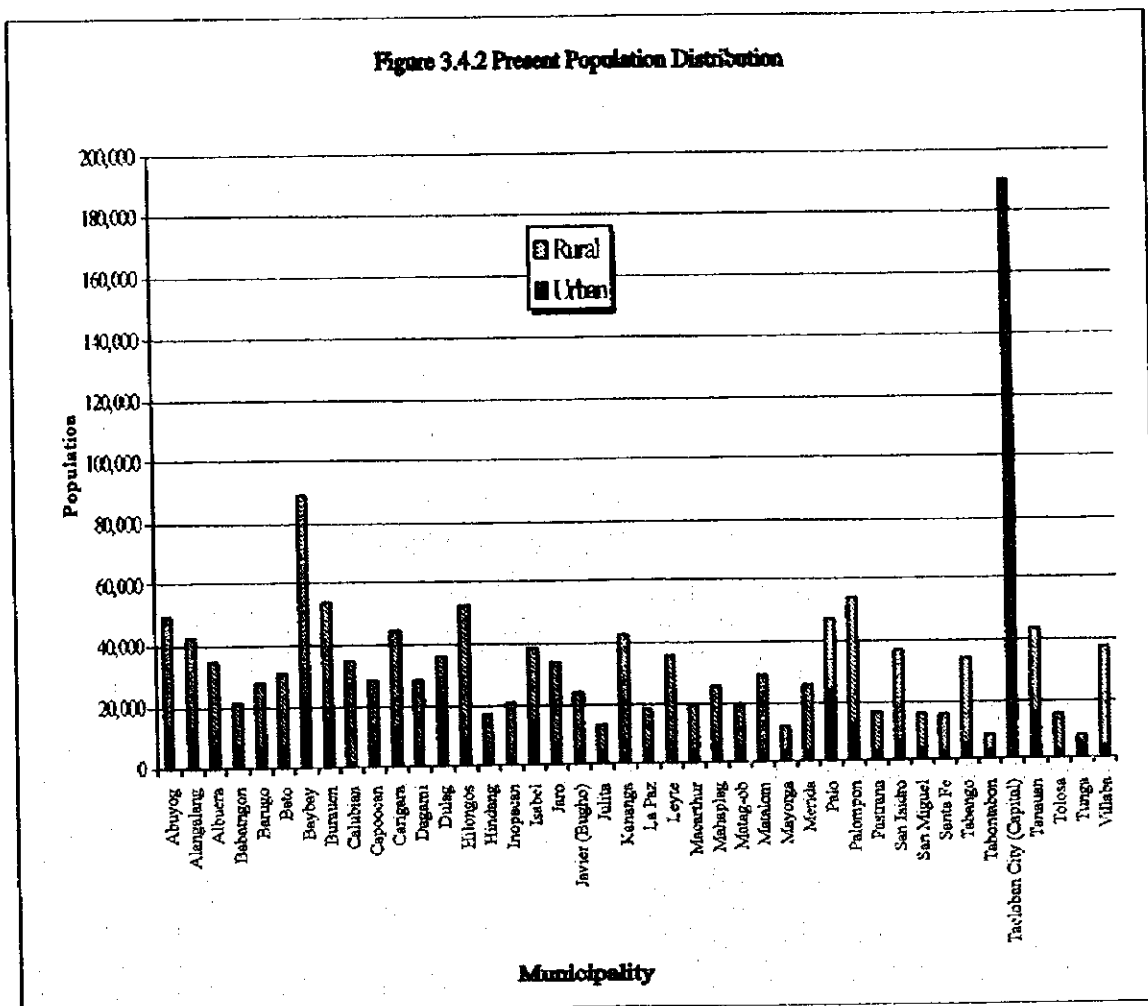


### 3.4.3 Present Population Distribution

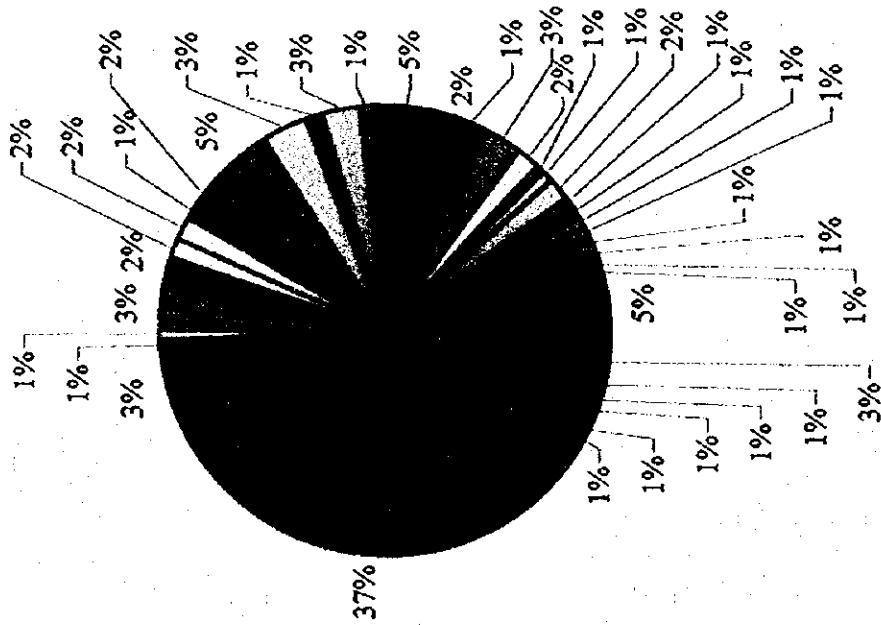
From the 1995 NSO census, the 1998 urban-rural population was estimated for the study area. Rural population accounts for 68% of the provincial total, while 32% is urban as reflected in Figure 3.4.2 Table 3.4.2 presents the breakdown of the number of urban and rural barangays by municipality and its corresponding present population distribution.

There are 288,000 households with 199,103 residing in rural areas and 89,097 households in urban areas. The average provincial household size is 5.03 persons/household. Table 3.4.3 presents a breakdown per municipality on the number of households and household sizes by urban and rural area.



