Chapter 3

PROVINCIAL PROFILE

3. PROVINCIAL PROFILE

3.1 General

Eastern Samar is one of the 6 provinces comprising the Eastern Visayas (Region VIII). Borongan, the provincial capital is about 65 air-km northeast of Tacloban City, the regional center. Eastern Samar bounds Northern Samar on the north, Philippine Sea on the east, Samar on the west, and Leyte Gulf/Surigao Strait on the south as shown in the Location Map.

The province is classified as 2nd class and has a total land area of 4,449km^2 that is 1.48% of the Philippine total land area of about 300,000km^2. It is composed of 23 municipalities with 597 barangays, of which 178 are urban and 419 rural. Provincial total population was 362,324 in 1995. About 61% of the population reside in rural areas, while the remaining 39% in urban areas. At present, there are 3 water districts and 4 LGU/association managed Level III water supply systems 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 (km^2)	1995 Population		Number of Barangay		
Name	Class		Number	Density (person/km^2)	Urban	Rural	Total
Arteche	5th	105.21	12,538	119	4	16	20
Balangiga	5th	190.05	11,100	58	6	7	13
Balangkayan	5th	207.05	8,849	43	5	10	15
Borongan (Capital)	2nd	582.89	48,638	83	11	50	61
Can-avid	5th	186.54	15,759	84	10	18	28
Dolores	4th	308.58	34,272	111	15	31	46
General Macarthur	5th	117.29	10,041	86	8	22	30
Giporlos	5th	97.51	10,050	103	8	10	18
Guiuan	4th	160.00	35,447	222	16	44	60
Hernani	6th	49.42	8,055	163	4	9	13
Jipapad	5th	234.80	6,222	26	4	9	13
Lawaan	5th	162.56	9,725	60	10	6	16
Llorente	4th	496.07	16,071	32	12	21	33
Maslog	5th	249.80	3,634	15		12	12
Maydolong	4th	399.63	12,201	31	7	13	20
Mercedes	6th	23.32	5,473	235	4	12	16
Oras	4th	188.70	31,533	167	9	33	42
Quinapondan	5th	67.70	12,644	187	7	18	25
Salcedo	5th	113.80	16,026	141	13	28	41
San Julian	5th	115.80	11,858	102	7	9	16
San Policarpo	5th	78.00	11,565	148	6	11	17
Sulat	5th	150.01	14,010	93	6	12	18
Taft	5th	164.27	16,613	101	6	18	24
Provincial Total	2nd	4,449.00	362,324	81	178	419	597

3.2 Natural Conditions and Geographical Features

3.2.1 Meteorology

The province has Type II climate under the Coronas classification. Type II is characterized by the absence of dry season with very pronounced maximum rain period generally occurring in December and January as reflected in the Location Map. Using the 20 year (1971-1990) rainfall records of PAGASA, the average annual rainfall was registered at 3,146.60mm. The average number of rainy days in a year was recorded at 192. Driest months were observed during July to September.

During the same period, the maximum temperature recorded was 30.80°C and the minimum was 22.90°C. Since the province is along the eastern coast, it is exposed to northeast monsoon. Also, it is located within the typhoon belt.

3.2.2 Land Use

Remaining forest area constitutes 38% of the total area of the province located mostly in Mt. Cabalantian, Mt. Yacgun and Mt. Honop mountain ranges. Agricultural and grassland occupy 27% and 24%, respectively. Built-up area is limited to less than 1%. Primary settlements are concentrated along the coastal area. 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	210	37.63
Grassland	136	24.37
Built-up	3	0.54
Agricultural	151	27.06
Fishponds, Mangrove, Inland Water Area	15	2.69
Openlands	43	7.71
Provincial Total	558	100

3.2.3 Topography and Drainage

The province of Eastern Samar lies on the eastern extension of a major geomorphic feature, the Samar Central Highlands. The Samar Central Highlands is N-S trending mountains of moderate relief extension from Leyte Gulf to the province of Northern Samar. Volcanic rocks of old geologic age cover the top of highlands. There is no chain of volcano nor active/inactive volcanic mountain in Samar Island.

The western part of Eastern Samar, which has a common boundary with 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. Rimming the central highlands in the middle sector of the province are numerous sinkholes of different dimensions and in their early stages of formation. Generally, the coastline is very irregular.

There are eight (8) major rivers, namely: Oras, Dolores, Ulot, Taft, Borongan, Suribao, Llorente and Balangiga Rivers. The Jicontrol River is a tributary of the Dolores River. The Suribao River is the largest in the province with a watershed of 920 km^2 and drains to the Philippine Sea passing through the municipality of Maydolong.

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. Most river courses are structurally controlled. 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 gauging station.

Eight (8) typical rivers in the province were selected for water quality examination, namely: Oras, Dolores, Ulot, Taft, Borongan, Suribao, Llorente and Balangiga. Analyzed river waters were turbid. The examination result shows low pH (slightly on acidic side) from the Dolores, Suribao, Llorente and Balangiga Rivers probably due to the mineral rich rocks (refer to 7.5, Data Report).

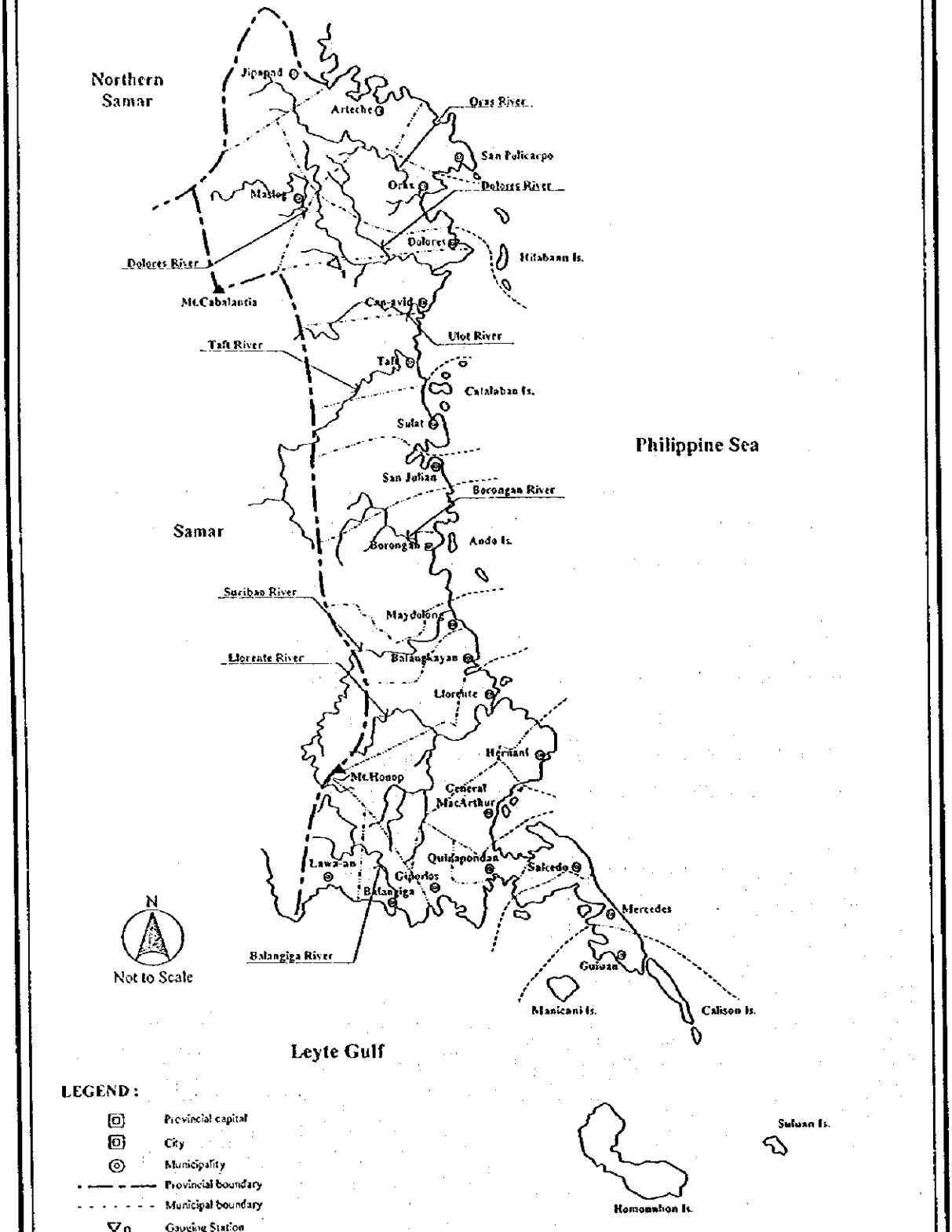


Figure 3.2.1 Major River Network Map
Province of Eastern Samar

Table 3.2.2 Drainage Areas & Flow Rates of Major Rivers

Major Rivers	Drainage Area (km^2)	Flow Rate (m^3/sec)			Water Districts (using river water)
		Peak	Maximum	Minimum	
Oras	-	No gauging station			None
Dolores	-	No gauging station			None
Jicontrol*1	95	231.31	180.96	2.48	None
Ulot	-	No gauging station			None
Taft	-	No gauging station			None
Borongan	-	No gauging station			None
Suribao	-	No gauging station			None
Llorente	-	No gauging station			None
Balangiga	-	No gauging station			None

Source: Philippine Water Resources Summary Data, established January 1980 by NWRC
Notes: Peak - Peak discharge of Daily Maximum Discharge
Maximum - Maximum Daily Discharge of Weighted Daily Discharge
Minimum - Minimum Daily Discharge of Weighted Daily Discharge
Inc. - Incomplete/Lacks record
*1; Jicontrol River is a tributary of Dolores River.

3.3 Socio-economic Conditions

3.3.1 Economic Activities and Household Income

Eastern Samar is basically an agricultural province. The major economic activities are farming and fishing. Principal crops cultivated are coconut, palay and root crops. With the whole stretch of the eastern coast facing the Philippine Sea, the province also yields commercial marine fishery products. At present, the province is promoting agro-industries, aqua-business and eco-tourism as other income-generating activities.

The NSO Family Income and Expenditures Survey in 1994 showed that the average annual family income of the province was ₱ 60,634 while the expenditure was at ₱ 39,444 or a net saving of ₱ 21,190. Distribution of households by income class in the region and province is indicated in Figure 3.3.1 (refer to Table 3.3.1, Supporting Report). Percentages of households of lower income levels were lower than the average figures in the region. Based on the established poverty threshold income of ₱ 37,053, in Region VIII for 1994, about 30% 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 41% as shown in Figure 3.3.2.

Figure 3.3.1 Distribution of Household by Income Class

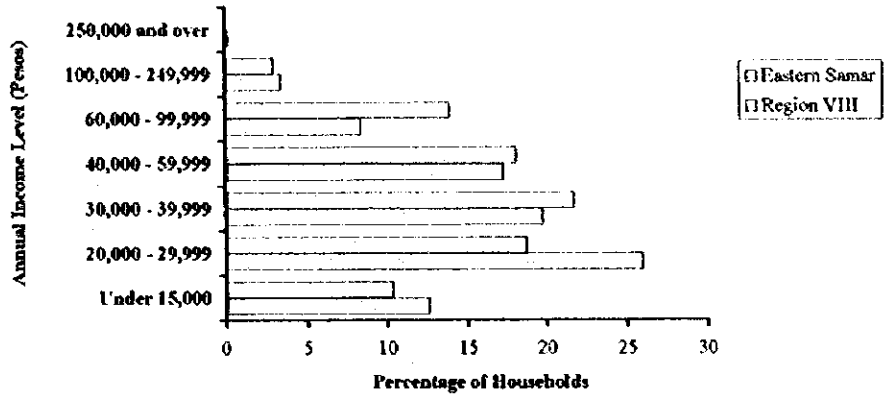


Figure 3.3.2 Population Distribution by Major Industry and Class of Worker

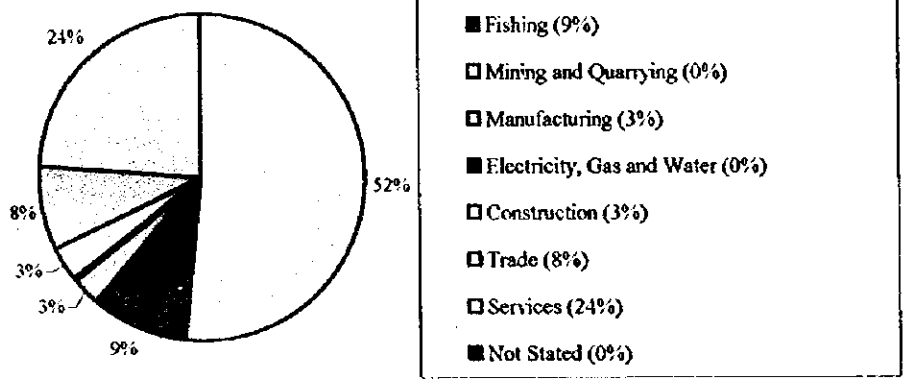
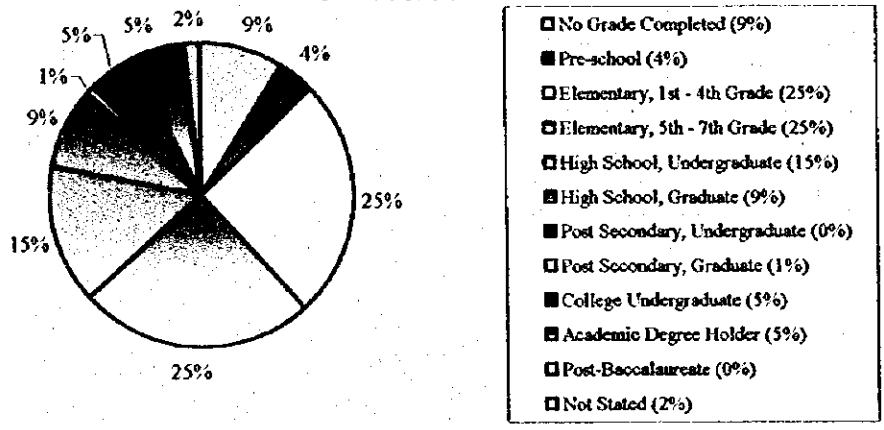


Figure 3.3.3 Population Distribution by Highest Attainment of Education



3.3.2 Basic Infrastructure

All municipalities have electric supply, while the service coverage at household level is quite low at 26%. Telephone service in the form of public calling offices is available in all municipalities. There are 24 post office in the province. Land transportation is available by means of jeepney, bus, rent-a car and tricycle. There are 1,335 business establishments. Table 3.3.1 presents a provincial outline of public services and Table 3.3.2 reflects the number of public facilities and services by municipality (refer to Table 3.3.1, Data Report).

3.3.3 Education

The province has a total of 420 schools consisting of 361 elementary schools, 52 high schools and 7 tertiary/technical schools. The 1997 Socio-economic data indicated that the province had 97.2% literacy rate of household population 5 years old and over. A large part of the population had attained elementary or high school levels of education as reflected in Figure 3.3.3 (refer to Table 3.3.3, Supporting Report).

