid Waste	*Urban Area*	*56*	*65*	*Not applicable*

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

Required Facilities to Meet Target Services

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

systems in rural area. Rehabilitation work is planned only for new deep wells (Level I) to be constructed under PW4SP, considering the difficulty of rehabilitation for existing wells constructed by means of traditional methods. Facilities for the provincial laboratory are determined, taking into account the existing facilities and the exigency to examine the water samples at the right time.

In sanitation sector, pour flush and/or flush type household toilets are planned, while VIP type household toilet and sanitary pit latrine are considered in rural area as an intermediate measure. Sewerage program is planned in Phase II for limited urban area. The study on solid waste considered only the number of required trucks for the year 2004. Additional service coverage of the sector by phase is shown in Table 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*	*9,317*	*141,645*
	Rural Area	*Persons*	*21,664*	*145,637*
Sanitation	*Urban HH Toilet*	*No. of Households*	*4,267*	*19,545*
	Rural HH Toilet	*No. of Households*	*9,376*	*44,760*
	School Toilet	*No. of Students*	*25,497*	*63,239*
	Public Toilet	*No. of Utilities*	*6*	*12*
Sewerage	*Urban Area*	*Persons*	*Not applicable*	*41,075*
Solid Waste	*Urban Area*	*No. of Households*	*8,905*	*Not applicable*

The necessary water supply facilities for Phase I include 17 deep wells/springs for 1,700 house connections in urban area, and 273 Level I wells/springs for rural area. For Phase II, 33 deep wells/springs for additional 35,400 connections and 2,500 Level I wells/springs are required for urban and rural water supplies, respectively. It is assumed that 50% of Level I facilities will be implemented by the LGUs and 25% of these public facilities will be allocated to spring development. Rehabilitation requirements are assumed to be 10% of the total number of deep wells to be constructed under PW4SP. Three (3) sets of water quality test instruments/equipment will be necessary; one (1) set to upgrade the existing laboratory in Catarman, and the other two (2) sets, for the new laboratories in Allen and Laoang.

For urban water supply, one Level III system is, in principle, considered for urban area of every municipality. In the municipalities with existing Level III system/s, the expansion of the existing system/s was first considered. In case there 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 the respective system of the municipalities.

Currently, 22 out of the total 24 municipalities have no Level III system in their urban areas. There are no specific planned/on-going projects such as foreign donor assisted project/s at present.

Merging of municipal systems (physical arrangement) in the long-term is considered. Integrated management systems shall also be sought. Conditions to be studied include; water source availability, willingness by concerned municipalities and technical study on cost recovery/economical construction.

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

Some municipalities have high potential in spring development for urban water supply. However, detailed survey to ensure appropriate developments of spring sources shall be conducted in the implementation of the projects.

Moreover, Phase I sanitation will require 4,267 household toilets, 29 public school toilets and 6 public toilets for urban area. In rural area, 9,376 household toilets and 89 public school toilets are necessary. Solid waste disposal will need 17 refuse collection trucks. For Phase II, urban area will require 19,545 household toilets, 92 public school toilets and 12 public toilets. In rural area a total of 44,760 household toilets and 449 public school toilets are necessary. It is assumed that half of the requirements of school toilets may be converted to classroom toilets from standard toilet building depending on technical conditions and adjustment with DECS.

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

Investment cost includes direct cost for construction/rehabilitation of required facilities, procurement of vehicle/equipment, construction/upgrading of laboratory, sector management, physical and price contingencies, and value-added tax. The recurrent cost is incurred for operation and maintenance of facilities. Unit construction cost per person/household/ facility was first prepared under contract-out basis in 1998 price level. In this regard, the cost for procurement and distribution of toilet bowl for pour-flush toilets is only counted for household toilets. Investment cost required by phase for the province is summarized in Table 9.1.

The total investment cost for Phase I is estimated at about ₱312.8 million. A total of ₱167.2 million is required as the construction/rehabilitation cost (including cost for disinfection of well) in Phase I, of which urban water supply and rural water supply share 28% and 53%, respectively. While, the remaining 19% is required for urban and rural sanitation.

Required equipment and vehicle for construction/rehabilitation of Level I facilities and solid waste management are roughly estimated: 1 set/unit each of well drilling equipment and service truck with crane; 1 set/unit each of well rehabilitation equipment and support vehicle; and 17 units of refuse collection truck. The total procurement cost is estimated at approximately ₱62.6 million. Out of the requirements, however, only one set/unit each of well rehabilitation equipment, support vehicle and maintenance tools/water quality testing kits is in-

corporated in the medium-term investment plan due to budgetary constraints and technical capability of LGUs at present.