Urban Population (31.8%)

- Abuyog (3%)
- Albuera (2%)
- Barugo (1%)
- Baybay (5%)
- Calubian (0%)
- Carigara (3%)
- Dulag (5%)
- Hindang (1%)
- Isabel (3%)
- Javier (Bugho) (1%)
- Kananga (2%)
- Leyte (1%)
- Mahaplag (1%)
- Matalom (1%)
- Merida (1%)
- Palompon (3%)
- San Isidro (1%)
- Santa Fe (0%)
- Tabontabon (1%)
- Tanauan (3%)
- Tunga (1%)
- Alangalang (2%)
- Babatngon (2%)
- Bato (2%)
- Burauen (3%)
- Capocan (1%)
- Dagami (1%)
- Hilongos (2%)
- Inopacan (0%)
- Jaro (2%)
- Julita (1%)
- La Paz (1%)
- MacArthur (1%)
- Matag-ob (1%)
- Mayorga (1%)
- Palo (5%)
- Pastrana (1%)
- San Miguel (1%)
- Tabango (1%)
- Tacloban City (Capital) (37%)
- Tolosa (0%)
- Villaba (1%)



Rural Population (68.2%)

- Abuyog (4%)
- Albuera (3%)
- ▣ Barugo (2%)
- Baybay (7%)
- Calubian (3%)
- Carigara (3%)
- Dulag (1%)
- Hindang (1%)
- Isabel (2%)
- Javier (Bugho) (2%)
- Kananga (4%)
- Leyte (3%)
- Mahaplag (2%)
- Matalom (2%)
- Merida (2%)
- Palompon (4%)
- San Isidro (3%)
- Santa Fe (1%)
- Tabontabon (1%)
- Tanauan (3%)
- Tunga (0%)
- Alangalang (3%)
- Babatngon (1%)
- Bato (2%)
- Burauen (4%)
- Capoccan (2%)
- Dagami (2%)
- Hilongos (4%)
- Inopacan (2%)
- Jaro (3%)
- Julita (1%)
- La Paz (1%)
- MacArthur (2%)
- Matag-ob (1%)
- Mayorga (1%)
- Palo (2%)
- Pastrana (1%)
- San Miguel (1%)
- Tabango (3%)
- Tacloban City (Capital) (2%)
- Tolosa (1%)
- Villaba (3%)

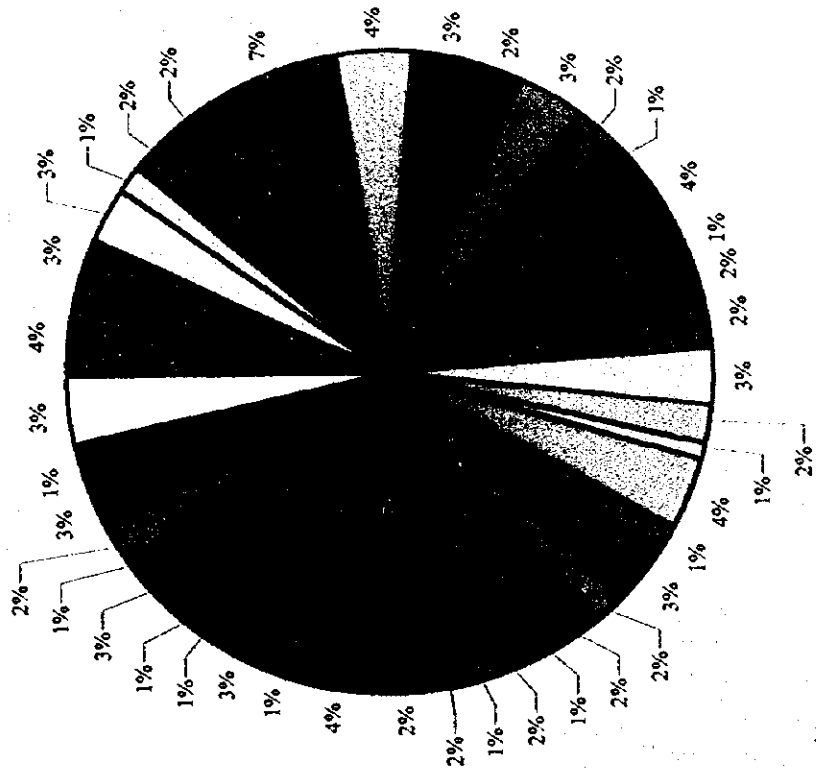


Table 3.4.2 Outline of Urban and Rural Areas in the Province

Name of Municipality	Number of Barangay			Population (1998)		
	Urban	Rural	Total	Urban	Rural	Total
Abuyog	10	53	63	13,559	36,391	49,950
Alangalang	10	44	54	10,561	32,030	42,591
Albuera	1	15	16	7,078	27,846	34,924
Babatngon	5	20	25	7,128	14,029	21,157
Barugo	6	31	37	6,298	21,415	27,713
Bato	5	27	32	7,072	23,771	30,843
Baybay	24	68	92	22,866	65,800	88,666
Burauen	9	68	77	14,992	38,858	53,850
Calubian	1	52	53	524	34,107	34,631
Capoocan	2	19	21	5,188	22,979	28,167
Carigara	5	44	49	12,102	32,438	44,540
Dagami	9	56	65	4,269	23,687	27,956
Dulag	26	19	45	23,148	12,694	35,842
Hilongos	4	47	51	8,819	43,281	52,100
Hindang	2	18	20	3,639	13,119	16,758
Inopacan	1	19	20	2,269	17,899	20,168
Isabel	4	20	24	13,879	24,035	37,914
Jaro	4	42	46	7,124	26,239	33,363
Javier (Bugho)	1	27	28	2,690	20,803	23,493
Julita	5	21	26	4,327	8,530	12,857
Kananga	1	22	23	7,140	34,949	42,089
La Paz	4	31	35	4,150	13,600	17,750
Leyte	1	29	30	3,998	31,118	35,116
Macarthur	3	28	31	3,293	15,886	19,179
Mahaplag	1	27	28	3,784	21,081	24,865
Matag-ob	5	16	21	3,980	14,587	18,567
Matalom	4	26	30	3,756	24,476	28,232
Mayorga	3	13	16	2,328	9,092	11,420
Merida	2	20	22	3,376	21,396	24,772
Palo	11	22	33	22,908	23,525	46,433
Palompon	9	41	50	11,774	41,542	53,316
Pastrana	4	25	29	2,913	12,798	15,711
San Isidro	3	16	19	5,210	30,775	35,985
San Miguel	2	19	21	3,227	11,967	15,194
Santa Fe	1	19	20	2,144	12,603	14,747
Tabango	1	12	13	4,890	28,296	33,186
Tabontabon	4	12	16	2,452	5,327	7,779
Tacloban City (Capital)	124	14	138	168,865	19,980	188,845
Tanauan	6	50	56	14,674	27,771	42,445
Tolosa	2	13	15	1,682	12,646	14,328
Tunga	4	4	8	4,219	3,094	7,313
Villaba	4	31	35	3,182	32,998	36,180
<b>Provincial Total</b>	<b>333</b>	<b>1,200</b>	<b>1,533</b>	<b>461,477</b>	<b>989,458</b>	<b>1,450,935</b>