Table 3.3.1 Provincial Outline on Public Services

Item	Unit	Value	Item	Unit	Value
(1) Roads			(8) Tourism facilities	Number	No data
a) Total length	Km	1,489.5	(Hotel resort, lodges, recreational		
b) Barangay roads	Percent	58.86	facilities, etc.)		
(2) Electricity service coverage			(9) Schools		
a) Municipality	Percent	100	a) Elementary level	Number	361
b) Barangay	Percent	65	b) Secondary level	Number	52
c) Household	Percent	26	c) Tertiary level/Technical	Number	7
(3) Telecommunication Services			(10) Health Facilities		
a) Availability in municipality	Percent	100	a) Hospital	Number	16
b) Telegraph station	Number	29	b) Main health centers, rural health	Number	118
c) Telephone station	Number	27	units, barangay health center, etc		
(4) Post Office	Number	24	(11) Labor		
			a) Labor force participation ratio	Percent	65.7
(5) Transportation services	Mode	Bus, jeepney	b) Employment rate	Percent	93.3
	(ex. Bus,	Rent a car,			
	jeep, taxi,)	pumpboat	(12) Average family income		
			a) Monthly income	Pesos/Month	5,053
(6) Banking Facilities	Number	6	b) Monthly expenditure	Pesos/Month	3,287
a) Private bank	(by Private				
b) Public bank	and public)				
(7) Industrial/business/commercial					
establishment	Number	1,335			

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

Table 3.3.2 Public Facilities and Services by Municipality

Municipality	High School			Vocational School	College	Hospital	Public Market	Bank and Financing Institution
	Public	Private	Total					
	nos.	nos.	nos.	nos.	nos.	nos.	nos.	nos.
Arteche	2		2			1	1	
Balangiga	1	1	2			1		
Balangkayan	1		1					
Borongan (Capital)	3	3	6		4	2	1	4
Can-avid	1		1		1	1	1	
Dolores	1	1	2			2	2	
General Macarthur	1	1	2			2	2	
Giporlos	2		2				1	
Guiuan	3	2	5			4	2	1
Hernani	1		1				1	
Jipapad	1		1					
Lawaan	2	1	3				1	
Llorente	1	1	2				1	
Maslog	1	1	2					
Maydolong	1		1				1	
Mercedes	2		2			1	1	
Oras	2	1	3				2	
Quinapondan	1		1				1	1
Salcedo	3		3		1		1	
San Julian	1	1	2				1	
San Policarpo	2	1	3			1	1	
Sulat	2	1	3			1	1	
Taft	2		2		1		1	
Provincial Total	37	15	52		7	16	23	6

3.4 Population

3.4.1 Previous Population Development

A fluctuating provincial population growth rate had been experienced since the last six (6) census years (1960-1995) as indicated in Figure 3.4.1. From an average annual growth rate of 1.32% during the period 1960 to 1970, it decreased to 0.27% (1980-1990) and again increased to 1.80% (1990-1995). A summary of the average annual growth rates of the province is as follows:

Year	Population	Ave. Annual Growth Rate (%)	Period
1970	271,000	1.32	1960 - 1970
1975	287,149	1.16	1970 - 1975
1980	320,637	2.23	1975 - 1980
1990	329,335	0.27	1980 - 1990
1995	362,324	1.80	1990 - 1995

A consideration on how the population growth behaved in the past and how it is likely to behave in the future is important because of the issue of resource allocation including the water supply and sanitation sector requirements.

The 1998 population was estimated to provide the planning base for this Master Plan (refer to Section 8.3.1 Population Projection, Main Report). Table 3.4.1 shows a breakdown of the past population development by municipality from 1948 to 1995.

Figure 3.4.1 Previous Population Development of the Province

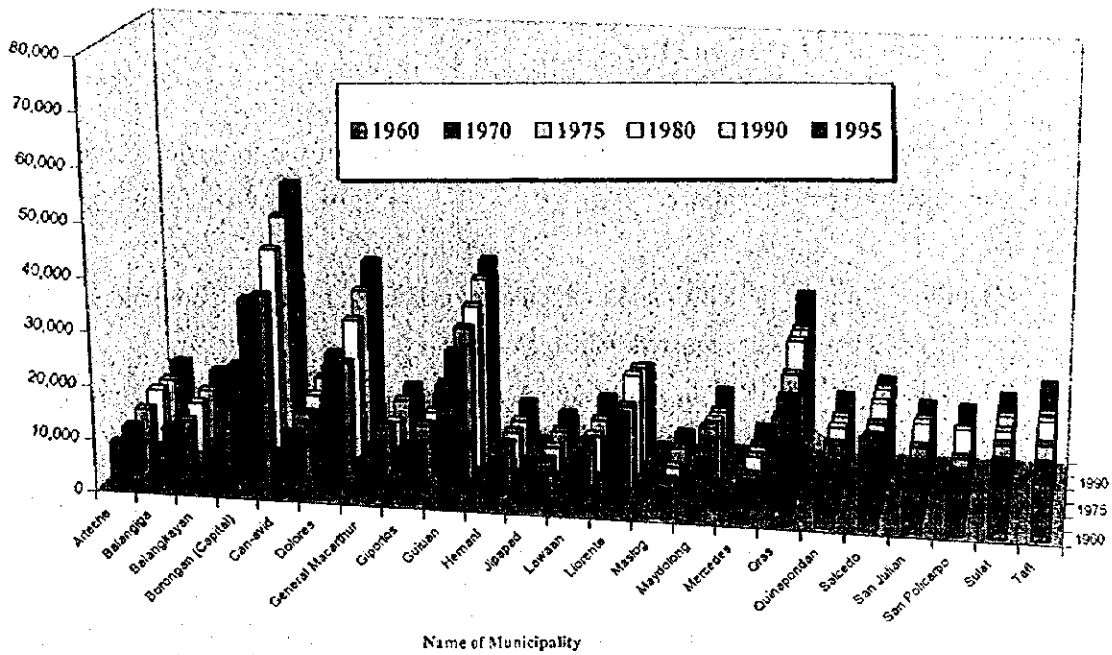


Table 3.4.1 Previous Population Development by Municipality

Municipality	Previous Population						
	1948	1960	1970	1975	1980	1990	1995
Arteche		8,647	9,330	10,246	11,686	11,245	12,538
Balangiga	21,621	8,215	9,538	8,474	9,559	9,565	11,100
Balangkayan		4,615	5,557	7,671	8,703	7,609	8,849
Borongan (Capital)	25,638	24,228	34,368	33,129	39,741	44,085	48,638
Can-avid	5,987	8,409	9,695	11,135	12,196	13,254	15,759
Dolores	13,124	16,055	22,730	21,119	26,949	30,570	34,272
General Macarthur	6,832	7,662	8,026	9,040	7,937	9,627	10,041
Giporlos		10,043	8,773	10,015	10,128	11,001	10,050
Guiuan	27,202	22,881	26,529	28,709	30,689	33,825	35,447
Hernani	5,035	6,622	6,216	7,315	7,032	6,840	8,055
Jipapad	2,005	2,201	3,769	4,497	4,586	5,207	6,222
Lawaan		5,983	7,479	8,517	7,275	7,792	9,725
Llorente	13,955	13,958	16,291	15,639	19,091	18,278	16,071
Maslog	1,131	1,593	1,988	1,886	1,956	3,089	3,634
Maydolong		7,872	8,424	12,317	11,353	10,656	12,201

Table 3.4.1 Previous Population Development by Municipality

(cont.d)

Municipality	Previous Population						
	1948	1960	1970	1975	1980	1990	1995
Mercedes	5,265	6,424	4,605	3,846	4,848	4,505	5,473
Oras	19,300	20,198	21,217	23,162	27,031	26,978	31,533
Quinapondan	8,204	9,173	9,180	10,530	11,355	10,986	12,644
Salcedo	15,201	16,766	15,077	14,877	16,355	16,597	16,026
San Julian	6,735	7,806	10,237	10,965	13,007	11,469	11,858
San Policarpo	4,779	8,051	9,140	9,280	12,258	9,970	11,565
Sulat	8,642	9,927	11,535	12,226	12,357	12,738	14,010
Taft	7,078	10,463	11,296	12,554	14,545	13,449	16,613
Provincial Total	197,734	237,792	271,000	287,149	320,637	329,335	362,324

3.4.2 Classification of Urban and Rural Areas

NSO classifies a barangay as urban when it satisfies any of the following conditions on the economic and social functions.

(1) In their entirety, all cities and municipal jurisdictions having a population density of at least 500 persons per square kilometer.

(2) Poblaciones or central districts of municipalities and cities, which have a population density of at least 500 persons per square kilometer.

(3) Poblaciones or central districts (not included in nos. 1 and 2) regardless of population size, which have the following:

   1) Street pattern, i.e., network of streets either at parallel or in right angle orientation;

   2) At least six establishments (commercial, manufacturing, recreational and/or personal services); and

   3) At least three of the following:

      a) a town hall, church or chapel with religious services at least once a month;

      b) a public plaza, park or cemetery;

      c) a market place or building where trading activities are carried on at least once a week; and

      d) a public building like school, hospital, health center or library.

(4) Barangays having at least 1,000 inhabitants, that meet the condition set forth in no. 3 above, and in which the occupation of the inhabitants is predominantly non-farming/fishing.

All areas not falling under the urban classification are defined as rural area. For this Master Plan, the 1995 NSO classification of urban and rural barangays was modified by the PSPT to reflect the actual condition prevailing in the area. Five (5) rural barangays were re-classified

as urban. With the re-classification, there are 183 urban barangays and 414 rural barangays for a total of 597 barangays in 1998. . Distribution of the classified areas is shown in Figure 3.4.1, Supporting Report.

3.4.3 Present Population Distribution

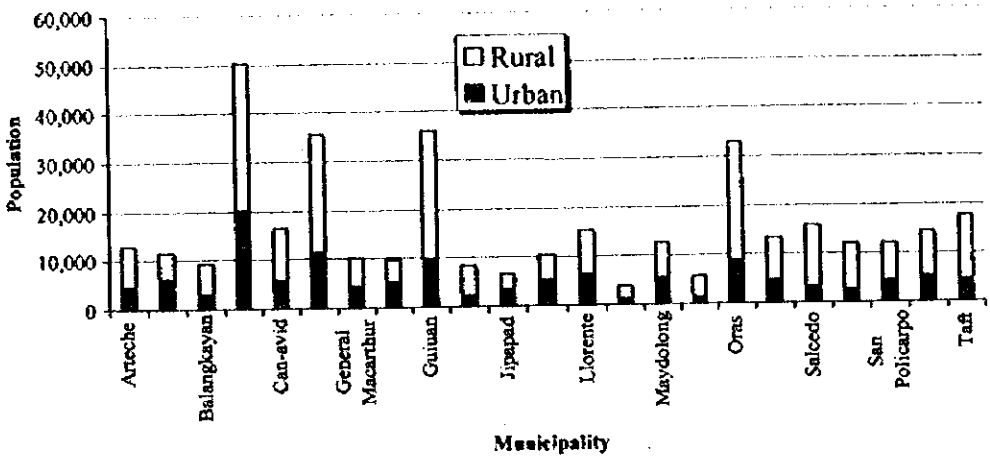
From the 1995 NSO census, the 1998 urban-rural population was estimated. Rural population accounts for 65.6% of the provincial total, while 34.4% is urban as reflected in Figure 3.4.2. Table 3.4.2 presents the breakdown of the number of urban and rural barangays by municipality and its corresponding present population distribution.

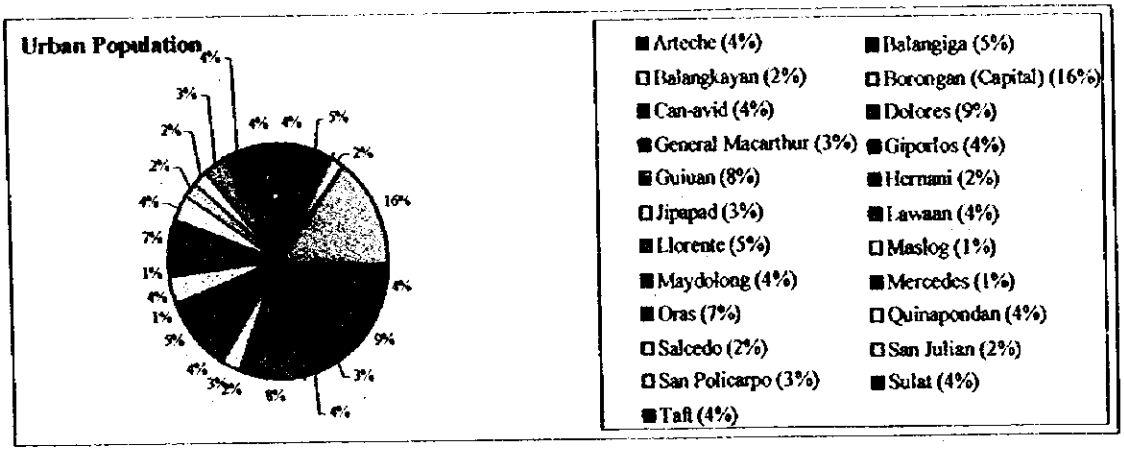
There are 69,511 households with 45,870 residing in rural areas and 23,641 households in urban areas. The average provincial household size is 5.36 persons/household. Table 3.4.3 presents a breakdown per municipality on the number of households and household sizes by urban and rural area.

Table 3.4.2 Outline of Urban and Rural Areas in the Province

Municipality	Number of Barangay			Population (1998)		
	Urban	Rural	Total	Urban	Rural	Total
Arteche	4	16	20	4,682	8,279	12,961
Balangiga	6	7	13	5,970	5,632	11,602
Balangkayan	5	10	15	2,985	6,270	9,255
Borongan (Capital)	16	45	61	20,078	30,051	50,129
Can-avid	10	18	28	5,674	10,905	16,579
Dolores	15	31	46	11,134	24,349	35,483
General Macarthur	8	22	30	4,388	5,788	10,176
Giporlos	8	10	18	5,168	4,571	9,739
Guiuan	15	45	60	9,862	26,116	35,978
Hernani	4	9	13	2,211	6,242	8,453
Jipapad	4	9	13	3,402	3,152	6,554
Lawaan	10	6	16	5,212	5,145	10,357
Llorente	12	21	33	6,478	8,871	15,349
Maslog	2	10	12	1,163	2,649	3,812
Maydolong	7	13	20	5,374	7,333	12,707
Mercedes	4	12	16	1,335	4,455	5,790
Oras	8	34	42	8,665	24,358	33,023
Quinapondan	7	18	25	4,547	8,639	13,186
Salcedo	13	28	41	3,053	12,786	15,839
San Julian	6	10	16	2,718	9,267	11,985
San Policarpo	6	11	17	4,280	7,807	12,087
Sulat	7	11	18	5,318	9,108	14,426
Taft	6	18	24	4,758	12,890	17,648
Provincial Total	183	414	597	128,455	244,663	373,118

Figure 3.4.2 Present Population





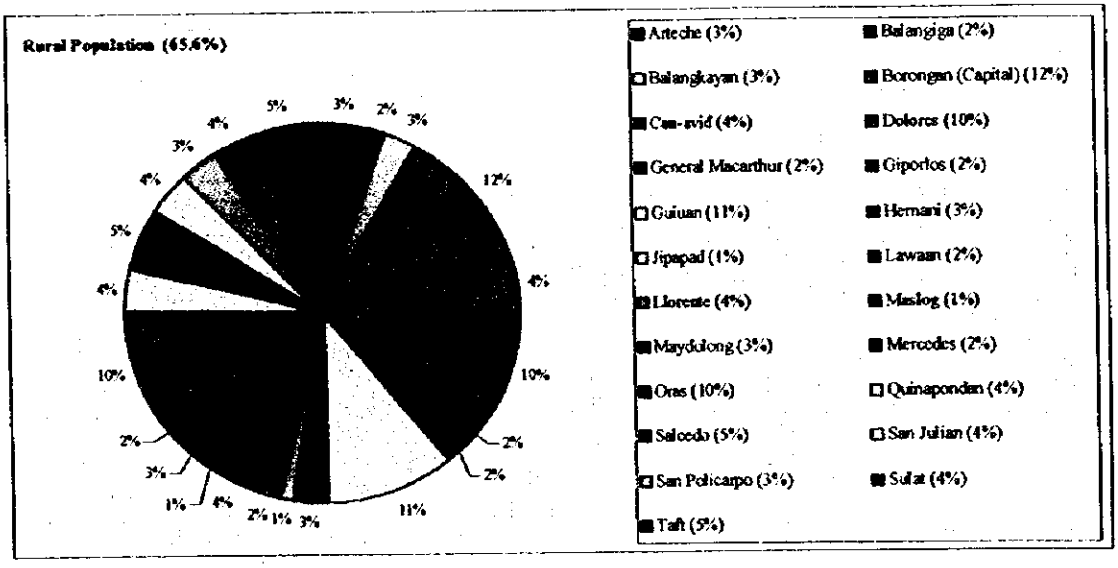


Table 3.4.3 Household Numbers and Household Size

Municipality	Number of Households (1995)			Number of Households (1998)			1995 Household Size (person/household)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Arteche	867	1,503	2,370	894	1,556	2,450	5.24	5.32	5.29
Balangiga	1,038	1,015	2,053	1,129	1,018	2,147	5.29	5.53	5.41
Balangkayan	575	1,104	1,679	575	1,181	1,756	5.19	5.31	5.27
Borongan (Capital)	3,846	5,707	9,553	3,846	6,010	9,856	5.22	5.00	5.09
Can-avid	871	1,921	2,792	973	1,961	2,934	5.83	5.56	5.64
Dolores	1,668	4,405	6,073	1,971	4,317	6,288	5.65	5.64	5.64
General Macarthur	799	1,008	1,807	804	1,026	1,830	5.46	5.64	5.56
Giporlos	955	934	1,889	983	850	1,833	5.26	5.38	5.32
Guiuan	1,850	5,208	7,058	1,878	5,287	7,165	5.25	4.94	5.02
Hernani	344	995	1,339	380	1,027	1,407	5.82	6.08	6.02
Jipapad	494	565	1,059	539	573	1,112	6.31	5.50	5.88
Lawaan	715	942	1,657	839	917	1,756	6.21	5.61	5.87
Llorente	1,344	1,976	3,320	1,344	1,829	3,173	4.82	4.85	4.84
Maslog	191	498	689	207	515	722	5.61	5.14	5.27
Maydolong	922	1,190	2,112	1,001	1,204	2,205	5.37	6.09	5.78
Mercedes	172	716	888	198	740	938	6.74	6.02	6.16
Oras	1,538	4,154	5,692	1,539	4,421	5,960	5.63	5.51	5.54
Quinapondan	573	1,450	2,023	641	1,459	2,100	7.09	5.92	6.25
Salcedo	591	2,663	3,254	601	2,615	3,216	5.08	4.89	4.93
San Julian	555	1,843	2,398	555	1,868	2,423	4.90	4.96	4.94
San Policarpo	796	1,422	2,218	839	1,479	2,318	5.10	5.28	5.21
Sulat	951	1,759	2,710	1,045	1,748	2,793	5.09	5.21	5.17
Taft	858	2,088	2,946	860	2,269	3,129	5.53	5.68	5.64
Provincial Total	22,513	45,066	67,579	23,641	45,870	69,511	5.42	5.33	5.36

3.5 Health Status

3.5.1 Morbidity, Mortality and Infant Mortality

The number one cause of morbidity in Eastern Samar was diarrhea, followed by bronchitis, influenza and dengue fever. Obstructive pulmonary and intestinal parasitism ranked fifth and sixth, respectively. Regarding mortality, the number one cause was pneumonia, followed by tuberculosis. Septicemia and other accidents ranked third and fourth, respectively. Pneumonia, diarrhea and dysentery were the 3 leading causes of infant mortality in the province (refer to Table 3.5.1, Data Report).