Likewise, annual recurrent cost in 1998 price level is estimated at ₱9.6 to ₱12.6 million/year during Phase I period.

Table 9.1 Investment Cost Required by Phase

Unit: 1,000 Pesos

Item	Component	Phase I	Phase II
Construction/ Rehabilitation	Water Supply		
	Urban Area	46,585	553,674
	Rural Area	87,787	470,210
	Sanitation		
	Household Toilet	2,717	10,185
	School Toilet	27,553	126,324
	Public Toilet	2,210	4,421
	Disinfection of Well	359	181
	Urban Sewerage	N/A	299,848
	Sub-Total	167,211	1,464,872
Procurement of Vehicle/ Equipment/Maintenance Tools	Well Drilling Rig & Service Truck	0	26,782
	Support Vehicle	590	0
	Well Rehabilitation Equipment	280	0
	Maintenance Tools	260	0
	Water Quality Testing Kits	15	0
	Sub-Total	1,125	26,782
Water quality Laboratory		1,434	0
Sector Management	Engineering Studies	21,378	150,190
	Community Development and Training	15,504	103,978
	Sub-Total	36,882	254,168
Total Direct Cost		206,651	1,745,821
Contingencies	Physical Contingency	20,661	174,582
	Price Contingency	56,718	N.A
	Value-Added Tax (VAT)	19,111	N.A
Total Investment Cost		303,141	1,920,403
Total Investment Cost (excluding Price Contingency)		246,383	1,920,403

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

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 projection of IRA to the relevant sector for Phase I period was made covering different administrative levels. Provincial allocation to the relevant sector was assumed to be 3% of

total IRA (15% of 20% Development Fund) and the same percentage was applied for the allocation of municipal IRA to the sector. The fund available for this sector for 5-year implementation period from 2000 to 2004 was calculated as a sum of municipal and provincial allotments.

The combined provincial and municipal IRA to the sector was estimated at ₱121.61 million (provincial IRA is 2.80% of the total IRA). In the overall IRA allocation to the sub-sectors, rural water supply has the largest allotment of 47.9%, followed by urban water supply (33.2%). While, the share of rural sanitation is 18.7%, which is higher than that of urban sanitation of about ₱7.44 million.

The shortfall in funding on the current price level was figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. IRA can fund only 49% of the requirements as a provincial average. Hence, there is a big shortfall of ₱124.78 million in funding. It will become ₱181.53 million in consideration of price escalation with annual rate of 7% and VAT. In the municipal achievement percentage in finance, Capul, Laoang, Lavezares, Rosario, San Antonio, San Isidro and San Vicente (100%) is the highest among municipalities, followed by Mondragon (78%). Majority is in the range between 40% and 60% to the respective requirements, while the provincial average is 49% (40% in consideration of contingencies and VAT).

Under the above situation, different levels of funding availability are discussed with reference to service coverage. Alternative countermeasures are also discussed in view of: i) acquisition of external funds: ii) augmentation of sector finance under current arrangements (IRA and others); iii) introduction of private sector participation to mitigate public investment needs; and iv) effective and economical investments. It is noted that for urban and rural water supply sub-sectors, that the service coverage in the year 2004 would not sustain even at the present levels in the provision of only the projected IRA. Using computer-based programs, these scenarios may be modified by policy makers according to updated information and policy on available fund and sector targets.

In the synthetic investment need ranking of municipalities covering four sub-sectors, the top ranking municipalities are Lope de Vega, Las Navas and Biri, which indicate that they are given priority for investments in all sub-sectors while Laoang is the least priority in terms of investment.

With regard to Level I water supply and sanitation improvement, for which GOP may provide possible assistance, the DILG is assumed to be the Executing Agency and the province the Implementing Agency in the meantime. The project may be merged with those of 4th batch provinces in preparation of the PWASP. The implementation of a packaged project may be realized in the near future.

Project components including Level I water supply and public/school toilet facilities were identified to meet the conditions in provision of GOP-assisted project. There are fifteen (15) eligible municipalities in terms of 5th and 6th municipalities for GOP-assisted Level I rural water supply in the province, while all municipalities (24) in the province meet the condition for GOP-assisted projects (limited to 3rd to 6th municipalities) in sanitation sub-sector.