Table 3.4.3 Household Numbers and Household Size

Municipality/ City	Number of Households (1995)			Number of Households (1998)			1995 Household Size (person/household)		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Abuyog	2,615	7,168	9,783	2,669	7,322	9,991	5.08	4.97	5.00
Alangalang	1,843	5,690	7,533	2,019	6,232	8,251	5.23	5.14	5.16
Albuera	1,391	5,541	6,932	1,433	5,706	7,139	4.94	4.88	4.90
Babatngon	1,157	2,632	3,789	1,347	2,729	4,076	5.29	5.14	5.19
Barugo	1,107	3,719	4,826	1,173	3,937	5,110	5.37	5.44	5.42
Bato	1,404	4,494	5,898	1,452	4,652	6,104	4.87	5.11	5.05
Baybay	3,782	13,797	17,579	4,601	13,484	18,085	4.97	4.88	4.90
Burauen	2,660	7,247	9,907	2,823	7,695	10,518	5.31	5.05	5.12
Calubian	95	6,308	6,403	106	7,032	7,138	4.95	4.85	4.85
Capoocan	1,022	4,302	5,324	1,090	4,596	5,686	4.76	5.00	4.96
Carigara	2,354	6,170	8,524	2,480	6,501	8,981	4.88	4.99	4.96
Dagami	806	4,694	5,500	834	4,854	5,688	5.12	4.88	4.92
Dulag	4,527	2,485	7,012	4,667	2,564	7,231	4.96	4.95	4.95
Hilongos	1,640	8,422	10,062	1,683	8,639	10,322	5.24	5.01	5.04
Hindang	716	2,790	3,506	723	2,821	3,544	5.03	4.65	4.73
Inopacan	410	3,338	3,748	438	3,566	4,004	5.18	5.02	5.03
Isabel	2,692	5,002	7,694	2,827	5,248	8,075	4.91	4.58	4.70
Jaro	1,400	5,244	6,644	1,428	5,344	6,772	4.99	4.91	4.93
Javier (Bugho)	260	3,954	4,214	521	4,071	4,592	5.16	5.11	5.11
Julita	835	1,598	2,433	921	1,759	2,680	4.70	4.85	4.80
Kananga	1,306	6,477	7,783	1,381	6,853	8,234	5.17	5.10	5.11
La Paz	746	2,518	3,264	809	2,731	3,540	5.13	4.98	5.01
Leyte	677	5,734	6,411	697	5,905	6,602	5.74	5.27	5.32
Macarthur	541	2,598	3,139	624	2,992	3,616	5.28	5.31	5.30
Mahaplag	653	3,960	4,613	676	4,101	4,777	5.60	5.14	5.20
Matag-ob	743	2,769	3,512	796	2,965	3,761	5.00	4.92	4.94
Matalom	789	4,862	5,651	789	4,866	5,655	4.76	5.03	5.00
Mayorga	471	1,817	2,288	486	1,875	2,361	4.79	4.85	4.84
Merida	963	4,409	5,372	848	4,723	5,571	3.98	4.53	4.43
Palo	3,351	4,994	8,345	4,448	4,550	8,998	5.15	5.17	5.16
Palompon	2,327	8,462	10,789	2,463	8,972	11,435	4.78	4.63	4.66
Pastrana	484	2,158	2,642	527	2,348	2,875	5.53	5.45	5.47
San Isidro	1,082	6,016	7,098	1,173	6,520	7,693	4.44	4.72	4.68
San Miguel	609	2,170	2,779	638	2,275	2,913	5.06	5.26	5.22
Santa Fe	163	2,502	2,665	416	2,452	2,868	5.15	5.14	5.14
Tabango	959	5,426	6,385	1,000	5,659	6,659	4.89	5.00	4.99
Tabontabon	481	1,066	1,547	495	1,098	1,593	4.95	4.85	4.88
Tacloban City (Cap.)	27,528	3,323	30,851	31,099	3,749	34,848	5.43	5.33	5.42
Tanauan	2,744	5,571	8,315	2,860	5,810	8,670	5.13	4.78	4.90
Tolosa	326	2,513	2,839	335	2,586	2,921	5.02	4.89	4.91
Tunga	593	462	1,055	664	517	1,181	6.35	5.98	6.19
Villaba	1,102	6,011	7,113	638	6,804	7,442	4.99	4.85	4.87
<b>Provincial Total</b>	<b>81,354</b>	<b>190,413</b>	<b>271,767</b>	<b>89,097</b>	<b>199,103</b>	<b>288,200</b>	<b>5.17</b>	<b>4.97</b>	<b>5.03</b>

### 3.5 Health Status

#### 3.5.1 Morbidity, Mortality and Infant Mortality

The number one cause of morbidity in Leyte was ARI, followed by pneumonia, skin diseases, a water-washed disease and bronchitis. Diarrhea and intestinal parasitism, both water-related diseases ranked fifth and sixth, respectively. Regarding mortality, the number one cause was pneumonia, followed by heart diseases. Other accidents and vascular diseases ranked third and fourth, respectively. Pneumonia, prematurity and asphexia neonatorium 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 Leyte 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.

Water-related diseases in the ten leading causes of morbidity include skin diseases (rank 3<sup>rd</sup>), diarrhea (5<sup>th</sup>), intestinal parasitism (6<sup>th</sup>), conjunctivities (8<sup>th</sup>), schistosomiasis (9<sup>th</sup>) and dengue fever (10<sup>th</sup>). Schistosomiasis also ranked 10<sup>th</sup> as the leading causes of mortality. Diarrhea (rank 4<sup>th</sup>) is also among the ten 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, typhoid, dysentery, conjunctivities, viral hepatitis, gastroenteritis, cholera, skin disease, scabies, dengue fever, intestinal parasitism, filariasis and schistosomiasis. Table 3.5.2 presents the reported cases and deaths of notifiable water-related diseases in the province.