The general health status of the populace of the province in 1998 was relatively poor compared with the national condition. The incidence of diseases was higher in Eastern Samar than the country as a whole. Table 3.5.1 presents a comparative statistics on the ten leading causes of morbidity, mortality and infant mortality of the province as well as of the Philippines.

Table 3.5.1 Number and Rates of Ten Leading Causes of Morbidity, Mortality and Infant Mortality

Rate: 1/100,000

	Causes	Eastern Samar		Philippines		
		Number	Rate	Number	Rate	Ranking
Morbidity	1. Diarrhea	20,055	5,535	1,337,449	1,997	1
	2. Bronchitis	19,779	5,459	903,508	1,349	2
	3. Influenza	18,040	4,979	609,471	910	3
	4. Dengue Fever	4,203	1,160			
	5. Obstructive Pulmonary	2,141	591			
	6. Intestinal Parasitism	1,757	485			
	7. Conjunctivities	1,174	324			
	8. Tuberculosis	1,047	289	159,049	238	6
	9. Pneumonia	1,040	287	470,574	703	4
	10. Measles	971	268	85,345	127	8
Mortality	1. Pneumonia	714	197	35,582	53	3
	2. Tuberculosis	373	103	24,580	37	5
	3. Septicemia	105	29			
	4. Other Accidents	105	29	13,477	20	6
	5. Tetanus	7	2			
Infant Mortality	1. Pneumonia	87	24	7,631	4.5	1
	2. Diarrhea	47	13	1,661	1.0	4
	3. Dysentery	4	1			
	4. Intestinal Parasitism	4	1			
	5. Other Accidents	4	1			

Water-related diseases in the ten leading causes of morbidity include diarrhea (rank 1st), dengue fever (4th), intestinal parasitism (6th) and conjunctivities (7th). These were no water-related diseases in the five leading causes of mortality. Diarrhea, (rank 2nd), dysentery (3rd) and intestinal parasitism (4th) were among the five leading causes of infant mortality.

3.5.2 Water Related Diseases

An indicator of health problems related to water supply and sanitation is the incidence of water-related diseases. The World Health Organization (WHO) has classified diseases related to water into four (4) categories: 1) water-borne diseases e.g., cholera, typhoid, hepatitis A, diarrhea and dysentery; 2) water-based diseases e.g., schistosomiasis; 3) water-washed diseases e.g., diarrhea, intestinal parasitism, scabies, conjunctivitis (sore eyes), and skin diseases; and 4) water-vector related diseases e.g., malaria, filariasis and dengue or H-fever. As with malaria, the control of filariasis is beyond this Master Plan. A safe water supply, sanitary toilet and proper hygiene practices are conditions necessary for the control and prevention of these diseases.

Water-related diseases reported in the province in 1998 were diarrhea, dysentery, typhoid/parathyphoid, intestinal parasitism, conjunctivities, dengue fever, viral hepatitis, skin

disease schistosomiasis. Table 3.5.2 presents the reported cases and deaths of notifiable water-related diseases in the province.

Table 3.5.2 Reported Cases and Deaths of Notifiable Water Related Diseases in 1998

Rate: 1/100,000

Diseases	Morbidity		Mortality		Infant Mortality	
	Number	Rate	Number	Rate	Number	Rate
Water-borne						
1. Diarrhea	20,055	5,535			47	13
2. Dysentery	97	26			4	1
2. Viral hepatitis	26	7				
3. Typhoid/Paratyphoid	41	11				
Water-based						
1. Schistosomiasis	757	203				
Water-washed						
1. Intestinal parasitism	1,757	485			4	1
2. Conjunctivities	1,174	324				
3. Skin disease	458	123				
Water vector						
1. Dengue/H-fever	4,203	1,160				

3.5.3 Health Facilities and Practitioners

Present facilities serving the health care of the populace are 16 hospitals, 26 rural health units and 92 barangay health stations. The ratio of the population to these facilities and to the health practitioners are relatively lower as compared to the national average figures (refer to Table 3.5.1 number and ratio of population to health facilities and/or medical practitioners, Supporting Report).

3.6 Environmental Conditions

3.6.1 General

Environmental issues and problems directly affecting the sector and/or how the sector affects these environmental concerns are dealt with in this sub-section. Specifically, the problems of water pollution and solid waste disposal spawned by rapid population growth and increasing industrial and economic activities are discussed. These problems put a strain on the provincial water resources and hinder their optimum utilization.

3.6.2 Water Pollution

There are no existing sanitary sewerage systems in the province. Majority of the drainage facilities in all municipalities is open canals or ditches. The rivers and streams function as the drainage system. These rivers receive the domestic wastewater and storm water collected

by the segmented drainage facilities in urban centers or poblacions (refer to the types of drainage facilities in Table 3.6.1, Supporting Report).

A major water pollution source in urban areas is domestic wastewater. Graywater generated by households is simply allowed to discharge into nearby channels. Effluent from septic tanks or cesspools is also flowing into the streams. The other major pollutant is dumped refuse that finds its way to the river systems during rain or is thrown indiscriminately into the rivers. In rural areas, natural assimilation of the river may be expected to purify organic substances. However, pollution or contamination is anticipated caused by agricultural activities especially with reference to fertilizers and pesticides.

Manufacturing establishments are identified as potential pollution sources in the province if no control measures are in place. The rivers must be protected and conserved for their intended or beneficial use. However, as of now, the rivers in the province have not been classified as to their usage by the Department of Environment and Natural Resources (refer to general information in Table 3.6.2 DENR Water Quality Criteria/Water Usage and Classification, Supporting Report).

3.6.3 Solid Waste Disposal

Of the 20 municipalities (4 municipalities have no data), 9 have municipal refuse collection and disposal services as of 1998 (details are referred to Table 3.6.1, Data Report). These municipalities have only 1 unit each of open dump truck. In the province, 28% of the households is served, while the majority (72%) is unserved. Table 3.6.1 reflects the manner of solid waste collection and disposal, and service coverage by municipality in 1998.

Open dumping is commonly practiced by the LGUs as disposal of solid wastes. The dumped refuse is usually burned or left unattended. Some significant negative effects associated with this unsanitary method are surface and groundwater pollution, air pollution, scattered solid waste, breeding grounds for insects, rodents and other disease vectors and fire hazard. At the household level, unserved households by the LGUs primarily depend on individual waste disposal such as dumping in vacant lots or body of water, burying and composting.

Table 3.6.1 Municipal Solid Waste Collection and Disposal, and Service Coverage, 1998

Name of Municipality	Number of Households 1998	With Service						Without Service				Percentage of Households Served	Percentage of Households Unserved
		Number of Collection Trucks			Disposal			Manner of Disposal (Number of Household)					
		Open Dump Trucks	Closed Type Trucks	Total Units	Number of Households Served by Open Dump Site	Number of Households Served by Sanitary Landfill	Total Households Served	Dumping (Land and Water)	Burying	Composting	Total Households Unserved		
Arteche	(2450)							1,470	735	245	2,450		100
Balangiga	2,147				997		997	247	852	51	1,150	46	54
Balangkayan	(1756)							966	615	175	1,756		100
Borongan (Capital)	9,856	1		1	4,116		4,116	3,657	1,781	302	5,740	42	58
Can-avid	2,934							1,060	837	1,037	2,934		100
Dolores	6,288	1		1	1,668		1,668	3,580	872	168	4,620	27	73
General Macarthur	1,830				916		916	914			914	50	50
Giporlos	1,833	1		1	950		950	645	170	68	883	52	48
Guiuan	7,165	1		1	1,929		1,929	4,375	535	326	5,236	27	73
Hernani	1,407							1,273	107	27	1,407		100
Jipapad	(1112)							778	278	56	1,112		100
Lawaan	1,756							881	500	375	1,756		100
Llorente	3,173	1		1	1,349		1,349	1,139	513	172	1,824	43	57
Maslog	722							636	75	11	722		100
Maydolong	2,205							1,085	493	627	2,205		100
Mercedes	938							50	800	88	938		100
Oras	5,960							5,584	318	58	5,960		100
Quinapondan	2,100	1		1	591		591	1,051	316	142	1,509	28	72
Salcedo	3,216	1		1	2,939		2,939	109	9	159	277	91	9
San Julian	2,423							1,556	140	727	2,423		100
San Policarpo	(2318)							1,507	695	116	2,318		100
Sulat	2,793	1		1	951		951	1,237	412	193	1,842	34	66
Taft	3,129	1		1		858	858	1,875	267	129	2,271	27	73
Provincial Total	61,875	9		9	16,406	858	17,264	35,675	11,320	5,252	52,247	25	75

Chapter 4

EXISTING FACILITIES AND SERVICE COVERAGE

4. EXISTING FACILITIES AND SERVICE COVERAGE

4.1 Water Supply

4.1.1 General

Existing water supply facilities and conditions were surveyed by municipality under the category of urban and rural areas (as of June 1999 and regarded as a figure in 1998). Facilities are classified into three service levels, of which Level I facilities are further classified into safe and unsafe for drinking purpose.

The percentages of service coverage by different service level were estimated covering urban and rural areas by municipality. The served population is defined as "population served adequately with access to safe water sources/facilities." The rest of the population with unsafe sources/facilities and without access to water supply facilities was then defined as "underserved population" and "unserved population," respectively. The service coverage was figured out using the estimated population in 1998.

Service profile and operating conditions of existing facilities are summarized by service level to come up with problem areas and need of rehabilitation to reflect in the development plan.

As a provincial total, approximately 58% of the present population (of which 34% in urban area and 66% in rural area) is considered as adequately served (refer to 4.1, Supporting Report for the detailed study). Under the area classification, 68% of urban population and 52% of rural population have access to safe water sources/facilities, while the rest is underserved or unserved. About 172,300 persons or 80% of the served population depend on Level I facilities, while about 41,600 persons or 20% are served by Level III and/or Level II systems.

4.1.2 Types of Facilities and Definition of Service Level Standard

(1) Composition of water supply system/facility

The NSMP defines service level and system components of the water supply systems/facilities as shown in Table 4.1.1. NEDA Board Resolution No. 12 (s. 1995) also provides the approved definition of terms relative to water supply including levels of service (refer to 4.1.2 Data Report). These terms are to be adopted by all government agencies including LGUs.

Table 4.1.1 Composition of Water Supply System/Facility by Service Level

Description	Level I (Point Source Facility)	Level II (Communal Faucet System)	Level III (Individual House Connection)
1. Water Source	Drilled/driven shallow well Drilled/driven deep well Dug well Spring Rain collector	Drilled shallow/deep well Spring Infiltration gallery	Drilled deep well Spring Infiltration gallery Surface water intake
2. Water Treatment	Generally none. Disinfection of wells is conducted periodically by local health authorities. Iron removal facilities are provided in problem areas.	Generally none	Disinfection is provided. Systems with surface water source have series of water treatment facilities.
3. Distribution	None	Piped system provided with reservoir/s	Piped system provided with reservoir/s and pumping facilities.
4. Delivery & Service Level	At point (within 250m radius)	Communal faucet (within 25m radius)	Individual house connection/household tap
5. Consumption Rate (Adequately Served)	At least 20 lpcd	At least 60 lpcd	At least 100 lpcd

(2) Safe and unsafe classification of water sources

DOH has classified Level I water source facilities as safe (reliable water source) and unsafe sources/facilities based on the National Standard for Drinking Water (NSDW).

Safe source: Protected deep well, protected shallow well, improved/covered dug well and developed spring

Unsafe source: Unprotected deep well, unprotected shallow well, open dug well, undeveloped/unprotected spring and rainwater collector

Water sources other than the above, such as untreated surface water of rivers, lakes and ponds are also considered unsafe sources. On the other hand, Levels II and III water supply systems are regarded to have safe/reliable sources with provision of adequate treatment.

(3) Service level standard

The NSMP and NEDA Resolution No. 12 define "adequate service level" by different water supply system. Improvement in the number of households per water source/facility may be expected for Level I service in the future. On the contrary, the number of households served by a unit of private/public source is sometimes beyond the standard on a current basis.

Level III: 1 household/connection

Level II: 5 (4 to 6) households/communal faucet

Level I: 15 households/point source
1 household/private well

4.1.3 Level III Systems

Level III (individual house connection) systems at municipal level are usually established and operated by WD under the technical and financial assistance of LWUA. Some LGUs also implement and operate Level III systems commonly at barangay level.

There are 7 Level III systems in the province operated under a Water District or a municipal government as shown in Table 4.1.2 together with their service coverage in 1998 (details are referred to in Table 4.1.1, Supporting Report). These are:

- 3 water districts in the municipalities of Borongan, Llorente and Sulat;
- 3 municipal waterworks in the municipalities of Balangkayan, Maydolong and Salcedo;
- 1 barangay waterworks in Borongan.

Table 4.1.2 Information on Existing Level III System

Name of Municipality	Name of Operating Body	Water Consumption			Service Coverage								
		Type of Water Source	Water Consumption (cu.m/day)	Domestic Supply (%)	No. of Brgys. Served			No. of Household Served			No. of Population Served		
					Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Balangkayan	Balangkayan WS	SP	78	100	5		5	157		157	1,256		1,256
Borongan	Borongan WD	SP	2,793	94	16	1	17	1,216	32	1,248	6,348	160	6,508
	Camada	SP	N.A.	100		1	1		30	30		159	159
	Municipal Total		2,793	94	16	2	18	1,216	62	1,278	6,348	319	6,667
Llorente	Llorente WD	SP	376	100	8		8	105		105	506		506
Maydolong	Maydolong WS	SP	N.A.	99	7	1	8	231	19	250	1,150	116	1,266
Salcedo	Salcedo WS	SP/DW	N.A.	100	12		12	243		243	1,458		1,458
Sulat	Sulat WD	DW	N.A.	97	5		5	732		732	3,726		3,726
Provincial Total			3,247	96	53	3	56	2,684	81	2,765	14,443	435	14,879

Note: 1. Type of Water Source: *DW* - Deep Well, *SP* - Spring
2. N.A.: No data available.

Borongan WD is the largest system in the province covering 16 urban and 1 rural barangays with a total served population of about 6,500. Presently, the WD covers 32% of the urban population in Borongan. Water sources of the WD are springs with 3 intake facilities and a total discharge fluctuating from 1,400 to 2,100 m3/d due to seasonal variation. Water is supplied to service area by gravity and pumping system. Insufficient water supply during dry season and salt-water intrusion into deteriorated distribution pipes are the current problems. The WD is seeking an alternative spring source together with system expansion. In regard to this, LWUA is presently conducting a Feasibility Study (F/S).