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

For Case 1, GOP shall share 50% of the overall project cost (₱132.7 million in 1998 price level) in combination of the foreign assisted loan and government counter part fund. The remaining 50% shall be shared by the LGUs (47%) and beneficiaries (3%). Under this case, the IRA to be used by the LGU will increase to ₱80.0 million from ₱62.4 million (1998 price level), considering price contingency and VAT. As a result of cost comparison between the estimated project cost to be shared by the LGUs (₱80.0 million) and available IRA of LGUs (₱78.0 million), it was identified that there was a shortage of ₱2.0 million, achieving 97% of the proposed requirements. An option suggested is to utilize sector IRA alloted (concerned municipalities and province) to urban water supply or other sub-sectors without limiting to the available IRA for rural water supply sub-sector, as the possible financial source

For Case 2, the utilization of the MDF is considered in case the LGUs will fail to furnish IRA for the cost to be shared. The foreign loan may be availed of at the maximum financing limit of 75% of the overall project cost. GOP will possibly finance up to ₱99.6 million or 75% of the total project cost in the portion of loan. Out of GOP finance through the loan, ₱63.0 million or 47.5% of the total project cost shall be granted to the LGUs, aside from the 2.5% GOP counterpart fund. The remaining ₱36.5 million or 27.5% of the total project cost shall be utilized for financing the LGUs to secure their budgetary capacity through MDF. Under this case, the IRA to be used by the LGU will increase to ₱29.9 million from ₱25.8 million (1998 price level), considering price contingency and VAT, which is about 40% of available IRA estimated in the previous study (₱80.0 million).

Cost recovery and cost-sharing shall be promoted to attain the planned target based on the principle that adequate water, sewerage and sanitation facilities should be paid for. For Level I water supply systems, LGUs and beneficiaries are required to share the capital cost. While users need to pay water charge up to 2% of their monthly income to sustain the system (maximum P65/HH/month in 1998). For Level II water supply systems, full cost recovery is required for all capital and recurrent cost (P114/HH/month in 2004, 2.3% of monthly income). For Level III water supply systems, a full recovery of capital and O&M cost is required (P267/HH/month in 2004, 5.5% of monthly income). Based on experience that water fee must not exceed about 5% of income, the monthly water rate seems to be affordable.

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

11. 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 Northern Samar 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 Northern Samar

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

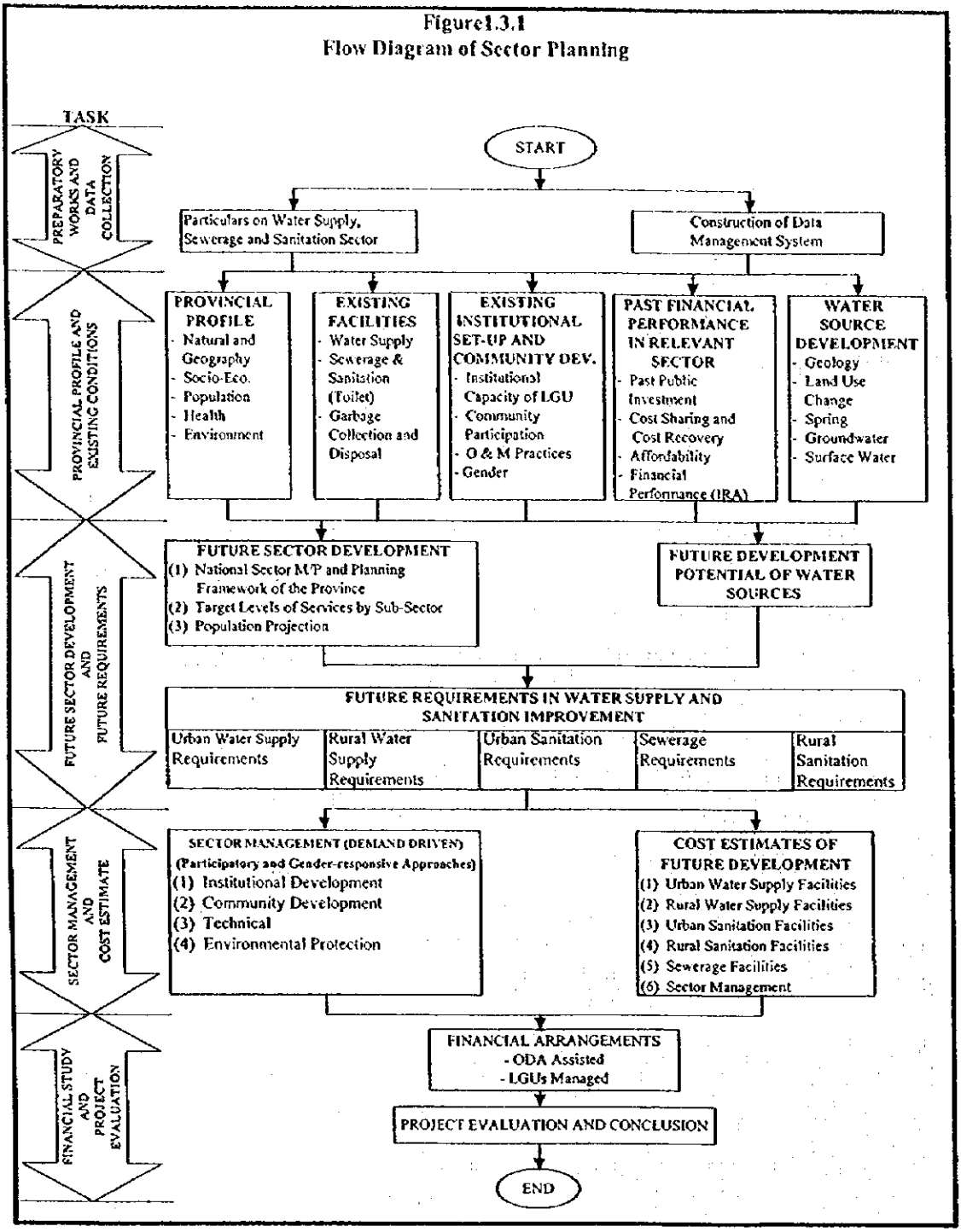
The PW4SP is a framework plan that would serve as the basis for the future implementation work in the sector. It will be carried out either as large-scale projects funded by international agencies or as a small size project carried out by local parties. It should be noted that the PW4SP is a sector development 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 who 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.