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

Rate: 1/100,000

Causes	Leyte		Philippines			
	Number	Rate	Number	Rate	Ranking	
Morbidity	1. ARI	329,302	24,085			
	2. Pneumonia	157,739	11,537	470,574	703	4
	3. Skin Diseases	152,298	11,139			
	4. Bronchitis	136,397	9,976	903,508	1,349	2
	5. Diarrhea	127,592	9,332	1,337,449	1,997	1
	6. Intestinal Parasites	72,122	5,275			
	7. Influenza	31,679	2,317	609,471	910	3
	8. Conjunctivitis	31,556	2,308			
	9. Schistosomiasis	29,697	2,172			
	10. Dengue Fever	28,042	2,051			
Mortality	1. Pneumonia	7,028	514	35,582	53	3
	2. Heart Diseases	5,442	398	48,582	69	1
	3. Other Accidents	4,498	329	13,477	20	6
	4. Vascular Diseases	4,375	320	37,358	56	2
	5. Tuberculosis	3,938	288	24,580	37	5
	6. Malignant Neoplasms	1,231	90	25,399	38	4
	7. Chronic Liver Disease	1,203	88			
	8. Kidney/ Nephritis	971	71	5,510	8	10
	9. Senility	861	63			
	10. Schistosomiasis	697	51			
Infant Mortality	1. Pneumonia	104	3.53	7,631	4.5	1
	2. Prematurity	35	1.19			
	3. Asphyxia Neonatorum	23	0.78			
	4. Diarrheal Diseases	20	0.68	1,661	1.0	4
	5. Congenital Heart Disease	15	0.51			
	6. Congenital Debility	14	0.48	2,366	1.4	3
	7. Sepsis Neonatorum	12	0.41			
	8. Septicemia Neonatorum	7	0.24	1,252	0.7	5
	9. Unknown Death	7	0.25			
	10. Respiratory Disease Syndrome	1	0.13	5,651	3.4	2

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
<b>Water-borne</b>						
1. Typhoid/Paratyphoid	8,251	546	91	6		
2. Dysentery	14,946	989				
3. Viral hepatitis	1,904	126	348	23		
4. Diarrhea	127,592	9,332	362	24	20	0.68
5. Cholera	216	14	15	1		
<b>Water-based</b>						
1. Schistosomiasis	29,697	2,172	697	51		
<b>Water-washed</b>						
1. Intestinal parasitism	72,122	5,275	45	3		
2. Scabies	17,002	1,125				
3. Conjunctivitis	31,556	2,308				
4. Skin disease	152,298	11,139				
<b>Water vector</b>						
1. Dengue fever	28,042	2,051	212	14		
2. Filariasis	378	25				

### **3.5.3 Health Facilities and Practitioners**

Present facilities serving the health care of the populace are 23 hospitals, 48 rural health units and 214 barangay health stations. The ratio of the population to these facilities and to the health practitioners are relatively higher 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. Most of the drainage facilities in all municipalities are 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.

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.

Heavy industries and agro-industrial 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 3.6.1 DENR Water Quality Criteria/Water Usage and Classification, Supporting Report).



### 3.6.3 Solid Waste Disposal

All the municipalities and Tacloban City have municipal refuse collection and disposal services as of 1998 (details are referred to Table 3.6.1, Data Report). These municipalities/city have a total of 57 units of open dump truck. Abuyog, Bato and Palompon have one (1) unit each of closed type truck, Baybay has two (2) units, while Tacloban City has three (3) units. In the province, 55% of the households is served, while 45% 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