Aside from the Borongan WD, there is a small waterworks using a spring source in the municipality. The system adopts a combined system with communal faucets and catering to one rural barangay with a total served population of 270.

The Sulat WD is the second largest system in the province covering 5 urban barangays in the municipality of Sulat. Its water source is a deep well and the system adopts a combined system with communal faucets. The current served population is approximately 4,000.

In the municipality of Balangkayan, a municipal waterworks exists covering 5 urban barangays. Water source is a spring. The system was originally designed by PEO and adopts a combined system with communal faucets catering presently to about 3,000 urban population.

There is another WD in the municipality of Llorente covering 8 urban barangays with 500 served population. The WD is using pumping system to supply spring water to its service area. At present, discharge is estimated at 90m³/d. The WD is seeking a system expansion with augmentation of spring water source. Hence, LWUA is presently conducting F/S.

The municipality of Maydolong has a combined system with communal faucets using a spring source. The provincial government established the waterworks with technical assistance from the DEO in 1980. Presently, the municipal government manages it. The waterworks covers 7 urban and 1 rural barangays with a total served population of 2,400.

The municipality of Salcedo has a Level III system managed by the municipal government with a current service population of 1,500. Water source of the system is a combination of deep well and spring water.

The other 17 municipalities have no Level III system/s both in urban and rural area at present. The municipality of Mac Authur however, is constructing a Level III system to be created as a new Water District.

Table 4.1.3 Information on Water District

Name of Water District	Number of Connections						Production (cu. m/mon)	Accounted for Water (cu. m/mon)
	Domestic	Institutional	Commercial	Industrial	Total	Metered		
Borongan WD	1,248	29	51		1,328	1,328	N.A.	83,792
Llorente WD	106				106	106	64,800	11,282
Sulat WD	150	4			154	154	1,950	N.A

4.1.4 Level II Systems

Level II (communal faucet) systems are designed to cater for barangay level water supply with limited service coverage and supply capacity. These systems have been implemented by different agencies (DPWH, DILG, LGUs) and usually promote the use of spring sources. These are mostly operated either by Barangay Council or by an association.

There are 114 Level II systems in 19 municipalities in the province. Most of these systems (105 systems) are utilizing spring sources, while 9 systems use shallow or deep wells (details are referred to in Table 4.1.2, Supporting Report). Can-avid has the largest number, 13 systems or 11% of the total as shown in Table 4.1.4 together with the service coverage in 1998.

Majority of the systems that replied to the questionnaire (97 systems out of 114 systems) on their current water supply status, provides water for 24 hours a day. In the municipality of Mercedes, water quality of existing Level II system does not meet the standard for drinking purpose due to saline water.

Problem areas, both in managerial and technical aspects, identified on existing Level II systems and the necessary countermeasures for the improvement are discussed below.

(1) Management practice

The waterworks using electric pump impose a flat rate water charge ranging from 5 to 100 Pesos/HH/month and the rest (using spring source) supplies water free of charge. Regarding repair works, majority requested for assistance from the MEO when the need arises. This fact shows that the current management practices will lead to any one of these systems to become non-operational sooner or later. This is because the financial savings to cope with future repair and depreciation of existing facilities are not duly considered under the current management practice. Meanwhile, cost recovery by the operating bodies is a prerequisite in sector management.

To attain financial and managerial sustainability, reinforcement of associations or other operating bodies shall be promoted with reference to institutional development.

(2) Technical skill for O&M of facilities

Utilization of spring source usually leads to less attention to the daily O&M practice, owing to gravity flow of water to the service area. However, inappropriate care of spring box and pipeline results to various problems, e.g. turbid water, less water flow by clogging at spring box and pipeline, etc. Physical damage may also happen to the transmission line exposed on the ground in the mountainous area due to landslide, etc. associated with heavy rainfall, when proper protection of pipeline is not taken up.

Expansion of distribution line and installation of additional public faucets are usually undertaken without appropriate technical study on the capacities of water sources and distribution facilities, resulting to decrease of supply pressure and quantity.

Table 4.1.4 Information on Existing Level II System

Name of Municipality	Name of Operating Body	Service Coverage								
		No. of Brgys. Served			No. of Household Served			No. of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Balangiga	Guinmaayohan		1	1		35	35		194	194
	Maybunga		1	1		10	10		55	55
	Santa Rosa		1	1		200	200		1,106	1,106
	Municipal Total		3	3		245	245		1,355	1,355
Borongan (Capital)	Benowangan		1	1		25	25		125	125
	Calico-an		1	1		30	30		150	150
	Calingatngan		1	1		15	15		75	75
	San Gabriel BWSA		1	1		80	80		400	400
	San Jose		1	1		15	15		75	75
	San Mateo BWSA		1	1		40	40		200	200
	San Saturnino		1	1		15	15		75	75
	Siha		1	1		10	10		50	50
	Sohutan		1	1		15	15		75	75
	Municipal Total		9	9		245	245		1,225	1,225
Can-avid	Balagon WS		1	1		30	30		167	167
	Baruk WS		1	1		10	10		56	56
	Boco BWSA		1	1		20	20		111	111
	Cagahalong BWSA		1	1		20	20		111	111
	Camantaug BWSA		1	1		50	50		278	278
	Can-ilay WS		1	1		35	35		195	195
	Guibuangan WS		1	1		20	20		111	111
	Jepaco BWSA		1	1		20	20		111	111
	Mabuhay WS		1	1		30	30		167	167
	Malogo WS		1	1		10	10		56	56
	Obong WS		1	1		15	15		83	83
	Pandol BWSA		1	1		20	20		111	111
	Solong WS		1	1		25	25		139	139
	Municipal Total		13	13		305	305		1,696	1,696
Dolores	Aroganga BWSA		1	1		150	150		846	846
	Brgy. 3, Pob.	1		1	75		75	424		424
	Brgy. 8, Pob.	1		1	40		40	226		226
	Osmeña BWSA		3	3		225	225		1,269	1,269
	Tanauan		1	1		45	45		254	254
	Municipal Total	2	5	7	115	420	535	650	2,369	3,019
General Macarthur	Aguinaldo WS		1	1		50	50		282	282
	Santa Cruz WS		1	1		50	50		282	282
	Municipal Total		2	2		100	100		564	564
Giporlos	Biga		1	1		15	15		81	81
	Coticot		1	1		15	15		81	81
	Gigoso BWSA		1	1		50	50		269	269
	Parina BWSA		1	1		10	10		54	54
	Paya BWSA		1	1		75	75		404	404
	Santa Cruz		1	1		10	10		54	54
	Municipal Total		6	6		175	175		943	943
Guiuan	Bitangan		1	1		50	50		247	247
	Cagusu-an		1	1		50	50		247	247
	Campoyong		1	1		65	65		321	321
	Canawayon		1	1		20	20		99	99
	Casuguran		1	1		50	50		247	247
	Culasi		1	1		35	35		173	173
	Habag		1	1		20	20		99	99
	Hamorawon		1	1		125	125		618	618
	Inapulangan		1	1		40	40		198	198
	San Jose WS		1	1		35	35		173	173
	Suluan		1	1		40	40		198	198
	Municipal Total		11	11		530	530		2,620	2,620
Hernani	San Miguel		1	1		50	50		304	304
Lawaan	Barangay 1	1		1	55		55	342		342
	Bolusao		1	1		65	65		365	365
	Maslog		1	1		80	80		449	449
	Taguite BWSA		1	1		35	35		196	196
	Municipal Total	1	3	4	55	180	235	342	1,010	1,352
Llorente	Babanikon		1	1		15	15		73	73
	Naubay BWSA		1	1		35	35		170	170
	San Jose BWS		1	1		15	15		73	73
	Waso BWSA		1	1		15	15		73	73
	Municipal Total		4	4		80	80		389	389

Table 4.1.4 Information on Existing Level II System

(Cont'd)

Name of Municipality	Name of Operating Body	Service Coverage								
		No. of Brgys. Served			No. of Household Served			No. of Population Served		
		Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Maslog	Brgy. 1-2	2		2	60		60	337		337
	Bulawan		1	1		15	15		77	77
	Carayacay		1	1		10	10		51	51
	San Miguel		1	1		20	20		103	103
	Municipal Total	2	3	5	60	45	105	337	231	568
Maydolong	Brgy. 1-7	7		7	190	55	245	1,355		1,355
	Camoda WS		1	1		20	20		122	122
	Campakirit WS		1	1		15	15		91	91
	Canloterio WS		1	1		30	30		183	183
	Del Pilar WS		1	1		10	10		61	61
	Guindalitan WS		1	1		25	25		152	152
	Lapgap		1	1		45	45		274	274
	Omawas WS		1	1		30	30		183	183
	Patag WS		1	1		10	10		61	61
	San Gabriel WS		1	1		20	20		122	122
	Tagaslian WS		1	1		10	10		61	61
	Municipal Total	7	10	17	190	270	460	1,355	1,310	2,665
Mercedes	Brgy. 1, 2 & 3									
Oras	Cagdine WS		1	1		20	20		110	110
	Dalid WS		1	1		70	70		386	386
	Factoria WS		1	1		10	10		55	55
	Iwayan WS		1	1		25	25		138	138
	Japay WS		1	1		10	10		55	55
	Kalaw WS		1	1		10	10		55	55
	Minapoos WS		1	1		20	20		110	110
	Naga WS		1	1		20	20		110	110
	San Eduardo WS		1	1		40	40		220	220
	Saurong WS		1	1		10	10		55	55
	Trinidad WS		1	1		25	25		138	138
	Municipal Total		11	11		260	260		1,432	1,432
Quinapondan	Brgy. 1-4 & 7 WS	5		5	125		125	886		886
	Brgy. 6 BWSA	1		1	10		10	71		71
	San Pedro BWSA		1	1		65	65		385	385
	San Vicente BWSA		1	1		30	30		178	178
	Santo Niño BWSA		1	1		85	85		503	503
	Sta. Cruz BWSA		1	1		45	45		266	266
	Sta. Margarita BWSA		1	1		10	10		59	59
	Municipal Total	6	5	11	135	235	370	957	1,391	2,348
Salcedo	Abejao WS		1	1		20	20		98	98
	Cagaut WS		1	1		15	15		73	73
	Camanga		1	1		15	15		73	73
	Iberan WS		1	1		10	10		49	49
	Malbog WS		1	1		15	15		73	73
	Municipal Total		5	5		75	75		366	366
San Julian	Casoroy BWSA		1	1		15	15		74	74
	Libas BWSA		1	1		10	10		50	50
	Lunang BWSA		1	1		30	30		149	149
	Nena BWSA		1	1		70	70		347	347
	Putong BWSA		1	1		15	15		74	74
	Municipal Total		5	5		140	140		694	694
Sulat	Del Remedio		1	1		15	15		78	78
	Kandalakit		4	4		90	90		469	469
	San Juan		1	1		15	15		78	78
	Santo Niño		1	1		15	15		78	78
	Municipal Total		7	7		135	135		703	703
Taft	Bati-awan WS		1	1		15	15		85	85
	Bongdo WS		1	1		25	25		142	142
	Burak WS		1	1		10	10		57	57
	Danao WS		1	1		40	40		227	227
	Mabuhay WS		1	1		30	30		167	167
	Nato WS		1	1		40	40		227	227
	San Pablo WS		1	1		30	30		170	170
	San Rafael WS		1	1		20	20		114	114
	Municipal Total		8	8		210	210		1,189	1,189
Provincial Total		18	111	129	555	3,700	4,255	3,641	19,791	23,432

To attain technical sustainability of existing facilities, an appropriate technical guidance and skills training for operating bodies shall be arranged by concerned agencies/LGUs.

It is also common that water quality examination is not adequately conducted.

4.1.5 Level I Facilities

Level I facilities (point source) are common in rural barangays. The major facilities are different types of wells equipped with hand-pumps or developed spring with transmission line and one communal faucet.

Level I facilities are classified in terms of safe and unsafe sources referring to the definition of DOH and the data from PHO as presented in Table 4.1.5 (details are referred to the Supporting Report). Served population in 1998 is also estimated as shown in the same table.

Of the 4,051 operational Level I facilities, 83% are shallow wells. According to the study on safe/unsafe percentage for shallow well, as a provincial average, 40% of the shallow wells are estimated to be unsafe (details are referred to the Supporting Report). All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. By applying the unsafe percentage to the number of shallow wells for each municipality, 2,527 Level I facilities are classified as safe sources, while 1,524 facilities are unsafe sources.

Percentage shares between public and private Level I facilities for rural water supply is 58% and 42%, respectively. The share of developed springs in public facilities is 10% (details are referred to the Supporting Report).

Problem areas observed on Level I facilities and the necessary countermeasures for the improvement are summarized in terms of potability and functionality.

(1) Unsafe water sources

Most of the sources declared as unsafe are driven shallow wells that are unprotected against seepage of surface water and are usually located in nearby potential pollution sources, such as septic tank and piggery. (The Code on Sanitation requires a minimum distance of 25m between water source and pollution sources.)

These shallow wells shall be provided with concrete apron on the ground surface and proper drainage facility at the surrounding area. Relocation of wells or pollution sources

Table 4.1.5 Information on Existing Level I Facilities

Name of Municipality	Number of Safe Water Sources					Number of Unsafe Water Sources					Served by Safe Source					
											Number of Household			Number of Population		
	Deep Well	Shallow Well	Covered/Improved Dug Well	Developed Spring	Total	Shallow Well	Open Dug Well	Undeveloped Spring	Rain Water Collector	Total	Urban	Rural	Total	Urban	Rural	Total
Arteche		88		2	90	59				59	511	527	1,039	2,680	2,806	5,486
Balangiga		96	2	5	103	64	4		2	70	688	371	1,058	3,638	2,050	5,688
Balangkayan		43		1	44	28				28	3	480	483	15	2,550	2,565
Borongan (Capital)	42	722	3	11	778	482				482	1,792	3,114	4,905	9,352	15,569	24,921
Can-avid	2	134			136	89				89	578	546	1,123	3,368	3,033	6,401
Dolores	19	108	16	9	152	72	53			125	1,086	1,283	2,370	6,137	7,239	13,376
General Macarthur	12				12						761		761	4,157		4,157
Giporlos	3	72	5	1	81	48	33			81	597	131	728	3,143	705	3,847
Guiuan	39	249	2	7	297	166	3			169	1,161	2,969	4,130	6,094	14,669	20,762
Hernani	6	72		7	85	48				48	227	411	639	1,323	2,501	3,824
Jipapad	4	2		1	7	2	9			11	396		396	2,500		2,500
Lawaan		83	4		87	55	8			63	494	368	862	3,066	2,064	5,131
Llorente	1	32		7	40	22				22		721	721		3,494	3,494
Maslog									7	7						
Maydolong		21		1	22	14			1	15	169	225	394	906	1,370	2,276
Mercedes	20	16		1	37	10				10		571	571		3,437	3,437
Oras	123	92		21	236	62	15		15	92	1,330	1,729	3,059	7,489	9,526	17,015
Quinapondan		1		6	7	1				1	365	567	932	2,586	3,356	5,942
Salcedo	4				4							2,057	2,057		10,058	10,058
San Julian	8	34		7	49	23	3			26	345	1,104	1,449	1,690	5,475	7,165
San Policarpo	9	36		2	47	24				24	567	832	1,398	2,889	4,393	7,282
Sulat	5	76		9	90	51	24			75	154	814	968	786	4,240	5,026
Taft	11	40	58	1	110	26				26	679	1,435	2,114	3,753	8,150	11,903
Provincial Total	308	2,018	90	99	2,515	1,345	152		25	1,522	11,903	20,254	32,157	65,572	106,686	172,258

may be another countermeasure. For new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic monitoring of water quality.

(2) Non-functioning/abandoned wells

There are several non-functioning public wells in the province as shown in Table 4.1.6.

Most of the beneficiaries are not aware of the manner for O&M of the facilities. A considerable number of public wells are abandoned/non-functional due to lack of O&M, dried-up of wells and other reasons. In most cases, the operating bodies for the facilities are not organized or non-functioning. Unauthorized private tapping to transmission lines (spring water source) are also found at some Level I facilities which caused insufficient water supply/water pressure.

Beneficiaries still rely on LGUs even for a simple replacement of parts (such as gasket). As for existing public Level-I, the barangay council takes care of the O&M using the IRA allotted to the barangay. In cases where major repair is required (e.g., replacement of hand pump unit/major parts), the barangay council submits a barangay resolution of request for the repair to the municipal government. The municipal government assists them in case financial sources are secured. The beneficiaries contribute free labor.