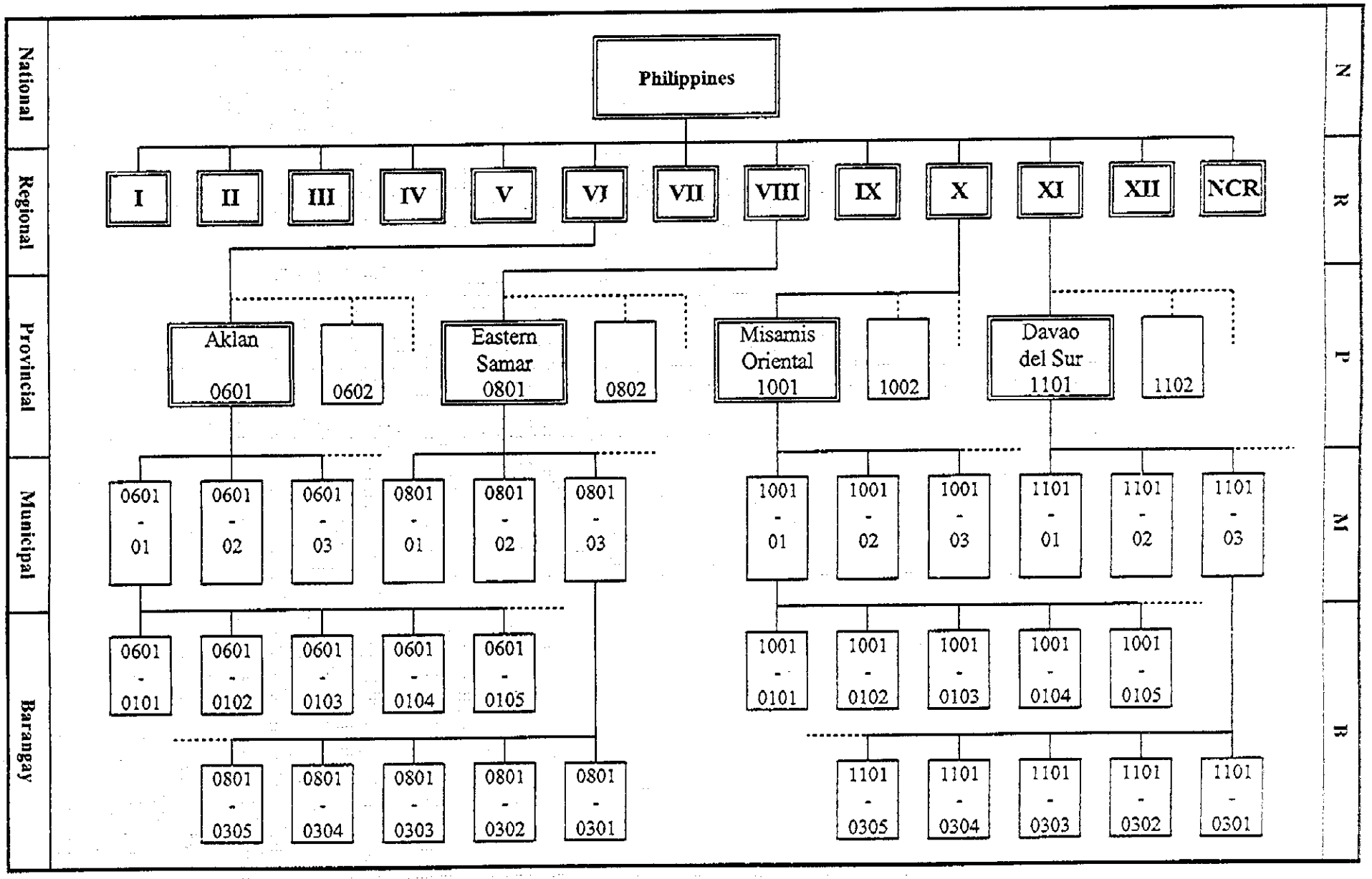


Figure 2.6.1 Institutional Hierarchical System by the NEDA Coding

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			
			P.1.3.2	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 WD/ 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

Northern Samar is one of the 3 provinces in Samar Island with Catarman as the provincial capital. It is part of Region VIII, the Eastern Visayas Region. The province is bounded by the San Bernardino Strait on the northwest, the Philippine Sea on the northeast, the Samar Sea on the west, and the Eastern and Western Samar on the south as shown in the Location Map.

The province is classified as 2nd class and has a total land area of 3,498km² that is 1.17% of the Philippine total land area of about 300,000km². It is composed of 24 municipalities. Based on the 1995 NSO records, the province has 569 barangays, of which 101 are urban and 468 rural. Provincial total population was 454,195 in 1995. About 72% of the population reside in rural areas, while the remaining 28% in urban areas. At present, there are 2 water districts (Level III water supply system) operating in the province. Table 3.1.1 presents the breakdown per municipality of land area, population and density, as well as administrative composition.

Table 3.1.1 Outline of Municipalities

Municipality		Land Area	1995 Population		Number of Barangay		
Name	Class	(km²)	Number	Density (person/km²)	Urban	Rural	Total
Allen	5th	47.50	17,972	378	6	14	20
Biri	6th	28.80	8,866	308	1	7	8
Bobon	5th	130.00	15,800	122	3	15	18
Capul	5th	35.00	9,964	285	5	7	12
Catarman (Capital)	3rd	285.40	61,705	216	19	36	55
Catubig	5th	276.30	25,190	91	8	39	47
Gamay	5th	115.10	19,457	169	3	23	26
Laoang	4th	214.70	47,438	221	6	50	56
Lapinig	5th	57.30	9,813	171	2	13	15
Las Navas	5th	210.80	25,031	119	4	49	53
Lavezares	5th	119.50	20,492	171	4	22	26
Lope De Vega	6th	280.00	11,947	43	1	21	22
Mapanas	6th	121.70	9,377	77	2	11	13