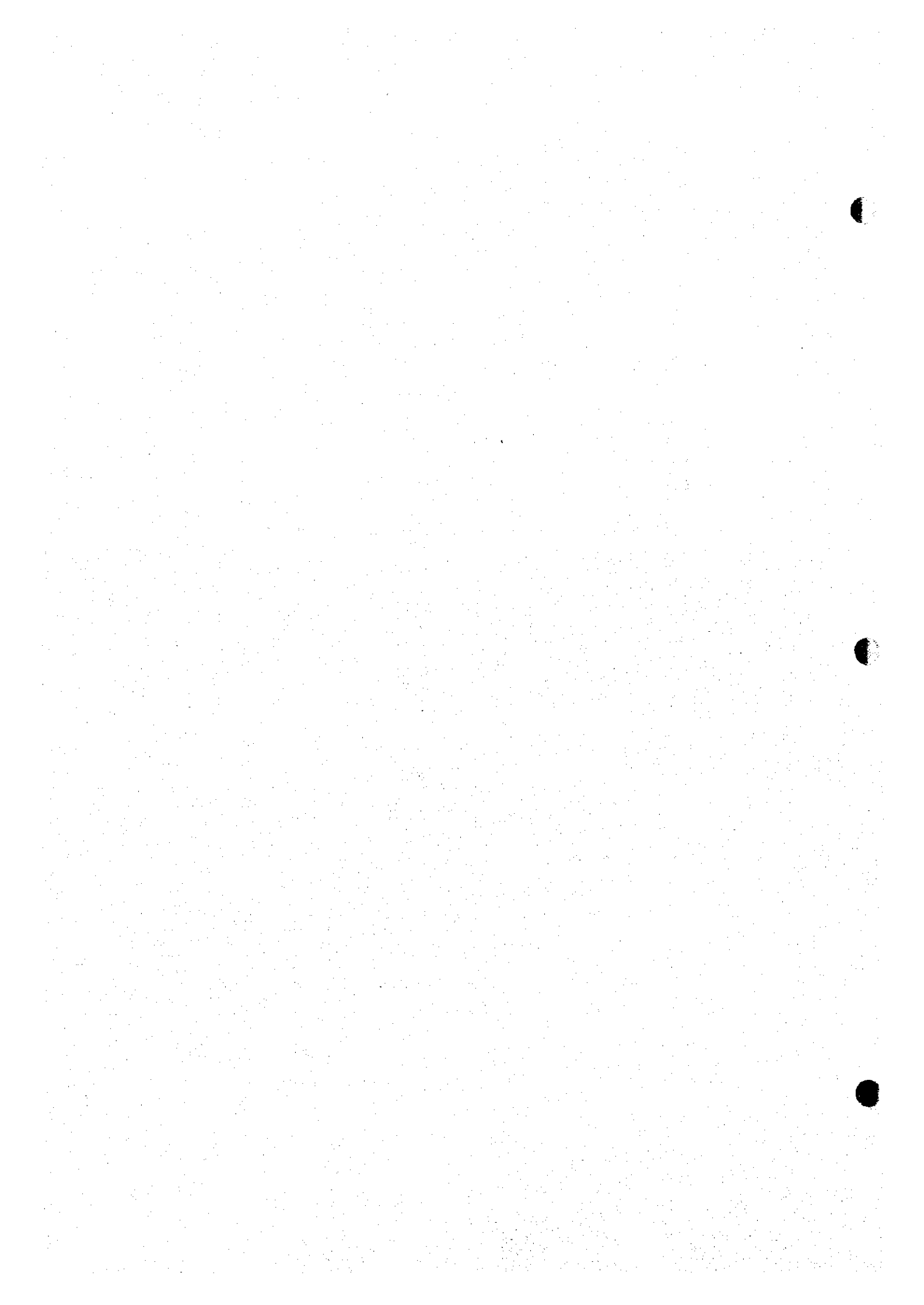
Name of Municipality/City	Number of Households 1998	With Service					Without Service					Percentage of Households Served	Percentage of Households Unserved	
		Number of Collection Trucks			Number of Households Served by Open Dump Site	Number of Households Served by Sanitary Landfill	Total Households Served	Manner of Disposal (Number of Households)			Total Households Unserved			
		Open Dump Trucks	Closed Type Trucks	Total Units				Dumping (Land and Water)	Burying	Composting				
Abuog	9,991	3	1	4	2,967				2,579	3,096	1,349	7,024	30	70
Alangalang	8,251	1			562				2,701	3,062	1,926	7,689	7	93
Albuera	7,139	3	3	3	638				2,543	2,194	1,714	6,451	10	90
Babatingon	4,076				786				2,640	335	315	3,290	19	81
Barugo	5,110	1			1,107			98	883	1,184	1,838	3,905	24	76
Bato	6,104	1	1		895			1,292	1,065	1,063	1,789	3,917	36	64
Bavsay	18,085	2	2	2	3,329				6,062	7,328	1,366	14,756	18	82
Burnau	10,518	3	3	3	2,277				1,199	5,913	1,129	8,241	22	78
Calubian	7,138				106			687	793	3,060	2,680	6,345	11	89
Capococan	5,686	1			491				4,434	165	596	5,195	9	91
Cangara	8,981	3	3	3	2,076				633	3,764	2,508	6,905	23	77
Dagami	5,688	1			821			1,183	3,611	1,178	78	4,867	14	86
Dulang	7,231	2			1,667				4,686	2,970	1,362	6,048	16	84
Hilongos	10,322	1	1		2,263			160	4,110	2,970	1,575	8,655	16	84
Hindang	3,544	1			867				423	419	279	1,121	68	32
Inopacan	8,075	1			728				3,637	1,282	3,028	7,347	9	91
Isabel	6,772	2			1,381				4,669	510	212	5,391	20	80
Jaro	4,592				632			86	1,297	1,183	1,394	3,874	16	84
Javier (Bugho)	2,680								1,394	785	501	2,680	100	
Julita	8,234	3	3	3	1,243				2,496	95	4,400	6,991	15	85
Kananga	3,540	1			953				3,610	602	375	2,587	27	73
La Paz	6,602	2			4,714				391	327	1,170	1,888	21	79
Leyte	3,616								2,357	166	1,193	3,616	100	
MacArthur	4,777	2			653				2,332	894	898	4,124	14	86
Magaplag	3,761	1			418			414	1,403	50	1,476	2,929	22	78
Matag-ob	5,655	1			400				2,182	1,91	1,882	5,255	7	93
Matalom	2,361								932	473	956	2,361	100	
Mayorga	5,571	1			803				1,531	1,580	1,607	4,768	14	86
Merida	8,998	2			1,822			1,170	2,382	1,626	2,098	6,006	33	67
Palo	11,435				1,913				3,509	2,754	3,259	9,522	17	83
Palompon	2,875								534	1,810	531	2,875	100	
Pastrana	7,693	2			375				2,414	2,239	2,615	7,318	5	95
San Isidro	2,913	1			689				2,136	30	58	2,224	24	76
San Miguel	2,868	1			1,010				1,147	74	637	1,858	35	65
Santa Fe	6,659	1			450				2,501	1,815	1,893	6,209	7	93
Tabango	34,848	7	3	10	32,655				829	201	503	1,593	100	
Tabontabon	8,670	3			2,615				1,951	279	557	2,787	92	8
Tacloban City (Capital)	2,921	1			472				2,274	2,297	1,044	6,055	30	70
Tanauan	1,181	1			395				1,244	1,220	457	2,921	100	
Tolosa	7,442	1			472				62	440	284	786	33	67
Villaba	288,200	57	8	65	74,623			5,090	90,392	60,094	57,995	208,481	28	72

Chapter

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**EXISTING FACILITIES AND  
SERVICE COVERAGE**

**4**



#### **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 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 66% of the present population (of which 32% in urban area and 68% in rural area) is considered as adequately served (refer to 4.1, Supporting Report for the detailed study). Under the area classification, 82% of urban population and 59% of rural population have access to safe water sources/facilities, while the rest is underserved or unserved. About 583,300 persons or 61% of the served population depend on Level I facilities, while about 376,800 persons or 39% 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 4.1.4 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 the municipal level are usually established and operated by the WD under the technical and financial assistance of LWUA. Some LGUs also implement and operate Level III systems commonly at barangay level.

There are 22 Level III systems in the province operated under different kinds of ownership (authority or association) 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:

- 10 water districts covering 20 municipalities/city of Abuyog, Barugo, Bato, Baybay, Calubian, Capoocan, Carigara, Dagami, Hilongos, Hindang, Isabel, Jaro, Merida, Palo, Palompon, Pastrana, Tabontabon, Tacloban City, Tanauan and Tolosa;
- 9 municipal waterworks in the municipalities of Babatngon, Buraucn, Inopacan, Javier, Kananga, Leyte, Mahaplag, Matag-ob and Matalom;
- 3 systems operated by RWSA in the municipality of Villaba.

The Leyte Metropolitan Water District is the largest system in the province, covering urban barangays in seven (7) municipalities/city of Dagami, Tacloban, Palo, Pastrana, Tabontabon, Tanauan and Tolosa with served population of about 180,000. Presently, the LMWD covers 95% of the urban population in Tacloban City, and 2 to 35% of the population in the other concerned municipalities. Water source of the WD is surface water from the tributaries of Binahan River that originates from Lake Danao. Raw water is treated at two (2) water filtration plants located in Dagami and Pastrana with production capacities of 4,000m<sup>3</sup>/d and 24,200m<sup>3</sup>/d, respectively. The WD is planning to expand its system by introducing a BOT scheme, but at present, there are no details yet.

Following LMWD is Baybay WD, the second largest system in the province. The WD covers 23 urban and 15 rural barangays with a served population of 24,200 using spring water.