Considering the current situation of the beneficiaries, the LGUs shall lead them to recognize the need of formation of association and participation for sound O&M of the facilities. Information dissemination to beneficiaries is a requisite.

Among others, deep wells usually necessitate repair/replacement of mechanical parts and redevelopment of the well itself. Apart from the same problems as deep wells, shallow wells have primary disadvantages such as the use of shallow aquifer which is easily affected by surrounding environmental conditions and the simple construction method applied (driving well point) that makes rehabilitation works difficult.

To prolong the service life of public deep wells, periodic check-up entailing preventive maintenance and redevelopment of wells are to be performed. Meanwhile, proper site selection and protection of well sources are requisites for shallow wells.

Table 4.1.6 Operating Status of Existing Wells in the Province

Operating Status	Unit	Public Facility		Private Facility		Total
		Deep Well	Shallow Well	Deep Well	Shallow Well	
Functioning	No.	230	1,336	88	2,031	3,685
	Percent	60%	80%	91%	97%	87%
Non-Functioning	No.	152	338	9	73	572
	Percent	40%	20%	9%	3%	13%
Total Number		382	1,674	97	2,104	4,257

Note: Number of non-functioning wells includes abandoned wells, but details in number and reasons are not available.

4.1.6 Water Supply Service Coverage

According to the definition of DOH in terms of safe and unsafe sources, service coverage was studied under "served", "underserved" and "unserved" categories.

The present population of the municipalities as of 1998, base year for planning purpose, was estimated referring to the NSO population census results (1903 to 1995, conducted 10 times) and the 1995 Census-based National and Regional Population projection prepared by the NSO and NEDA Regional Office. In addition, the population distribution in 1995 census by urban and rural barangay prepared by the NSO was adjusted to meet actual conditions in the classification of barangays. Details are refered to Section 8.3.1 Population Projection.

Water supply service coverage by service level is estimated for urban and rural areas covering all municipalities under the following conditions and assumptions:

- Service percentage/population by Level III and Level II systems was estimated based on the questionnaire survey results.
- Unserved population was estimated using the percentages of unserved households to the total number of households by urban and rural area based on the questionnaire survey results and the 1990 population census data; "Households by Main Source of Drinking Water and City/Municipality".
- The rest of the population was considered served by Level I facilities assuming that 50% of private facilities was shared by neighbors to augment insufficiency of public facilities.

The average number of households sharing at each Level I public/private facility was calculated at an average of 16 households/facility under the above assumptions (details are referred to the Supporting Report).

Table 4.1.7 presents the profile of the service coverage in terms of served, underserved and unserved. As a provincial total, 57% of the population is adequately served (68% of urban population and 52% of rural population).

The percentage of underserved population is estimated at 20% of the total population (21% of urban population and 20% of rural population) who are depending on unsafe sources/facilities.

The provincial service coverage at present is exhibited in Figure 4.1.1 (details are referred to the Supporting Report).

Among different service levels, Level I water supply facilities have predominant service coverage in most of the municipalities in the province.

Percentage shares of population coverage by Level I public and private facilities in rural water supply are estimated at 98% and 2%, respectively (details are referred to the Supporting Report).

Level III systems combined with communal faucets take a major part of service coverage in urban water supply in limited municipalities such as Balangkayan, Maydolong, Salcedo and Sulat.

Likewise, Level II systems are in operation in most of the municipalities. However, piped systems (Level II and III systems) are presently not fully developed in the entire province (7% for Level II and 4% for Level III systems).

Taking into account the municipal service coverage of the 23 municipalities of the province, 12 are above the average provincial service coverage of 57% in terms of served population. The highest coverage is seen in Salcedo (75%), followed by Taft (74%), Sulat (67%) and Borongan (66%).

In contrast to the above, 10 municipalities are below the provincial average. The lowest is Maslog at 15%, followed by Llorente (29%), Jipapad (38%), Arteche (42%), General Mac Arthur (46%), Giporlos (46%), Guiuan (49%) and Hernani (49%). Low coverage of these municipalities is considered to arise from the existence of a large number of unserved population. A specific case is seen in the urban area of Mercedes. Although they are using Level I and Level II system, water is not drinkable due to saline water intrusion. Accordingly, the population using Level I and Level II system was classified into underserved population.

Table 4.1.7 Water Supply Service Coverage by Municipality

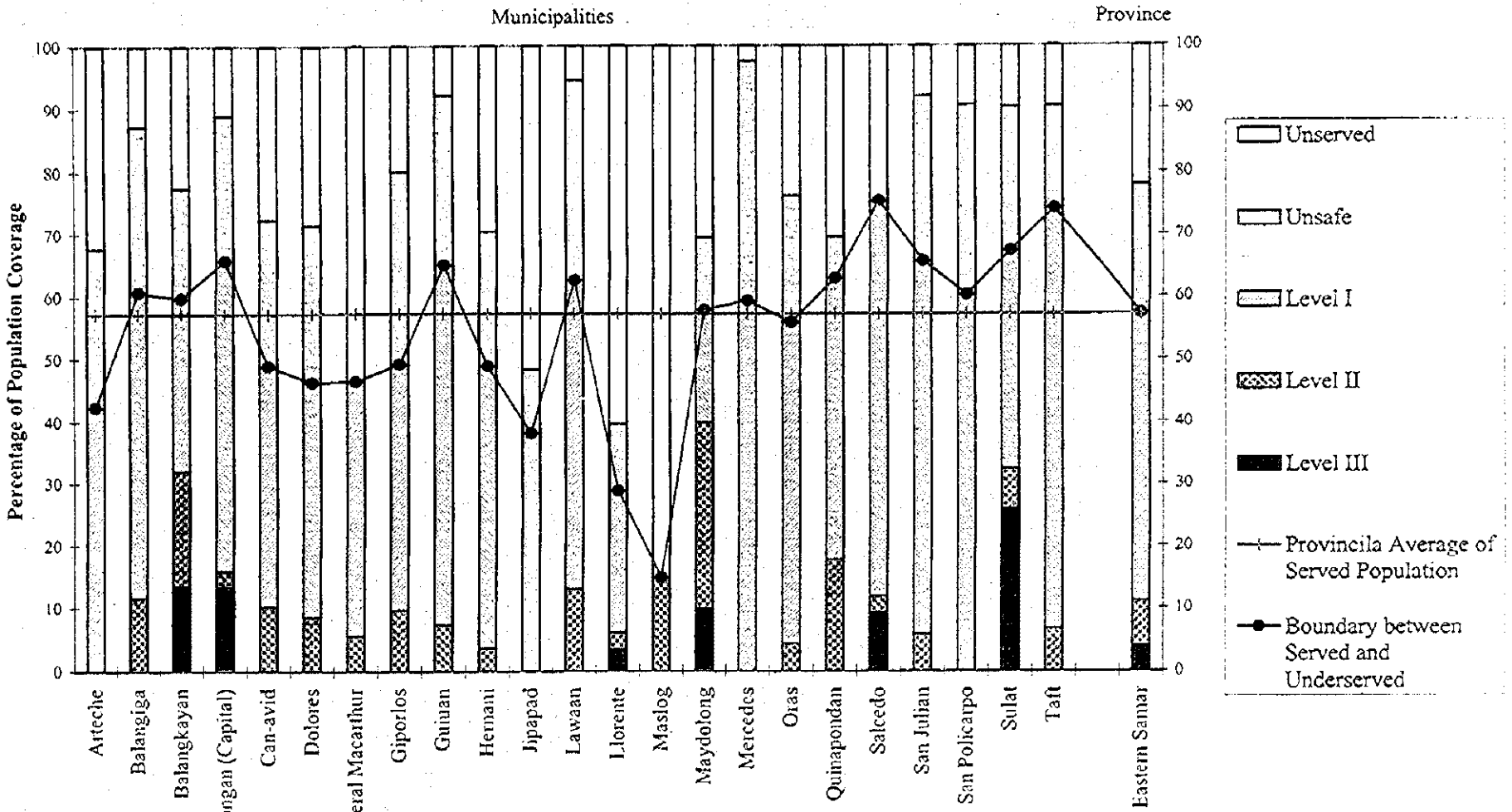
Name of Municipality	Area	Population (1998)	Population Coverage							Percentage of Population Coverage						
			Served by Safe Source				Underseved/Unserved			Served by Safe Source				Underseved/Unserved		
			Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total	Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total
Arteche	Urban	4,682			2,680	2,680	1,721	281	2,002			57	57	37	6	43
	Rural	8,279			2,806	2,806	1,556	3,916	5,473			34	34	19	47	66
	Total	12,961			5,486	5,486	3,278	4,197	7,475			42	42	25	32	58
Balangiga	Urban	5,970			3,638	3,638	2,229	104	2,332			61	61	37	2	39
	Rural	5,632		1,355	2,050	3,405	851	1,376	2,227		24	36	60	15	24	40
	Total	11,602		1,355	5,688	7,043	3,079	1,480	4,559		12	49	61	27	13	39
Balangkayan	Urban	2,985	1,256	1,710	15	2,981	4	0	4	42	57	0	100	0	0	0
	Rural	6,270			2,550	2,550	1,635	2,084	3,720			41	41	26	33	59
	Total	9,255	1,256	1,710	2,565	5,531	1,639	2,084	3,724	14	18	28	60	18	23	40
Borongan (Capital)	Urban	20,078	6,348		9,352	15,700	4,002	376	4,378	32		47	78	20	2	22
	Rural	30,051	319	1,333	15,569	17,221	7,659	5,171	12,830	1	4	52	57	25	17	43
	Total	50,129	6,667	1,333	24,921	32,921	11,661	5,547	17,208	13	3	50	66	23	11	34
Can-avid	Urban	5,674			3,368	3,368	1,948	358	2,306			59	59	34	6	41
	Rural	10,905		1,696	3,033	4,729	1,958	4,218	6,176		16	28	43	18	39	57
	Total	16,579		1,696	6,401	8,097	3,905	4,576	8,482		10	39	49	24	28	51
Dolores	Urban	11,134		650	6,137	6,787	3,519	828	4,347		6	55	61	32	7	39
	Rural	24,349		2,369	7,239	9,608	5,433	9,308	14,741		10	30	39	22	38	61
	Total	35,483		3,019	13,376	16,395	8,952	10,136	19,088		9	38	46	25	29	54
General Macarthur	Urban	4,388			4,157	4,157		231	231			95	95		5	5
	Rural	5,788		564		564		5,224	5,224		10		10		90	90
	Total	10,176		564	4,157	4,721		5,455	5,455		6	41	46		54	54
Giporlos	Urban	5,168			3,143	3,143	1,879	146	2,025			61	61	36	3	39
	Rural	4,571		943	705	1,648	1,132	1,791	2,923		21	15	36	25	39	64
	Total	9,739		943	3,847	4,790	3,011	1,937	4,949		10	40	49	31	20	51
Guiuan	Urban	9,862			6,094	6,094	3,566	203	3,768			62	62	36	2	38
	Rural	26,116		2,620	14,669	17,289	6,260	2,567	8,827		10	56	66	24	10	34
	Total	35,978		2,620	20,762	23,382	9,825	2,770	12,596		7	58	65	27	8	35
Hernani	Urban	2,211			1,323	1,323	715	174	888			60	60	32	8	40
	Rural	6,242		304	2,501	2,805	1,116	2,321	3,437		5	40	45	18	37	55
	Total	8,453		304	3,824	4,128	1,831	2,495	4,325		4	45	49	22	30	51
Jipapad	Urban	3,402			2,500	2,500	668	234	902			73	73	20	7	27
	Rural	3,152						3,152	3,152						100	100
	Total	6,554			2,500	2,500	668	3,386	4,054			38	38	10	52	62
Lawaan	Urban	5,212		342	3,066	3,408	1,753	51	1,804		7	59	65	34	1	35
	Rural	5,145		1,010	2,064	3,074	1,563	508	2,071		20	40	60	30	10	40
	Total	10,357		1,352	5,131	6,483	3,315	559	3,874		13	50	63	32	5	37

Table 4.1.7 Water Supply Service Coverage by Municipality

(cont'd)

Name of Municipality	Area	Population (1998)	Population Coverage							Percentage of Population Coverage						
			Served by Safe Source				Underseved/Unserved			Served by Safe Source				Underseved/Unserved		
			Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total	Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total
Llorente	Urban	6,478	506	30		536		5,942	5,942	8	0		8		92	92
	Rural	8,871		389	3,494	3,883	1,679	3,309	4,988		4	39	44	19	37	56
	Total	15,349	506	419	3,494	4,419	1,679	9,251	10,930	3	3	23	29	11	60	71
Maslog	Urban	1,163		337		337		826	826		29		29		71	71
	Rural	2,649		231		231		2,418	2,418		9		9		91	91
	Total	3,812		568		568		3,244	3,244		15		15		85	85
Maydolong	Urban	5,374	1,150	2,495	906	4,551	572	251	823	21	46	17	85	11	5	15
	Rural	7,333	116	1,310	1,370	2,796	908	3,630	4,537	2	18	19	38	12	49	62
	Total	12,707	1,266	3,805	2,276	7,347	1,480	3,880	5,360	10	30	18	58	12	31	42
Mercedes	Urban	1,335					1,321	14	1,335					99	1	100
	Rural	4,455			3,437	3,437	893	124	1,018			77	77	20	3	23
	Total	5,790			3,437	3,437	2,214	138	2,353			59	59	38	2	41
Oras	Urban	8,665			7,489	7,489	658	518	1,176			86	86	8	6	14
	Rural	24,358		1,432	9,526	10,958	6,059	7,341	13,400		6	39	45	25	30	55
	Total	33,023		1,432	17,015	18,447	6,717	7,860	14,576		4	52	56	20	24	44
Quinapondan	Urban	4,547		957	2,586	3,543	647	357	1,004		21	57	78	14	8	22
	Rural	8,639		1,391	3,356	4,747	240	3,652	3,892		16	39	55	3	42	45
	Total	13,186		2,348	5,942	8,290	886	4,009	4,896		18	45	63	7	30	37
Salcedo	Urban	3,053	1,458	60		1,518		1,535	1,535	48	2		50		50	50
	Rural	12,786		366	10,058	10,424		2,362	2,362		3	79	82		18	18
	Total	15,839	1,458	426	10,058	11,942		3,897	3,897	9	3	63	75		25	25
San Julian	Urban	2,718			1,690	1,690	964	64	1,028			62	62	35	2	38
	Rural	9,267		694	5,475	6,169	2,203	895	3,098		7	59	67	24	10	33
	Total	11,985		694	7,165	7,859	3,167	959	4,126		6	60	66	26	8	34
San Policarpo	Urban	4,280			2,889	2,889	1,316	75	1,391			68	68	31	2	32
	Rural	7,807			4,393	4,393	2,355	1,060	3,414			56	56	30	14	44
	Total	12,087			7,282	7,282	3,670	1,135	4,805			60	60	30	9	40
Sulat	Urban	5,318	3,726	255	786	4,767	450	101	551	70	5	15	90	8	2	10
	Rural	9,108		703	4,240	4,943	2,865	1,300	4,165		8	47	54	31	14	46
	Total	14,426	3,726	958	5,026	9,710	3,316	1,400	4,716	26	7	35	67	23	10	33
Taft	Urban	4,758			3,753	3,753	900	105	1,005			79	79	19	2	21
	Rural	12,890		1,189	8,150	9,339	1,971	1,580	3,551		9	63	72	15	12	28
	Total	17,648		1,189	11,903	13,092	2,870	1,686	4,556		7	67	74	16	10	26
Provincial Total	Urban	128,455	14,444	6,836	65,572	86,852	28,831	12,772	41,603	11	5	51	68	22	10	32
	Rural	244,663	435	19,899	106,686	127,020	48,335	69,309	117,643	0	8	44	52	20	28	48
	Total	373,118	14,879	26,735	172,258	213,872	77,165	82,081	159,246	4	7	46	57	21	22	43

Figure 4.1.1 Water Supply Coverage of the Province



4.2 Sanitation and Sewerage

4.2.1 General

The national strategy for sanitation and sewerage is demand-oriented. It aims to stimulate sustainable improvements in sanitation service coverage, public health, and environmental pollution abatement. To achieve this goal, the Government has made investment choices based on demand and the extent to which choices contribute to efficiency and cost-effectiveness.