Mondragon	4th	288.90	25,504	88	2	22	24
Palapag	5th	179.60	24,947	139	4	28	32
Pambujan	5th	154.90	22,152	143	8	18	26
Rosario	6th	31.60	8,626	273	2	9	11
San Antonio	6th	27.00	7,984	296	1	9	10
San Isidro	4th	255.90	22,991	90	2	12	14
San Jose	5th	28.20	12,556	445	4	12	16
San Roque	5th	183.10	18,094	99	6	10	16
San Vicente	6th	15.80	5,970	378	2	5	7
Silvino Lobos	5th	224.20	11,028	49	3	23	26
Victoria	6th	186.70	11,291	60	3	13	16
Provincial Total	2nd	3,498.00	454,195	130	101	468	569

3.2 Natural Conditions and Geographical Features

3.2.1 Meteorology

The province has Type II climate under the Coronas classification. This type is characterized by no distinct dry and wet seasons. Maximum rainfall generally occurs in December and January and the driest month is May as reflected in the Location Map. Since the province is very near the eastern coast, it is open to the northeastern monsoon and is within the typhoon belt.

3.2.2 Land Use

Remaining forest area constitutes a mere 32% of the total area of the province located mostly in the hinterland areas of Las Navas, Silvino Lobos, Mapanas and San Isidro. Grassland and agricultural land occupy 1% and 64%, respectively. Built-up area is limited to less than 1%. Primary settlements are concentrated along the seacoast, riverbanks and major transport routes. 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	1,107.4	31.66
Grassland and Openlands	48.6	1.39
Built-up	22.8	0.65
Agricultural	2,229.8	63.74
Fishponds, Mangrove, Inland Water Area	89.4	2.56
Provincial Total	3,498.0	100

3.2.3 Topography and Drainage

The province of Northern Samar lies on the northern extension of two major geomorphic features, the Samar Central Highlands and the western mountain system. The Samar Central Highlands is N-S trending mountains of moderate relief extension from Leyte Gulf to the

province. Volcanic rocks of old geologic age cover the top of the highlands and the mountain system. There is no active or inactive volcanic mountain in Samar Island.