Metro Carigara WD is the third largest system in the province. The WD supplies water to four (4) municipalities of Barugo, Capoocan, Carigara and Tunga with served population of about 20,000 covering 8 to 50% of the population of the concerned municipalities. Water source is a combination of surface water from Maulaog River and spring source located in Capoocan with production capacities of 1,650m<sup>3</sup>/d and 950m<sup>3</sup>/d, respectively. Water sources may contain high level of iron due to its soil condition.

Metro Hilongos WD is another inter-municipality water supply covering three (3) municipalities of Bato, Hindang and Hilongos utilizing deep well sources. Presently, the total population served by the WD is about 9,200. Water source may contain high level of iron.

The municipality of Burauen has relatively large Level III system (Burauen WWs) being managed by the municipal government. The WWs covers the poblacion area using spring source serving about 13,000 people. The municipality has a plan to conduct F/S for the rehabilitation of transmission and distribution pipelines due to the deterioration of the facilities. However, financial source is not yet secured at present.

In the municipality of Kananga, a waterworks is being operated by the municipal government, which supplies water to one urban and one rural barangays. It has a served population of 9,050 corresponding to 21% of the urban population. Water source is a spring.

The municipality of Babatngon has a Level III system managed by the municipal government using a waterfall as water source. The system was converted from Level II system to Level III system about 2-3 years ago. Presently, the waterworks serves 40% of the urban population. The current problem of the system is insufficient water supply caused by smaller diameter of transmission pipe (designed 6" dia. was changed to 3" dia in the construction stage). Although the municipality is ready to improve the services, it is necessary to get prior concurrence from users to increase water charges to cover the required cost for the improvement.

The municipality of Matalom has a waterworks managed by the municipal government.

In the municipalities of Isabel and Merida, there are WDs of which water is supplied with groundwater from the Leyte Industrial Development Estate (LIDE) by using a booster pump. Current served population is 6,800 and 2,600, respectively. The main concern of LIDE is to supply water to government-owned Philippine Associated Smelting and Refining Corporation (PASAR) and Philippine Phosphate Corporation (PHILPHOS) both located at Isabel. Hence, LIDE is planning to cut-off water supply to these two municipalities due to the high water demand of these 2 companies. Ground water supply of LIDE's facility cannot meet the demands of these two municipalities and two companies all at the same time.

As a countermeasure, the municipality of Merida has a program to develop the untapped spring at Brgy. San Jose, about 8km away from the town proper that may be applicable for Level-III. The province then, extended technical assistance (F/S) including basic design of transmission and distribution pipes and reservoir. Financing for the construction is a current issue. Also, the municipality of Isabela is planning to develop its untapped spring, but financing for the technical preparation of F/S, D/D and construction is its constraint.



In the municipality of Jaro, there are 720 HHs being served by the Jaro WD. The water source of the system is a deep well. In the F/S, the discharge rate of the well was estimated at 10lps which is enough to serve 1,100 connections, but the current discharge rate is only from 6 - 7 lps. Under this condition, insufficient water supply has been experienced especially during fiestas. The WD was established in 1993 through the assistance of LWUA. Before then, the municipal waterworks supplied water to users; the previous system used riverbed water (1982 - 1983), and later replaced to spring source (1983 - 1993). The municipality has a plan of system expansion, but was not completed due to limited financing. An untapped spring was already identified as a potential water source.

The other municipalities, such as Abuyog, Albuera, Calubian, Inopacan, Javier, Leyte, Mahaplag, Matag-ob and Palompon have Level III systems managed by the WDs or the LGUs. The population being served ranges from 800 to 4,600 using deep wells or spring sources.

Generally, the waterworks with spring sources are simply managed without the necessity of higher expertise and providing lower water charges.

Some Level-III systems mentioned above, practice scheduled water supply due to insufficient water source capacity. Even in cases where there are enough water sources, intermittent water supply is experienced due to insufficient capacity of the facilities (e.g., distribution pipe) against current water demand. The municipalities that have this problem are Jaro, Calubian, Palompon, Baybay, Metro Hilongos, Merida, Isabel and Metro Carigara. Lack of consideration for the expansion of the system during the D/D stage was also observed.

All waterworks has O&M staff (engineer/technician/plumber/water fee collector) and practice chlorination using liquid chlorine gas (purchased either in Cebu and Manila). They have ensured budget for O&M cost, but the income is insufficient for expansion of the system.

Even in Level-III systems, some cases were found where water was contaminated due to negative pressure in the deteriorated distribution pipes, especially during shut down of water supply/intermittent operation. Under such condition, bacteriological examination sometimes indicates positive results in E.coli. For example, the Baybay WD had to shut down its supply for 3 to 7 days because of some doubts that contaminated water was flowing into the deteriorated distribution pipes during the outbreaks of typhoid fever last Dec., 1998 and Apr., 1999.

At present, the other 10 municipalities, such as Alangalang, Dulag, Julita, La Paz, MacArthur, Mayorga, San Isidro, San Miguel, Santa Fe, Tabango have no Level III system/s both in urban and rural area at present.