This sub-sector focuses on household toilets, school toilets and public toilets (public markets, bus/jeepney terminals and parks/playgrounds). The latest data from the PHO on household and public toilets as well as from DECS on school toilets were gathered by municipality. In case of household toilets, data were consolidated by urban and rural area. These facilities were classified into sanitary and unsanitary in terms of structure rather than the surrounding conditions.

The Code on Sanitation of the Philippines provides the minimum standards for services dealing with public health. Specifically, Chapter XVII on Sewage Collection and Disposal, Excreta Disposal and Drainage (Implementing Rules and Regulations, 1995) defines alternatives for on-site sanitation and sewage collection and disposal. At present, the development of sewerage systems, even in the urban centers of the province is not given priority because of the huge investment cost it entails.

In the NEDA Board Resolution No. 12 (series of 1995), definitions of approved types of sanitary toilets were outlined (refer to 4.1.2, Data Report). There were 4 approved types of sanitary toilets including the sanitary pit privy where water is not used but provided with cover to minimize the emission of foul odor and also to keep away flies and rodents. These definitions were applied in this Master Plan.

4.2.2 Types of Facilities and Definition of Service Level Standard

As set forth in the above-mentioned Resolution, the types of household toilet facilities commonly used are categorized into: 1) sanitary toilets - approved types of toilet facilities include water-sealed pour flush or flush-type toilets either with receiving pit or septic tanks/vaults, and ventilated improved pit latrines and sanitary pit privy (dry type) considering its low construction cost especially in rural areas and in areas where water is scarce; and 2) unsanitary facilities - include the types of facilities used for receiving and disposing human waste which

do not fall under the category of approved types of toilet facilities such as open pit privy and over-hung latrines (refer to Figure 4.2.1 DOH standard structure of a household toilet that meets the minimum requirements of a sanitary facility, Supporting Report).

In terms of service level, households are classified into: 1) served households - households with at least one (1) sanitary toilet; 2) underserved households - households with unsanitary toilets; and 3) unserved households - households without toilet. Coverage of adequately served households (with sanitary toilets) was estimated by urban and rural area of municipalities. The remaining households were considered as underserved or unserved. The service coverage was determined using the estimated number of households in 1998.

Service level standard for both elementary and secondary school toilets is translated in terms of: 1) served students - students who are adequately covered by the DECS standard ratio of one (1) unit per 40 students with access to sanitary toilets (number of sanitary toilet units multiplied by 40); and (2) underserved or unserved students - those with unsanitary and without toilet facilities, and students unserved (based on the standard ratio) even though they have access to sanitary toilets. Service coverage of adequately served students was estimated both for public and private schools by municipality. Figure 4.2.2, Supporting Report shows a standard structure of a school toilet facility adopted by the DOH through the JICA-DPWH and DOH Rural Environmental Sanitation Project.

For public toilets, the service level is classified into: 1) served - utilities that have at least one (1) sanitary toilet, and 2) underserved or unserved - utilities that have unsanitary or without toilet facilities. Service coverage of public utilities was estimated as a percentage of sanitary facilities to the total number of utilities. Figure 4.2.3, Supporting Report shows a standard structure of a public toilet facility adopted by the DOH

4.2.3 Sanitation Facilities and Service Coverage

(1) Household Toilets

The service coverage of sanitary toilets in the province is 61% of the total number of households. The rest is underserved or unserved. Of this, a high 83% is without toilet facilities (refer to 4.2.1, Supporting Report and 4.2.3, Sanitation Facilities and Service Coverage, Data Report).

Municipalities that have higher or equal service coverage from the provincial average of 61% are Borongan and San Julian (81%), Sulat (71%), San Policarpio (69%), Jipapad

(66%), Hernani and Maydolong (64%), and Balangiga and Llorente (62%). On the other hand, the first 5 municipalities that registered lower service coverage are: General Macarthur and Giporlos (48%), Oras (50%), Mercedes (51%) and Guiuan (52%). It was observed that in municipalities that have high water supply service coverage (Borongan, Sulat), high sanitation coverage occurs and correspondingly, in low water supply service coverage (General Macarthur, Guiuan), low sanitation coverage also occurs. This can be attributed by the fact that the development of water supply almost always follows the upgrading of the household sanitation facilities because of access to water.

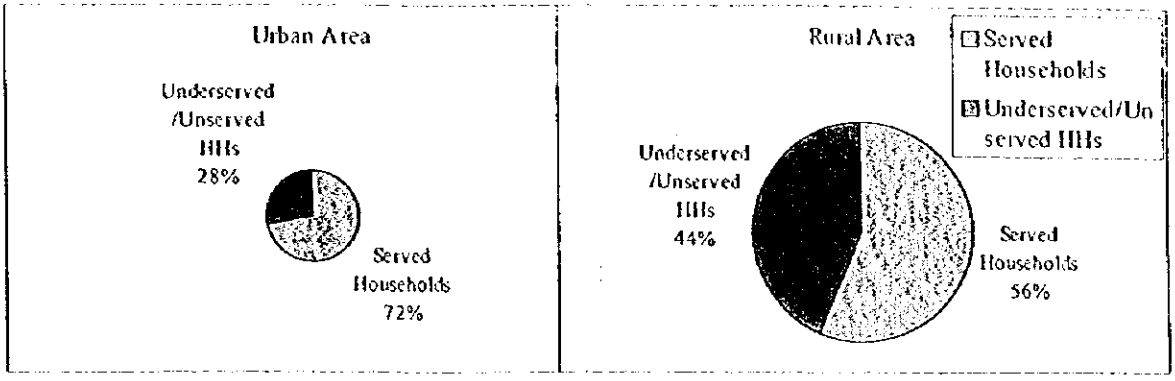
In urban areas, approximately 72% of the total households are served. A much lower served household of 56% exists in rural area. Table 4.2.1 shows the municipal breakdown in the number of urban and rural household toilets by category, and service coverage. Figure 4.2.1 reflects the provincial service coverage of household toilet facilities for urban and rural areas.

Even if high percentages of sanitary toilets are revealed 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. Generally, there is little concern about the unsatisfactory disposal of wastes once it is outside their dwelling units. Practically, almost all the households dispose their wastes in the manner that poses risks to public health. Sullage waste management is unheard of.

Table 4.2.1 Sanitation Facilities and Service Coverage of Household Toilets, Urban and Rural, 1998

Municipality	No. of Households, 1998			Household Toilets Facilities and Service Coverage											
				Urban				Rural				Municipal Total			
	Urban	Rural	Total	HHs Served by Sanitary Toilets		Underserved/ Unserved HHs		HHs Served by Sanitary Toilets		Underserved/ Unserved HHs		HHs Served by Sanitary Toilets		Underserved/ Unserved HHs	
				Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs
Arteche	894	1,556	2,450	722	81	172	19	706	45	850	55	1,428	58	1,022	42
Balangiga	1,129	1,018	2,147	774	69	355	31	548	54	470	46	1,322	62	825	38
Balangkayan	575	1,181	1,756	390	68	185	32	658	56	523	44	1,048	60	708	40
Borongan	3,846	6,010	9,856	2,959	77	887	23	5,054	84	956	16	8,013	81	1,843	19
Can-avid	973	1,961	2,934	700	72	273	28	1,015	52	946	48	1,715	58	1,219	42
Dolores	1,971	4,317	6,288	1,766	90	205	10	1,775	41	2,542	59	3,541	56	2,747	44
Gen. Macarthur	804	1,026	1,830	424	53	380	47	453	44	573	56	877	48	953	52
Giporlos	983	850	1,833	574	58	409	42	310	36	540	64	884	48	949	52
Guiuan	1,878	5,287	7,165	1,532	82	346	18	2,204	42	3,083	58	3,736	52	3,429	48
Hernani	380	1,027	1,407	200	53	180	47	698	68	329	32	898	64	509	36
Jipapad	539	573	1,112	465	86	74	14	271	47	302	53	736	66	376	34
Lawaan	839	917	1,756	412	49	427	51	534	58	383	42	946	54	810	46
Llorente	1,344	1,829	3,173	944	70	400	30	1,021	56	808	44	1,965	62	1,208	38
Maslog	207	515	722	137	66	70	34	277	54	238	46	414	57	308	43
Maydolong	1,001	1,204	2,205	713	71	288	29	705	59	499	41	1,418	64	787	36
Mercedes	198	740	938	84	42	114	58	396	54	344	46	480	51	458	49
Oras	1,539	4,421	5,960	795	52	744	48	2,166	49	2,255	51	2,961	50	2,999	50
Quinapondan	641	1,459	2,100	354	55	287	45	832	57	627	43	1,186	56	914	44
Salcedo	601	2,615	3,216	447	74	154	26	1,307	50	1,308	50	1,754	55	1,462	45
San Julian	555	1,868	2,423	420	76	135	24	1,531	82	337	18	1,951	81	472	19
San Policarpo	839	1,479	2,318	724	86	115	14	886	60	593	40	1,610	69	708	31
Sulat	1,045	1,748	2,793	674	64	371	36	1,310	75	438	25	1,984	71	809	29
Taft	860	2,269	3,129	756	88	104	12	1,103	49	1,166	51	1,859	59	1,270	41
Provincial Total	23,641	45,870	69,511	16,966	72	6,675	28	25,760	56	20,110	44	42,726	61	26,785	39

Figure 4.2.1 Provincial Service Coverage of Household Toilet Facilities, 1998



(2) School and Public Toilets

Toilet facilities in elementary and secondary schools for both public and private schools were investigated. The province has a total of 1,514 toilet units found in 449 schools. Sanitary toilets adequately serve 56% of the students. The rest, 44% is underserved or unserved. Meanwhile, sanitary toilets adequately serve about 56% of the public school students. Table 4.2.2 provides the number and service coverage of school toilet facilities.

The number of sanitary school toilets is low to meet the service level standard of 40 students per sanitary facility. At present, the average ratio is 66 students per sanitary toilet, a little over the standard level. A number of school toilets 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. In some areas, this problem is compounded when access to the sanitary facility is limited to only the teachers and guests.

DECS is currently promoting the practice of having one toilet within the classroom. This practice should be thoroughly reviewed with respect to maintaining sanitary condition, provision of water faucet/supply in every toilet/unit, proper design of depository to avoid groundwater pollution, and provision of regular sludge collection and disposal.

There are 22 public toilets found in public markets, bus/jeepney terminals and parks/playgrounds in the province. All these public toilets are sanitary resulting to 100% service coverage. Table 4.2.3 shows the number and service coverage of public utilities.

Public toilets at markets, bus/jeepney terminals and parks/playgrounds, although culturally acceptable, are improperly used and maintained resulting to unsanitary conditions.

In most cases, no specific arrangements are made for the operation and maintenance and for the collection of fees to cover such costs. Although considered as sanitary because of the structure, most of the facilities have unsanitary conditions due to inadequate/lack of water supply and destroyed appurtenances because of vandalism.

Table 4.2.2 School Toilet Service Coverage by Municipality

Municipality		Number of School	Total No. of Student	Number of Toilet		Service Coverage			
				Sanitary	Unsanitary	Served	%	Unserved	%
Arteche	Public	14	3,424	10		400	12	3,024	88
	Private								
	Total	14	3,424	10		400	12	3,024	88
Balangiga	Public	9	2,569	57		2,280	89	289	11
	Private	1	109	2		80	73	29	27
	Total	10	2,678	59		2,360	88	318	12
Balangkayan	Public	11	2,061	42		1,680	82	381	18
	Private								
	Total	11	2,061	42		1,680	82	381	18
Borongan (Capital)	Public	51	14,182	235		9,400	66	4,782	34
	Private	3	572	38		572	100		
	Total	54	14,754	273		9,972	68	4,782	32
Can-avid	Public	20	3,731					3,731	100
	Private								
	Total	20	3,731					3,731	100
Dolores	Public	40	9,264	22		880	9	8,384	91
	Private	1	72	44		72	100		
	Total	41	9,336	66		952	10	8,384	90
General Macarthur	Public	22	2,903	65		2,600	90	303	10
	Private	1	316	5		200	63	116	37
	Total	23	3,219	70		2,800	87	419	13
Giporlos	Public	13	2,668	83		2,668	100		
	Private	1	141	2		80	57	61	43
	Total	14	2,809	85		2,748	98	61	2
Guiuan	Public	45	9,152	88	2	3,520	38	5,632	62
	Private	2	568	16		568	100		
	Total	47	9,720	104	2	4,088	42	5,632	58
Hernani	Public	11	2,121	38		1,520	72	601	28
	Private								
	Total	11	2,121	38		1,520	72	601	28
Jipapad	Public	8	1,002	8		320	32	682	68
	Private	1	240	2		80	33	160	67
	Total	9	1,242	10		400	32	842	68
Lawaan	Public	8	2,523	55		2,200	87	323	13
	Private	1	157	2		80	51	77	49
	Total	9	2,680	57		2,280	85	400	15
Llorente	Public	2	4,174	65		2,600	62	1,574	38
	Private	1	176	3		120	68	56	32
	Total	3	4,350	68		2,720	63	1,630	37
Maslog	Public	12	698	28	6	698	100		
	Private								
	Total	12	698	28	6	698	100		
Maydolong	Public	11	6,680	136		5,440	81	1,240	19
	Private								
	Total	11	6,680	136		5,440	81	1,240	19
Mercedes	Public	11	1,549	18		720	46	829	54
	Private								
	Total	11	1,549	18		720	46	829	54
Oras	Public	38	7,791	117		4,680	60	3,111	40
	Private	1	510	8		320	63	190	37
	Total	39	8,301	125		5,000	60	3,301	40
Quinapondan	Public	17	2,772	16	1	640	23	2,132	77
	Private								
	Total	17	2,772	16	1	640	23	2,132	77
Salcedo	Public	34	4,703	95		3,800	81	903	19
	Private								
	Total	34	4,703	95		3,800	81	903	19

Table 4.2.2 School Toilet Service Coverage by Municipality

(cont'd)

Municipality		Number of School	Total No. of Student	Number of Toilet		Service Coverage			
				Sanitary	Unsanitary	Served	%	Unserved	%
San Julian	Public	12	2,998	7		280	9	2,718	91
	Private	1	103	2		80	78	23	22
	Total	13	3,101	9		360	12	2,741	88
San Policarpo	Public	15	2,316	43		1,720	74	596	26
	Private	1	142					142	100
	Total	16	2,458	43		1,720	70	738	30
Sulat	Public	15	3,036	81		3,036	100		
	Private	1	91					91	100
	Total	16	3,127	81		3,036	97	91	3
Taft	Public	14	4,322	72		2,880	67	1,442	33
	Private								
	Total	14	4,322	72		2,880	67	1,442	33
Provincial Total	Public	433	96,639	1,381	9	53,962	56	42,677	44
	Private	16	3,197	124		2,252	70	945	30
	Total	449	99,836	1,505	9	56,214	56	43,622	44

Table 4.2.3 Public Toilet Facilities and Service Coverage in 1998

Municipality	Number of Sanitary Toilet			Number of Unsanitary Toilet			Total Number of PU Toilet	Served		Underserved	
	Public Market	Bus/Jeepney Terminal	Parks/ Playground	Public Market	Bus/Jeepney Terminal	Park/ Play-ground		Number of Sanitary Toilet	%	Number of Unsanitary Toilet	%
Arteche	1						1	1	100		
Balangiga											
Balangkayan											
Borongan (Capital)	1	1					2	2	100		
Can-avid	1						1	1	100		
Dolores	2	2	1				5	5	100		
General Macarthur	1						1	1	100		
Giporlos											
Guiuan	3						3	3	100		
Hernani	1						1	1	100		
Jipapad											
Lawaan	1						1	1	100		
Llorente	1						1	1	100		
Maslog											
Maydolong	1		1				2	2	100		
Mercedes	1						1	1	100		
Oras											
Quinapondan											
Salcedo											
San Julian	1						1	1	100		
San Policarpo		1					1	1	100		
Sulat	1						1	1	100		
Taft											
Provincial Total	16	4	2				22	22	100		

4.2.4 Sewerage Facilities

There are no existing sewerage facilities in the province. Most of the wastewater from the dwelling units with acceptable facilities finds its way to open drains and eventually to water-courses. These deficiencies are the major contributing factors to the poor condition of the water environment in some areas of the province.