The central to eastern part of Northern Samar, which has a common boundary with Samar and Eastern Samar is a portion of the Samar Central Highlands. This area consists primarily of a peneplaned surface that has attained a minimum elevation of 600 masl. The areas in the western mountain system and the coastal area are characterized by low rolling hills with elevations rarely exceeding 300 masl. Generally, the western coastline is very irregular.

There are seven (7) major rivers, namely: Gamay, Catubig, Pambujan, Bugko, Catarman, Bobon and Mawo Rivers. The Cadahonan, Irawahan and Bugtasan Rivers are tributaries of major rivers. The Catarman River is the largest in the province with a watershed of 772 km^2 and drains to Philippine Sea passing through the towns of Lope de Vega and Catarman.

The major drainage systems cut across bedding plains, with most of the tributaries joining the main stream at right angle, resulting in a more or less rectangular drainage pattern. This system consists of V-shaped valleys with broad-crested ridges, waterfalls, steep gorges and deeply entrenched rivers, indicating a rejuvenated land surface. In the middle sector of the province are numerous sinkholes with different dimensions in their early stages of formation. Underground solution channels abound. Figure 3.2.1 shows the natural drainage systems of the province. Table 3.2.2 is a list of the main rivers and their corresponding drainage areas with recorded flow rates at the site of the gauging station.

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	
Gamay	-	No gauging station			None
Catubig	252	237.34	229.43	8.56	None
Irawahan*1	19	101.57	81.16	0.08	None
Pambujan	-	No gauging station			None
Bugko	-	No gauging station			None
Catarman	472	900.26	863.20	3.03	None
Bobon	91	123.12	120.84	0.50	None
Mawo	-	No gauging station			None
Bugtasan*2	138	98.56	87.91	4.34	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
*1; Irawahan River is a tributary of Catubig River.
*2; Bugtasan River is a tributary of Mawo River.