Table 4.1.2 Information on Existing Level III System

Name of Municipality/City	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	
Abuyog	Abuyog WD	DW	751	95	9		9	905		905	4,597		4,597	
Bababgon	LGU - Bababgon	SP	NA		4		4	455		455	5,659		5,659	
Barugo	Metro Carigara				8	5	13	516	322	838	2,771	1,752	4,523	
Bato	Metro Hilongos	DW			1		1	147		147	716		716	
Baybay	Baybay WD	SP	3,236	88	23	15	38	3,022	1,932	4,954	15,019	9,428	24,447	
Burauen	LGU - Burauen	SP	NA		9	2	11	2,041	202	2,243	11,777	1,165	12,942	
Calubian	Calubian WD		NA		1	11	12	60	656	716	297	3,182	3,479	
Capoocan	Metro Carigara				2	5	7	129	322	451	614	1,610	2,224	
Carigara	Metro Carigara	Surf	1,593	91	5	14	19	322	902	1,224	1,571	4,501	6,072	
Dagami	Leyte Metro WD				1	8	9	25	645	670	126	3,150	3,276	
Dulag	LGU - Dulag	DW	12		1		1	51		51	253		253	
Hilongos	Metro Hilongos	DW	NA		1	2	3	281	957	1,238	1,472	4,795	6,267	
Hindang	Metro Hilongos				1		1	440		440	2,213		2,213	
Isabel	Isabel WD	DW	1,000	100	3	5	8	539	896	1,435	2,646	4,101	6,250	
Jaro	Jaro WD	DW	16	75	4		4	687		687	3,428		3,428	
Javier (Bugho)	LGU - Javier	SP	NA		2	3	5	160	120	280	826	613	1,439	
Kananga	LGU - Kananga		558	96	1	1	2	1,244	297	1,541	7,140	1,913	9,053	
Leyte	LGU - Leyte	SP	NA		1	1	2	137	4	141	786	21	807	
Matag-ob	LGU - Matag-ob		NA		3	4	7	77	292	369	386	1,435	1,821	
Matsion	Matsion WS	SP	1,634	84	3	3	6	604	718	1,322	3,020	3,537	6,557	
Merida	LGU - Merida		NA		1	1	2	132	10	142	528	36	564	
	Merida WD		17	100	1	1	2	468	32	500	1,863	145	2,008	
	Municipal Total		17	100	2	2	4	600	42	642	2,391	181	2,572	
Palo	Leyte Metro WD				11		11	3,429		3,429	17,659		17,659	
Palompon	Palompon WD	DW/SP	10	90	10	3	13	638	191	829	3,050	884	3,934	
Pastrana	Leyte Metro WD				1	3	4	16	394	410	86	2,150	2,236	
Tabontabon	Leyte Metro WD				1		1	38		38	188		188	
Tacloban City	Leyte Metro WD	Surf	18,531	72	72		72	17,044		17,044	160,163		160,163	
Tanauan	Leyte Metro WD				1	5	6	28	748	776	143	3,575	3,718	
Tolosa	IMWD				2	4	6	121	66	187	1,635	3,383	5,018	
Tunga	Metro Carigara				4	3	7	258	193	451	1,638	1,154	2,792	
Villaba	Hinabuyan	SP	15	100			1			100		600		600
	Pob. Del Norte	SP	16	100			1		175		929		929	
	Pob. Del Sur	SP	15	100			1		150		671		671	
	Municipal Total		46	100			3		325	100	425	1,600	600	2,200
Provincial Total			27,404	78	189	100	289	34,339	9,999	44,338	253,870	53,133	307,003	

Note: 1. Type of Water Source: DW - Deep Well, Surf - Surface Water (River), SP - Spring  
 2. NA: No data available

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		
Abuyog WD	935		75		1,010	1,010	25,409	22,534
Metro Hilongos WD							73,440	
Baybay WD	4,699	23	275		4,997	4,997	256,167	97,080
Calubian WD								
Metro Carigara WD	2,894	10	107		3,011	3,011	299,995	47,780
Leyte Metro WD	18,928	252	1,918	38	21,136	21,136	766,080	555,930
Isabel WD	1,392				1,392	1,392	12,960	30,000
Jaro WD	655	6	25		716	716	25,920	480
Merida WD	490				490	490	9,330	510
Palompon WD	856	103			959	957	25,920	300

#### 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, LWUA, DILG, LGUs) and usually promote the use of spring sources. These are operated either by the LGUs or by the RWSAs.

There are 218 Level II systems in 30 municipalities/city of the province. Most of these are utilizing spring sources (194 systems), while only 24 systems use deep wells (details are referred to in Table 4.1.2, Supporting Report). The municipality of Baybay has the largest number, 44 systems or 20% of the total as shown in Table 4.1.4 together with the service coverage in 1998.

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

Most of the Level II systems practice scheduled water supply due to insufficient water source/insufficient capacity of the facilities. Such problems are mainly caused by order-less expansion or unauthorized tapping of individual connections resulting to insufficient water flow/reduction of water pressure.

In some Level-II systems using spring sources, bursting of pipes occurred due to high water pressure in the system (a big elevation difference between intake point and service area), where pressure-reducing tanks are not installed and /or there exist poor/damaged pipe materials. It is also common that water quality examination is not adequately conducted.

In case of major repair, the barangay council collects money required for the repair work. Some cases, only the rich beneficiaries contribute money required for needed repair work.

##### (1) Management practice

About 20% of the waterworks impose a flat rate water charge of 5 to 30 Pesos/HH/month and the rest supplies water free of charge. Regarding repair works, they request for assistance from the MEO/CEO, as needed. 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 RWSA or other operating body 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.

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

Table 4.1.4 Information on Existing Level II System

Name of Municipality/ City	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	
Abuoz	Alanzilan WS		1	1		20	20		99	99	
	Bagacay WS		1	1		30	30		149	149	
	Balinasayad WS		1	1		65	65		323	323	
	Bayabas WS		1	1		40	40		199	199	
	Buaya WS		1	1		50	50		249	249	
	Bulak WS		1	1		40	40		199	199	
	Bunbud-an WS		1	1		10	10		50	50	
	Dingle WS		1	1		30	30		149	149	
	Kikilo WS		1	1		50	50		249	249	
	Lawaan WS		1	1		30	30		149	149	
	Libertad WS		1	1		30	30		149	149	
	Magauicay WS		1	1		70	70		348	348	
	Matagnao WS		1	1		15	15		75	75	
	New Taligue WS		1	1		30	30		149	149	
	Old Taligue WS		1	1		40	40		199	199	
	Parasonn WS		1	1		30	30		149	149	
	Pitar WS		1	1		20	20		99	99	
	Pinamanagan WS		1	1		50	50		249	249	
	San Francisco WS		1	1		40	40		199	199	
	San Roque WS		1	1		40	40		199	199	
	Tadoc WS		1	1		10	10		50	50	
	Tinocolan WS		1	1		20	20		99	99	
	Tuy-a WS		1	1		50	50		249	249	
	<b>Municipal Total</b>			23	23		810	810		4,028	4,028
	Albuera	Doña Maria		1	1		60	60		293	293
		Lawis, Balugo BWSA		1	1		20	20		98	98
Mahayag			1	1		15	15		73	73	
Mahaybay BWSA			1	1		25	25		122	122	
Poblacion WS		1		1	90		90	445		445	
Sherwood			1	1		50	50		244	244	
Sitio Soob, Poblacion						45	45		222	222	
<b>Municipal Total</b>		1	5	6	135	170	305	667	830	1,497	

Table 4.1.4 Information on Existing Level II System

(cont'd)