Chapter 5

EXISTING SECTOR ARRANGEMENT AND INSTITUTIONAL CAPACITY

5 EXISTING SECTOR ARRANGEMENT AND INSTITUTIONAL CAPACITY

5.1 General

Much has happened in the sector since 1987 when the national master plan for the sector was initially prepared. Its development targets to be attained for the medium term was renewed in 1996 through the Updated Medium Term Development Plan. The water supply, sewerage and sanitation sector today is still in a transition stage. As a recent development, a national level comprehensive plan, "The Philippine National Development Plan: Directions to the 21st Century," was published in 1998 by the NEDA.

As for the institutional aspect, the Local Government Code (1991) has essentially re-defined the role, relationship and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. Before the issuance of the Code, the responsibilities for water supply and sanitation functions were lodged with various national agencies. The new direction mandates the Local Government Units (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.

Chapter Five provides an overview of existing sector policies and arrangements as a basis for formulating modifications and improvements. It identifies current capacity building issues that need to be addressed in the early stages of master plan implementation. More importantly, it assesses the impact of the present devolved delivery system at the local levels.

5.2 Sector Reforms

The GOP has set the future agenda for sector reform. These initiatives followed the completion of the Water Supply Sector Reform Study and the National Urban Sewerage and Sanitation Strategy Study. The GOP has endorsed the major recommendations of these studies through the following NEDA resolutions. Furthermore, these resolutions are reflected in the above mentioned National Development Plan.

(1) NEDA Resolution No.4 (series of 1994)

In the context of the LGC and related decentralization efforts, LGUs now play a lead role in basic service delivery. NEDA Resolution No.4 allows LGUs to implement all levels of water supply projects and redefines the roles of other sector agencies.

With the purpose of ensuring common interpretation of clause (g) of NEDA Board Resolution No. 4 (series of 1994), the Implementing Rules and Regulations or IRR was prepared by the DILG and was approved by the NEDA in 1998. It delineates the responsibilities of government agencies involved in the sector and defines the role of LGUs in the provision of water supply and sanitation services, including O&M of the facilities. The new direction mandates the LGUs to play a larger role with an emphasis on institutional strengthening which is needed to adequately perform their devolved functions.

(2) NEDA Resolution No. 5 (series of 1994)

This resolution reaffirms the provision of urban sewerage and sanitation services. It designates LGUs as primary implementors of the sanitation/sewerage programs, also mandates the establishment of a Central Project Support Office (CPSO) at LWUA to assist LGUs in the formulation, preparation and implementation of sewerage/sanitation projects.

(3) NEDA Resolution No. 6 (series of 1996)

Providing the national government assistance to LGUs in the implementation of devolved infrastructure activities/facilities under the LGC in support of national priority programs in order to ensure efficiency, effectivity and more focused implementation, it affirms DILG's responsibilities for overseeing and administrating the NG assistance to LGUs in the implementation of devolved infrastructure programs/projects, and institutional, capacity and capability building of the LGUs (refer to 5.2, Data Report for the full text of NEDA Resolution No.4, 5 and 6).

5.3 Sector Institutions

(1) Existing Institutional Arrangements

Although the LGC mandates major changes on sector structure and performance within LGUs, the sector is still in transition. The new sector role and respective responsibilities of the LGUs and national agencies are defined in the IRR.

At the national government level, there are three line agencies (DPWH, DILG and DOH) and two government-owned and controlled corporations (MWSS and LWUA) which are responsible for sector project implementation (refer to Figure 5.3.1). A regulatory board, the National Water Resource Board (NWRB) coordinates the overall policy framework for water resources development and management. In addition to these agencies, there are government agencies but they are concerned with macro planning, natural resources allocation decisions and environmental protection and management.

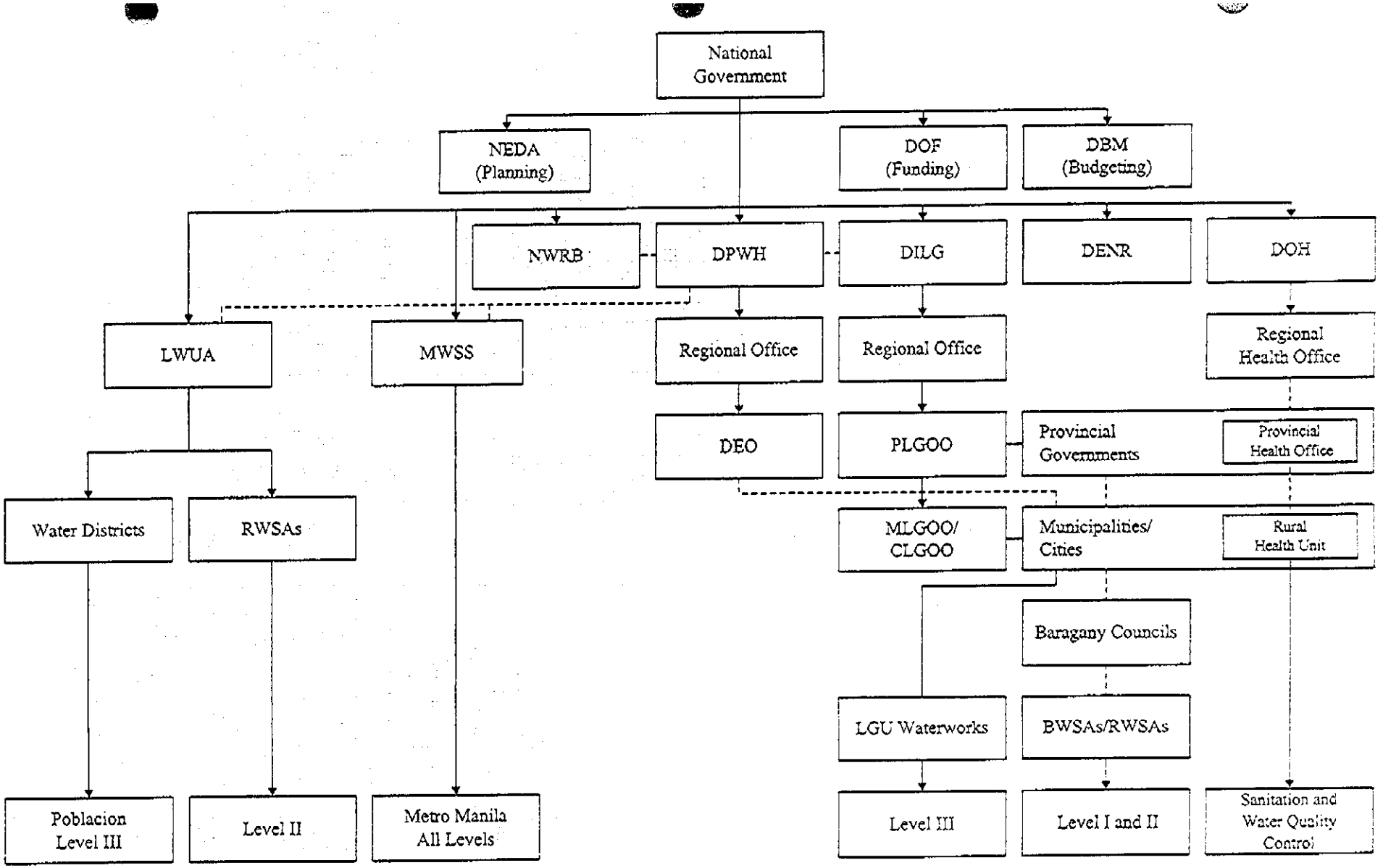


Figure 5.3.1 Functional Relationships

At the local level, field offices of national government agencies are present to guide and assist LGUs. The water districts and BWSAs deal with the actual delivery of water in different service levels. Also, some LGUs operate provincial and municipal water supply systems by themselves. The private sector, non-government organizations and community-based organizations also undertake water supply and sanitation activities in the rural communities.

With the government decentralization and issuance of the NEDA Board Resolution No.4, drastic changes took place among the DPWH, DILG, DOH and LGUs. The transition functions of these agencies are presented in Table 5.3.1. As shown, the function of implementing water supply projects (which DPWH used to undertake) has now been transferred to the LGUs. The functions of PHO under the DOH have likewise been devolved to the LGUs. The overall coordination function for the implementation of the WATSAN projects is now the responsibility of DILG.

Table 5.3.1 Transition Functions of the DPWH, DILG and DOH

	Previous Involvement (Before NEDA Board Resolution No.4 in 1994)	Present Involvement (After NEDA Board Resolution No.4, s. of 1994)
Identify projects	DPWH	DILG
Design/Construct Level I	DPWH	LGU (PEO/MEO)
Repair/Rehabilitate Level I	DPWH	LGU (PEO/MEO)
Formulate/Evaluate maintenance. Program	DPWH	LGU (PEO/MEO)
Organize BWSA	DPWH	LGUs with DILG assistance
Train BWSAs on O&M	DPWH	LGUs with DILG assistance
Procure/supply materials/spare parts	DPWH	LGU (PEO/MEO)
Sector/Project monitoring and data-management	DPWH	LGUs with DILG assistance
Overall coordination for project implementation (identification of project, training of BWSAs on O&M, and monitoring and data management) – These functions were transferred from DPWH.	DILG	DILG
Assist LGUs to identify water supply systems, Level I, II and III. This function was transferred from DPWH.	DILG	DILG
Develop and implement rural sanitation programs nationwide	DOH	LGU (PHO)
Implement the sanitation component of integrated water supply and sanitation projects	DOH	LGU (PHO)
Monitor, inspect and disinfect water supply systems	DOH	LGU (PHO)
Provide its health workers with training on water quality surveillance, hygiene education, and water purification treatment processes	DOH	LGU (PHO)
Conduct health education campaigns	DOH	LGU (PHO)
Produce information, education and communication (IEC) materials on water supply	DOH	LGU (PHO)

(2) Sector Finance

In financing WATSAN activities, LGUs have fund sources as follows:

LGUs may tap their Internal Revenue Allotments (IRAs) which comes from national government regularly, and/or locally generated revenues for leverage. These are also the resources to borrow from government or private financing institutions.

In addition, grant funds from National Government are provided to LGU under its social infrastructure development. However, granting these funds is regulated with conditions such as zero to 50 percent of development costs will be subsidized but limited only to Level I systems for 5th and 6th class municipalities. No subsidy will be provided for Level II and III systems.

LGUs can access ODA loans for devolved activities. However, they must pass through, i.e. the Municipal Development Fund (MDF) and a Government Financial Institution (GFI). The policy-making bodies of MDF and GFI determine the re-lending/on-lending terms passed on to the LGUs. The policy on accessing loans through the MDF is currently under review by the central government to make the terms and conditions more concessional towards the LGUs.

LGUs may either finance the sector projects directly or involve the participation of the private sector through concession-, management- or service-contracts. (Details on the sector finance is given in Chapter 6.

5.4 Sector Agencies at the National Level

(1) Department of the Interior and Local Government (DILG)

The DILG is responsible, through the promulgation of rules and regulations and by means of technical assistance and training, for facilitating the implementation of the LGC. Accordingly, it is the lead national coordination agency responsible for the supervision and administration of water supply and sanitation projects implemented by LGUs. It is also mandated to strengthen local capacity for delivery of the services.

General administration and institution building support to LGUs entail the following: i) assistance in the formation and training of BWSAs, ii) coordination of master plan preparation, iii) provision of external funds, iv) formulation and installation of sector management systems (including O&M) and BWSA management systems. The DILG also pro-

vides assistance to LGUs in terms of technical support for evaluation of water sources and design of simple water systems (Level I and II).

The Water Supply and Sanitation-Program Management Office (WSS-PMO), a unit within DILG, is primarily responsible for water and sanitation activities in the department. The Provincial Planning and Development Office (PPDO) and the Municipal Planing and Development Office (MPDO) are the immediate links of the DILG at the LGU level. For the purpose of ensuring coordination in implementing projects where there are other agencies involved, DILG facilitates the formation of Task Forces with the PPDO and the MPDO still assuming overall responsibility. Through the PPDO and MPDO, barangays that need improvements in water supply and sanitation are identified. Water supply and sanitation associations are then formed.

Likewise, the DILG is now one of the leading institutions tasked to promote gender-responsive project management. Under the leadership of focal points, gender awareness training seminars have been conducted at the regional and provincial levels.

(2) Department of Public Works and Highways (DPWH)

The Department was responsible for the construction and major repair/rehabilitation of rural water supply systems (Level I) and for the planning and execution of sewerage projects in some cities and larger poblaciones in the country with participation of LGUs. DPWH's responsibility drastically changed with the implementation of NEDA Board Resolution No.4. Based on the new mandate, the functions of DPWH are now limited to setting technical standards and assisting LGUs, upon agreement and in coordination with LGUs, in the conduct of surveys, preparation of plans, specifications, and programs of work, construction management, and technical researches in WATSAN project.

The DPWH maintains about 92 District Engineering Offices (DEOs) nationwide at the field level. The DEOs have a water engineer and drilling crews and equipment. With the diminishing DPWH role, most of the staff members have transferred to the private sector.

(3) Department of Health (DOH)

The DOH is the principal health policy-making and implementing agency. Its main function is to develop and implement sanitation programs nationwide. It also administers health education campaigns aimed at reducing morbidity due to waterborne and sanitation-related illnesses, specifically diarrhea, which is the second leading cause of morbidity in the past years.

Under the current sector arrangement, the DOH shall assume the following responsibilities: i) set and/or update standards on water quality testing, treatment and surveillance and sanitary practices; ii) assist LGUs in the conduct of periodic water quality control and surveillance-related activities; iii) and monitor and evaluate health and hygiene education.

Through the Provincial Health Offices and Rural Health Units, the DOH conducts health and hygiene education campaigns that focus on women and children health improvement in rural communities. The DOH has produced and distributed the Information, Education and Communication (IEC) materials on water supply and hygiene behavior nationwide. Through its field health workers, it gives orientation to BWSAs on protection and disinfection of water sources and construction and maintenance of toilets.

(4) Local Water Utilities Administration (LWUA)

Presidential Decree 198 created the LWUA to act as a specialized lending institution for local Water Districts (WDs) and oversee the development of these water utilities based on the twin concepts of financial viability and self-reliance. In 1987, LWUA responsibilities were expanded to include assistance to Level II Rural Waterworks and Sanitation Associations (RWSAs). The provision of Level II and III services and of wastewater disposal systems in communities outside Metropolitan Manila is largely coordinated by the LWUA. However, NEDA Resolution No.4 directed LWUA to focus on its development-banking role to finance only viable WDs.

Financial services include economic and financial analysis, tariff analysis and fund sourcing. Various types of loans are available to finance the following activities: i) construction of water systems; ii) reactivation of non-operating systems; iii) rehabilitation and expansion of facilities; and iv) training. Special loans finance watershed management projects: construction of administration buildings; purchase of service vehicles, communication and computer facilities; restoration of facilities damaged by calamities; and initial or emergency operational needs. Commodity loans support generation of additional service connections.

LWUA maintains and fields a pool of management advisors, trainers, engineers and other professionals to give WDs and RWSAs proper guidance in their operation and administration. In addition, the Central Sewerage and Sanitation Program Support Office (CPSO) was established at LWUA to coordinate the implementation of sewerage and sanitation projects at the national level and to assist LGUs and WDs plan and manage sewerage and sanitation at the local level.

(5) Other National Agencies

There are other national agencies that provide macro planning, funding support, and regulatory guidelines for the water supply and sanitation sector.

The National Economic and Development Authority (NEDA), the country's central planning office, ensures that all agencies' plans and programs are consistent with national priorities in the Medium-Term Public Investment Program and the Priority Sub-Sector Activity Layout. External grants and loan proposals are reviewed and approved at NEDA through the Investment Coordination Committee (ICC). Together with the DILG, NEDA coordinates the establishment of a system for national sector master planning and monitoring system.

The Department of Finance (DOF) is responsible for the generation and management of the financial resources of the government. It reviews and approves all public sector debt, and sets the fiscal deficit of major government corporations (as part of the public sector-borrowing program).

The Department of Budget and Management (DBM) plans the budget allocations for government agencies, including capital and operating expenditures, equity infusion to public corporations, and grants and subsidies. The budget is sent annually to Congress for approval. DBM also ensures that budget releases conform to approved plans and programs.

The National Water Resources Board (NWRB) coordinates the overall policy framework for water resources development and management. NWRB was created by President Decree No.424 in 1974 and is a high level ex-officio body responsible for coordinating and integrating all activities related to water resources development and management. As such, it formulate policies, evaluate and coordinated water resources programs, regulated and controls the utilization, exploration, development, conservation and projection of the country's water resources including the regulation of private and LGU-operated utilities.