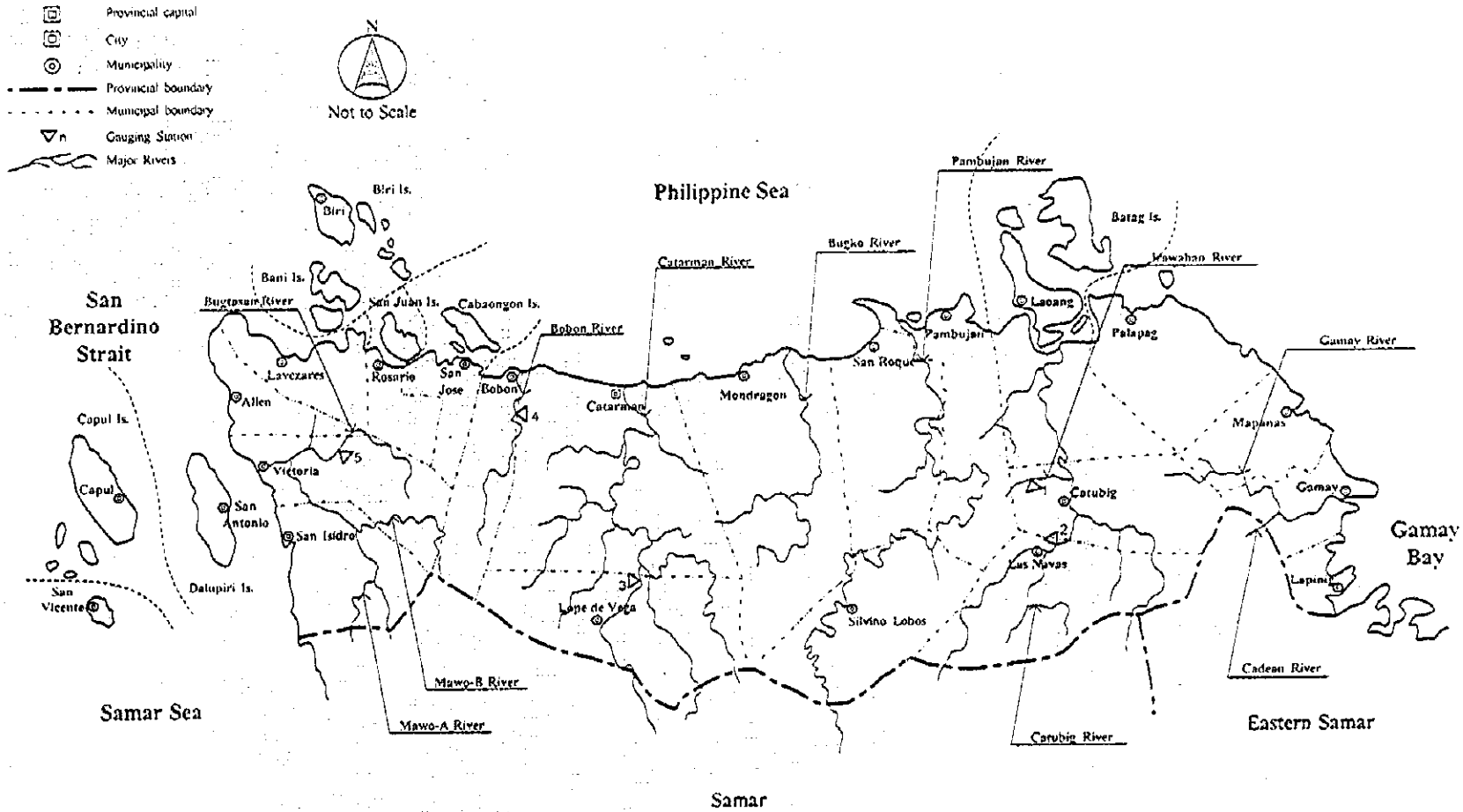


Figure 3.2.1 Major River Network Map
Province of Northern Samar

Seven (7) typical rivers in the province were selected for water quality examination, namely: Gamay, Catubig, Pambujan, Bugko, Catarman, Bobon and Mawo. Analyzed river waters were turbid. The examination results show low pH (slightly acidic) from the Catarman, Bonbon and Mawo Rivers probably due to the mineral rich rocks (refer to 7.5, Data Report).

3.3 Socio-economic Conditions

3.3.1 Economic Activities and Household Income

Northern Samar is primarily an agricultural province. The major economic activities are farming and livestock production. Principal crops cultivated are coconut, palay, abaca and corn. Bounded by 3 major fishing grounds, the province has high commercial and municipal fishery production. At present, the province is promoting cottage industry 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 was ₱ 45,485 while the expenditure was at ₱ 35,956 or a net saving of ₱ 9,529. 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 56% 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 were self-employed without any paid employee had the highest share of 44% as shown in Figure 3.3.2.

3.3.2 Basic Infrastructure

Electric supply coverage to municipalities is 92% with very low service coverage at household level of only 28%. Telephone service is available in all municipalities. There are 26 post office in the province. Land transportation is available by means of jeepney, bus, rent-a car and tricycle. There are 967 and 11 business and tourism establishments, respectively. 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).

Figure 3.3.1 Distribution of Families by Income Class

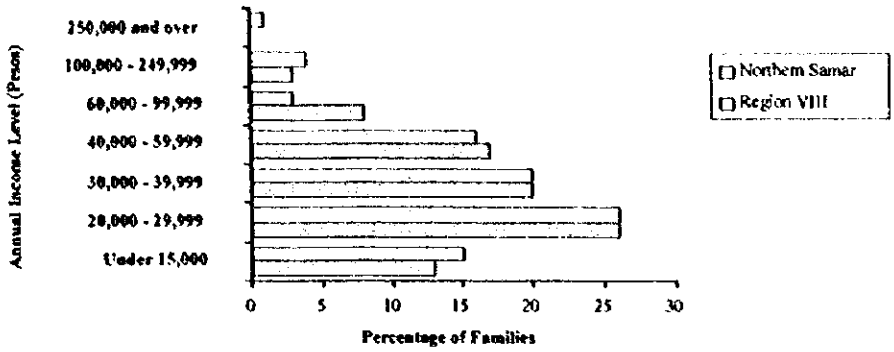


Figure 3.3.2 Employment Distribution by Major Industry and Class of Worker

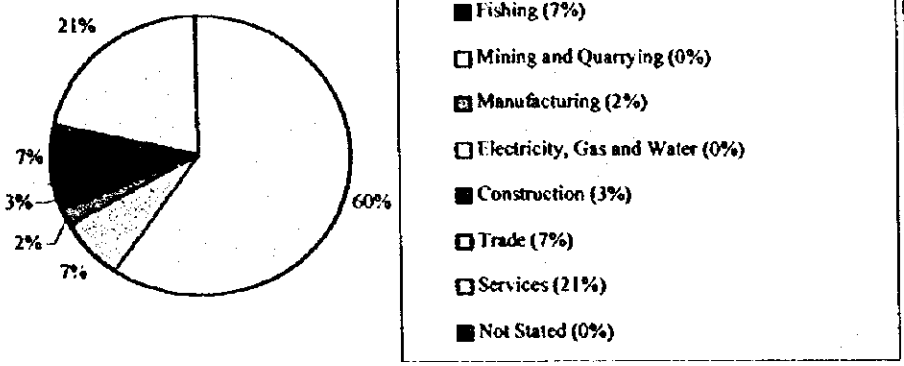


Figure 3.3.3 Population Distribution by Highest Educational Attainment

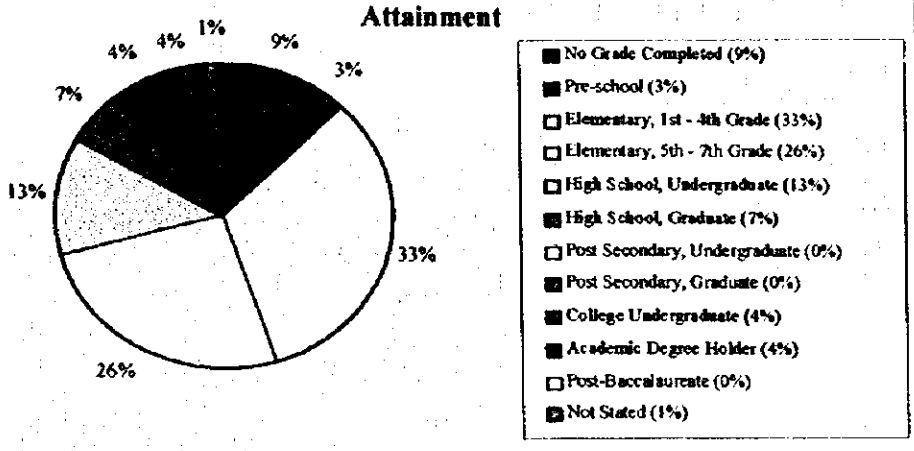


Table 3.3.1 Provincial Outline on Public Services

Item	Unit	Value	Item	Unit	Value
(1) Roads			(8) Tourism facilities	Number	11
a) Total length	Km	1,112.08	(Hotel resort, lodges, recreational		
b) Barangay roads	Percent	35.22	facilities, etc.)		
(2) Electricity service coverage			(9) Schools		
a) Municipality	Percent	91.67	a) Elementary level	Number	497
b) Barangay	Percent	36.82	b) Secondary level	Number	41
c) Household	Percent	28	c) Tertiary level/Technical	Number	23
(3) Telecommunication Services			(10) Health Facilities		
a) Availability in municipality	Percent	100	a) Hospital	Number	8
b) Telegraph station	Number	34	b) Main health centers, rural health	Number	136
c) Telephone station	Number	34	units, barangay health center, etc		
(4) Post Office	Number	26	(11) Labor		
			a) Labor force participation ratio	Percent	76.1
(5) Transportation services	Mode	Airplane Jeep,	b) Employment rate	Percent	49.65
	(ex. Bus,	Bus, Ferryboat			
	jeep, taxi,.)	Pumpboat	(12) Average family Income		
			a) Monthly income	Pesos/Month	3,594
(6) Banking Facilities	Number		b) Monthly expenditure	Pesos/Month	2,764
a) Private bank	(by Private	8			
b) Public bank	and public)	2			
(7) Industrial/business/commercial					
establishment	Number	967			

Sources: PSPT, Provincial Socioeconomic Profile Dev. Plan, 1995Population Census, 1994 NSO Family Income & Expenditures Survey

Table 3.3.2 Public Facilities and Services by Municipality

Name of Municipality	High School			Vocational School	College	Hospital	Public Market	Bank and Financing Institutions
	Public	Private	Total					
	nos.	nos.	nos.	nos.	nos.	nos.	nos.	nos.
Allen	2	1	3			1	1	2
Biri	2		2			1	1	
Bobon		1	1	2			1	1
Capul	1		1	1		1	1	
Catarman (Capital)	4	2	6		4	4	1	10
Catubig	1		1		1	1	1	1
Gamay	1		1	1		1	1	
Laoang	6	1	7		1	1		1
Lapinig	1		1	1			1	
Las Navas	1		1		1		1	
Lavezares		2	2	1	1		1	2
Lope De Vega	1		1				1	
Mapanas				1				
Mondragon	2	1	3	1				
Palapag	1		1	1				
Pambujan	1		1	1			1	
Rosario	2		2					
San Antonio		1	1	1		1	1	
San Isidro	2		2	1			1	1
San Jose		1	1	1				
San Roque	1		1	1			1	
San Vicente	1		1				1	
Silvino Lobos				1				
Victoria	1		1				1	
Provincial Total	31	10	41	15	8	11	17	18