The Department of Environment and Natural Resources (DENR) formulates and enforces policies and guidelines for environmental protection and pollution control. It is responsible for watershed protection and water resources management. It also checks compliance of major projects with environmental guidelines. DENR works with all environmental management agencies and special regulatory bodies.

The Department of Education, Culture and Sports (DECS) implements hygiene education programs through schools using the Teacher-Child-Parent (TCP) approach. Health and sanitation messages are integrated in the curricula and special activities are designed to make the parents and other family members practice what they learn. A wide range of learning materials is available and prototypes of safe water sources and water sealed toilets are set up in schools. DECS identifies priority schools for the GOP school toilet project and supports DOH's integrated health information, education and communication campaign using the formal and non-formal educational system.

5.5 Sector Agencies at the Local Level

(1) Provincial Level

The provincial governor, as the chief executive of the provincial government, exercises such power and performs such duties and functions in pursuing general supervision and control over all programs, projects, services, and activities of the provincial government, including ensuring the delivery of basic services and the provision of adequate facilities.

The Sagguniang Panlalawigan, as a legislative body of the province, enact ordinances, approve resolutions and appropriate funds for general welfare of the province and its inhabitants. It approves ordinances which ensure the efficient and effective delivery of the basic serves and facilities, including facilities or providing for establishment and maintenance of a waterworks system or district waterworks for supplying water to inhabitants of component municipalities and cities.

The offices of provincial government involved in WATSAN activities, are the Provincial Planning and Development Office (PPDO), the Provincial Engineering Office (PEO), the Provincial Health Office (PHO), the Provincial Treasurer's Office (PTO), the Provincial General Services Office (PGSO), the Provincial Budget Office (PBO), and the Provincial Accountant's Office (PAO).

1) Provincial Planning and Development Office (PPDO)

The PPDO is in-charge of the formulation of comprehensive development plans and policies for the consideration of the Provincial Development Council (PDC) which is headed by the Governor. It conducts dialogues, studies, researches, as well as training programs to support plan formulation and promotes people's participation in its planning activities. It likewise integrates and coordinates sectoral plans and studies undertaken by different functional groups or agencies, monitors and evaluates the im-

plementation of development programs and projects activities. This office is composed of five (5) sections (refer to the organization chart in Supporting Report, Figure 5.5.1), detail of which are shown below:

- Administrative Section – The section's function is to provide efficient administration and timely and adequate support services. It has two staff members.
- Social Development Section – The section is primarily responsible for the formulation of social development plans and programs. It undertakes project proposals and project study preparation, conducts ocular surveys and investigation, monitoring & evaluation, and prepares recommendations. It also coordinates social preparation in project execution and serves as liaison with concerned national, regional and local government units. It has two (2) staff members and since 1997, two VIDA volunteers.
- Economic Development – This section is tasked to formulate economic development plans and programs. It also conducts and prepares economic studies and researches, project concept papers, proposals and feasibility studies on agriculture, investment, livelihood, cooperatives, trade & industry, and tourism for funding of the national, local and foreign fund sources. Four (4) regular personnel man it.
- Infrastructure Development Section - This section conducts monitoring and evaluation of infrastructure projects funded by the province and the national government. It evaluates infra projects and recommends the same for funding according to priorities. It also prepares project studies, project proposals and feasibility studies for possible funding. It has four regular staff, which includes a water engineer who takes charge of WATSAN infra projects.
- Statistics – The section prepares statistical reports and other documents necessary for the evaluation, planning and programming of projects. It supports the other sections by supplying updated data and statistics. It is a one-man section that utilizes other PPDO staff in data gathering when the need arises.

2) Provincial Engineering Office (PEO)

The PEO is responsible for administration, coordination, supervision and control of construction, maintenance, improvement and repair of roads, bridges, waterworks and other engineering and pubic work projects of the provincial government. It formulates polices, objective, plans and programs, techniques and procedures/practices in infrastructure development and provides engineering services such as investigation and surveys, design and project management. The office has three divisions: Administrative, Construction and Maintenance divisions as discussed below: (refer to the organization chart - Figure 5.5.2, Supporting Report)

- Administrative -- It takes charge of the administrative and clerical services and financial control of the office.
- Construction Division – To cope with the tedious task of construction, this division divided into four sections: Construction, Investigation & Survey, Planning, Programming & Quality Control.

  Construction Section is mainly responsible in the construction and supervision of al infrastructure projects implemented by the province funded out of provincial or national funds. It has three project engineers.

  Investment & Survey Section conducts ocular inspection and survey of roads, bridges, waterworks and building sites and submit findings to the division chief for appropriate action. It has a workforce of four regular staff.

  Planning & Programming Section prepared plans, programs of works of all infrastructure projects of the province, monitors and evaluates the implementation accomplishment of the same and prepares/submits necessary reports to the provincial engineer through its division chief. It is composed of four engineers and a draftsman.

  Quality Control Section enforces the compliance of infrastructure projects to plans and specification. It determines the concrete mix in roads, bridges, buildings and waterworks are being complied according to standards.
- Maintenance Division – The function of this division is to provide over-all technical supervision of activities related to the maintenance of roads, bridges, and drainage systems along provincial roads. It also prepares estimates and does construction work along road maintenance sections when such structures are deemed necessary. It has a workforce of a division chief, two general foremen, five foremen, 27 capatazes, and 52 regular camineros.

3) Provincial Health Office (PHO)

The provision of comprehensive health services to the people of Eastern Samar is the mandate of PHO. The health services of the PHO is divided into two components -- the field health service which is in-charge of the preventive aspects of health service and the hospital operations which takes care of the curative side of health. Both are under the supervision of the Provincial Health Officer. PHO provides technical assistance to all rural health units (RHUs) and barangay health stations (BHS). The different programs of the Department of Health are coursed through the technical division down to the RHUs and BHS. The environmental Health Section spearheads in the promotion and maintenance of public sanitation and water quality monitoring province-wide. There are six district hospitals and six community hospitals. (refer to

the organization chart - Figure 5.5.3, Supporting Report).

4) Provincial Treasurer's Office (PTO), Provincial Budget Office (PBO), Provincial Accounting Office (PAO), and Provincial General Services Office (PGSO)

The PTO is in-charge of the disbursement of all local government funds. It collects taxes, revenues, fees and other charges that are needed to support the general appropriation ordinance. The office maintains and updates the tax information system in coordination with the PASSO and exercises local supervision over all treasury offices of component municipalities. It also conducts periodic tax education information/collection campaigns and trains barangay treasurers and officials on the methods of collecting real property taxes and other fees and charges.

The PBO administers the fiscal budget of the provincial government. It is responsible for budget preparation, execution, control and accountability. The office reviews and consolidates the budget proposals of different offices of the LGU. It coordinates budget concerns with the treasurer, the accountant, and the planning and development coordinator. It also provides prompt and efficient reviews of municipal budgets.

The PAO is tasked with the recording and review of financial transactions in accordance with government accounting principles, rules and regulations. It summarizes and prepares financial statements for submission to different offices to provide information on the financial condition and operation of the province. The office also conducts internal audit adhering to existing auditing rules and regulations and recommends measures to improve the utilization of government funds and properties. This function has been relegated tot his office to endure quality control.

The PGSO provides effective direction and coordination of the various administrative and support services necessary for the operation of the different provincial offices. It is responsible for the acquisition/procurement of supplies and materials as identifies in the overall fiscal plan. It conducts regular bidding of supplies, materials and equipment, collates and disseminates information on prices and other costs of supplies and other items commonly used by the provincial government including the hospitals.

5) Provincial Development Council (PDC)

The main functions of the PDC are: to formulate a long/medium term and annual socio -economic development plan and corresponding policies; to appraise and priori-

tize development programs and projects; to monitor and evaluate the project implementation and program execution; and to perform such other functions as may be provided by law or competent authority. The PDC is headed by the governor and is composed by the following: representative of the Congressman; Municipal Mayors, the Chairman of Sangguniang Panlalawigan's Committee on Appropriation, President of the Provincial League of Barangays, and representative from NGOs.

6) Provincial Inspectorate Team (PIT)

The PIT, which reports directly to the Office of Governor is tasked to monitor, evaluate and assess the implementation of all projects undertaken by the province to determine compliance with approved program of work, plans and specifications. Corollary to this, it certifies compliance as basis of payment and recommends changes to said approved program of work, plans and specifications. It provides feedback through quarterly reports to the Provincial Governor.

(2) Municipal and Barangay Level

1) Municipality

The municipal LGU functions primarily as a general purpose government agency that delivers basic, regular, and direct services and provides effective governance of the inhabitants within its territorial jurisdiction. It has a similar organizational structure and legislative authority as that of the province. For WATSAN projects, the following offices are directly involved.

The MPDO is in-charge of municipal planning and development. It is mandated to formulate an integrated economic, social and physical development plan and corresponding policies for the consideration of the Municipal Development Council (MDC). Its regular activities include preparation of planning documents and monitoring and evaluation of projects. Most MPDO has a regular staff of 2-3 persons.

The MEO is responsible in formulating and integrating infrastructure plans, programs and projects of the municipal government. It regularly performs engineering surveys to acquire data for designs and layout. It also inspects the works of contractors based on approved plans, program of works and specifications. Three to four staff are working with most MEO.

The MHO provides, through Rural Health Units/Barangay Health Stations (RHUs/BHSs) health services to the barangay residents such as family-planning activities,

emergency/relief services especially in far-flung barangays, and other similar activities that promote the general well-being and health needs of the residents. Midwives and other health workers schedule periodic visits to these health units/stations. It also undertakes water quality testing through Rural Sanitary Inspector (RSI) who works under the supervision of the Supervising Sanitary Inspector of the province.

2) Barangay Council (BC)

The LGC has designated barangays as independent units of local government. The Barangay Council (BC) acts as a legislative body of the barangay. It receives a share in the IRA from the National Government. The BCs can enact tax and revenue ordinances to raise funds for discharge of the responsibilities conferred upon them by law and for the promotion of the general welfare of its constituents. They may also solicit funds for the construction of barangay facilities and charge reasonable fees for the use thereof.

(3) Field Offices of Central Sector Agencies

1) DPWH District Engineer's Office (DEO)

There is one (1) District Engineering Office (DEO) of DPWH in the province. The DEO is mandated to undertake and evaluate the planning, design and construction, and work supervision functions for all public works within the district. They coordinate with other departments, agencies, institutions and LGUs within the district in the implementation of infrastructure projects. Currently, the previous water supply section (a unit under Construction Division) is maintained by the DEO. The staff members of this section consist of a water supply engineer, a well driller, and a supervisor.

2) DILG Provincial/Municipal/ Offices

The Provincial Director and the Municipal Local Government Operations Officer are tasked to provide general administration and institution-building support to the WATSAN implementers to strengthen their capacity to deliver basic services. Training along WATSAN is spearheaded by this office in close coordination with the PPDO at the provincial level and MPDC at the municipal level.

3) NEDA Regional Office and Regional Development Council

Various public and private sector organizations coordinate with DILG to establish the system for regional sector master planning and the monitoring system. The NEDA Regional Office acts as a secretariat of the Regional Development Council and en-

sures that sector plans are consistent with regional and national priorities. The office requires project proposals/plans and programs to be approved and endorsed by the Provincial Development Council, whose task is to incorporate, consolidate, and prioritize municipal plans, programs and projects.

The NEDA Regional Office No.8 has already prepared the Regional (Region VIII) Mater Plan (period: 1999-2004). The PPDO itself is involved in the preparation of the M/P, specifically within the province. In addition, the Provincial Development Investment Plan (period: 1999 –2004) was prepared in coordination with the PPDO as a basis for their annual action plan.

(4) Community Institutions and Water Supply System Operation Bodies

1) Barangay Waterworks and Sanitation Associations/Rural Waterworks and Sanitation Associations (BWSAs)

A BWSA is a organization of water supply ad sanitation beneficiaries in a barangay which owns and manages the water supply systems which are not covered by Water Districts. RA 6716 requires its formation to ensure the provision of adequate, potable, and accessible water supply to its members through the proper operation and maintenance of Level I and II facilities. The size of the BWSA would depend on the number of facilities, and the need, culture and situation in a particular barangay; its structure is quite simple as consisting of the Board of Directors, a treasurer, bookkeeper, and caretaker/s. There are three phases involved in BWSA forming: social preparation phase, formation, and post formation. During the formation phase, a BWSA pre-membership training and election of BOD are held. In this phase, members manifest their interest by formally applying for membership and paying the membership fee and monthly dues.

2) Water Districts (WDs)

A Water District is formed pursuant to Presidential Decree No.198 and organized for the purpose of serving the water supply requirements of the residents within its franchise area. Technical and financial assistance (loans) are provided by LWUA to WDs. LWUA also exercises regulatory functions to the districts. To be self-sufficient, a WD is operated in a business-like manner to generate enough revenue from its water services. The income is used to meet operational expenses, debt service, and reasonable reserves for future rehabilitation of facilities and contingencies. Eastern Samar has three (3) WDs are supplying water to the respective franchise areas of the province through Level III systems. WD in Borongan has 1,372 consum-

ers and has been on operation for 17 years, while WD in Llorente (operational for 4 years) and WD in Sulat (starting operation in 1998) has 117 and 200 HHIs connections, respectively.

3) LGU Waterworks

The municipalities of the province established LGU waterworks within their organizations for delivering Level III water supply services to residents and establishments in the areas where are not covered by the Water Districts. These waterworks are presently undertaking the operation and maintenance of the respective Level III water supply systems by themselves. The fees are being collected from water users for recovering cost of operation and maintenance of facilities.

(6) Private sector and NGO

Many water and sanitation systems are implemented by the private sector, NGO, and community-based organizations which often times undertake the operation and maintenance of the systems. NGOs and the private sector for the past decade have been involved in water supply development through investments, technical studies and construction of water supply and sanitation facilities. They have also demonstrated capability to undertake project implementation through community participation.

5.6 External Support Agencies Active in the Sector

(1) Wold Bank

The World Bank supported the First Water Supply, Sewerage and Sanitation Sector Project or FW4SP. This project provided capital funds (US$58.0M) for rural water supply system in Luzon provinces and sanitation system nationwide based on completed provincial master plans. The project concept called for a community-based approach through BWSAs. The project was implemented from 1991 to 1995 with an extension up to 1997. Subsequently, the Capacity Enhancement Program (CEP) with DILG as implementing agency was conducted until the end of 1997. In addition, the Bank prepared a new loan for DILG implementation - the Local Government Urban Water Supply & Sanitation Project. This project will assist municipalities of the lower tier income class i.e. 4th, 5th, and 6th (approximately 50 municipalities in 20 provinces nationwide, which are not covered by Water Districts: to improve water supply and sanitation services. Through its various trust fund facilities, the bank has also arranged for various technical assistance grants and other support activities.

(2) UNICEF

The United Nations Children's Fund (UNICEF) supports the sector through the Philippines Plan of Action for Children. Apart from hardware support in the priority project site, UNICEF assisted NEDA in updating the national master plan. UNICEF works through the inter-agency committee on environmental health and through NGOs. With the World Health Organization (WHO), UNICEF has been assisting in the preparation of Information, Education and Communication (IEC) materials and in strengthening the sector monitoring system. As part of these various assistance, UNICEF supported NEDA in 1997 for the assessment of WATSAN Sector of Eastern Visayas (Region VIII) and Southern Mindanao (This was compelled by the sudden and unexpected occurrence of water-borne epidemics that hit Region XI).

(3) ADB

Asian Development Bank (ADB) support the Rural Water Supply & Sanitation Sector Project (RW3SP) through sector lending approach for the 20 prospect provinces of the country. The project area covers about 3,000 rural communities with population ranging from 200 to 5,000 persons in provinces located in Luzon, Visayas and Minadanao. RW3SP will (i) provide capacity-building to local government units (LGUs) to enhance the delivery of social services, (ii) improve social infrastructure for basic needs such as water supply and sanitation, and (iii) reduce poverty incidences. The project also includes (i) comprehensive institutional capacity building, (ii) community development program, (iii) point source water supply systems, and (iv) public and household latrine facilities. This will be implemented from 1995 -- 2000.

Other external agencies' activities on WATSAN projects, and their terms and conditions, priority areas are shown in the Supporting Report.

5.7 Project Management Arrangement, and Issues and Problems

With reference to project management of the province, current vision and policies and practices in the implementation of WATSAN projects were investigated. The findings are discussed in terms of technical, institutional, financial, and community development aspects. Problems/issues are also discussed by sub-component. Current conditions of the municipalities investigated are referred to. Furthermore, some of the discussion items covered the entire sector management field.