Name of Municipality/ City	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
Babuyan	Baxong Silanz WS		1	1		15	15		77	77
	Magcasuang WS	1		1		15	15	79		79
	Mahbago WS		1	1		50	50		257	257
	Naga-asan WS		1	1		20	20		103	103
	Pagsulhugon WS		1	1		40	40		206	206
	Rizal II WS		1	1		70	70		360	360
	San Isidro WS		1	1		55	55		283	283
	San Ricardo WS		1	1		30	30		154	154
	Taguite WS		1	1		25	25		129	129
	Victory WS		1	1		40	40		206	206
	Villa Magsaysay WS		1	1		15	15		77	77
	Municipal Total	1	10	11	15	360	375	79	1,832	1,931
Barugo	Balud		1	1		15	15		82	82
	Bukid		1	1		20	20		109	109
	Duka		1	1		15	15		82	82
	San Roque		1	1		10	10		54	54
	Municipal Total		4	4		60	60		327	327
Bato	Dolho BWSA		1	1		15	15		77	77
	Himamaa BWSA		1	1		30	30		153	153
	Iniguhon BWSA	2		2	45	45	219		219	
	Mabini		1	1		10	10		51	51
	Plaridel BWSA		1	1		15	15		77	77
	Rivilla WS		1	1		10	10		51	51
Municipal Total	2	5	7	45	80	125	219	409	628	
Baybay	Ambocan WS		1	1		15	15		73	73
	Balao WS		1	1		15	15		73	73
	Banahao WS		1	1		30	30		146	146
	Bidlinan WS		1	1		20	20		98	98
	Bitanluan WS		1	1		500	500		2,440	2,440
	Bubon WS		1	1		15	15		73	73
	Buenavista WS		1	1		40	40		195	195
	Bunga WS		1	1		50	50		244	244
	Butigan WS		1	1		25	25		122	122
	Caridad WS		1	1		110	110		537	537
	Ciabo & Makinhas WS		1	1		120	120		586	586
	Guadalupe WS	1		1	20	20	99		99	
	Gubang WS		1	1		45	45		220	220
	Higuluan WS		1	1		15	15		73	73
	Hilapnitan WS		1	1		25	25		122	122
	Igang WS		1	1		20	20		98	98
	Kabalasan WS		1	1		25	25		122	122
	Kabatuan WS		1	1		15	15		73	73
	Kabungaan WS		1	1		80	80		390	390
	Kagunay WS		1	1		15	15		73	73
	Kambonggan & Makinhas		1	1		50	50		244	244
	Kantagnos WS		1	1		15	15		73	73
	Maganhaan WS		1	1		20	20		98	98
	Mahayahay WS		1	1		30	30		146	146
	Maitih WS		1	1		30	30		146	146
	Maitum WS		1	1		60	60		293	293
	Maggap WS		1	1		40	40		195	195
	Marcos WS		1	1		50	50		244	244
	Maslug WS		1	1		50	50		244	244
	Matanis WS		1	1		20	20		98	98
	Maybog WS		1	1		130	130		634	634
	Maypatag WS		1	1		40	40		195	195
	Monte Verde WS		1	1		20	20		98	98
	Pangasugan WS		1	1		2,580	2,580		12,590	12,590
	Pansagan WS		1	1		25	25		122	122
	Patag WS		1	1		10	10		49	49
	Plaridel WS		1	1		1,500	1,500		7,320	7,320
	Pomponan WS	1		1	100	100	497		497	
	Punta WS		1	1		25	25		122	122
	Sabang WS		1	1		80	80		390	390
	San Agustin WS		1	1		20	20		98	98
	San Juan WS		1	1		20	20		98	98
	Villa Solidaridad WS		1	1		25	25		122	122
	Zacarito WS		1	1		20	20		98	98
	Municipal Total	2	42	44	120	6,040	6,160	526	29,475	30,071

Table 4.1.4 Information on Existing Level II System

(cont'd)

Name of Municipality/ City	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	
Burauen Cebu	Burauen WS	3	11	14	29	93	122	325	465	860	
	Caroyocan WS		1	1		25	25		121	121	
	Casiogan WS		1	1		20	20		97	97	
	Herrera WS		1	1		20	20		97	97	
	Jubay WS		1	1		40	40		194	194	
	Kawayanan WS		1	1		10	10		49	49	
	Limite WS		1	1		20	20		97	97	
	Paula WS		1	1		15	15		73	73	
	Ulog WS		1	1		75	75		364	364	
	<b>Municipal Total</b>		8	8		225	225		1,092	1,092	
Canigara	Bislig		1	1		20	20		100	100	
	Libo & San Isidro WS		2	2		30	30		150	150	
	<b>Municipal Total</b>		3	3		50	50		250	250	
Dagami	Calipayan & Rizal BWSA		2	2		25	25		125	125	
	Guinaron WS		3	3		25	25		125	125	
	<b>Municipal Total</b>		5	5		50	50		250	250	
Hilongos	Cantandog I BWSA		1	1		45	45		225	225	
	Himo-aw BWSA	1		1	25		25	131		131	
	Matpay BWSA		1	1		45	45		225	225	
	Naval BWSA		1	1		420	420		2,104	2,104	
	<b>Municipal Total</b>	1	3	4	25	510	535	131	2,554	2,685	
Hindang	Anolon BWSA		1	1		15	15		70	70	
	Bontoc WS		2	2		90	90		419	419	
	Capudiosan BWSA		1	1		10	10		47	47	
	Himacugo BWSA		1	1		10	10		47	47	
	San Vicente BWSA		1	1		50	50		233	233	
	Taglibi BWSA		1	1		45	45		209	209	
	<b>Municipal Total</b>		7	7		220	220		1,025	1,025	
Inopacan	Cabulisan WS		1	1		50	50		251	251	
	Caminto WS		1	1		40	40		201	201	
	Can-angay		1	1		25	25		126	126	
	Caulisihan		1	1		20	20		100	100	
	De los Santos		1	1		15	15		75	75	
	Guadalupe		1	1		50	50		251	251	
	Hinabay		1	1		25	25		126	126	
	Jubasan		1	1		50	50		251	251	
	Maljo		1	1		50	50		251	251	
	Marao WS		1	1		75	75		377	377	
	Tahud WS		1	1		50	50		251	251	
	<b>Municipal Total</b>		11	11		450	450		2,260	2,260	
Jaro	Biaz-Zabala		1	1		20	20		98	98	
	Burabod WS		1	1		25	25		123	123	
	Daro WS		1	1		60	60		295	295	
	Hibunawon WS		1	1		25	25		123	123	
	Macanip WS		1	1		10	10		49	49	
	Piraon WS	4		4	20		20	100		100	
	Rubas WS		1	1		25	25		123	123	
	San Agustin WS		1	1		25	25		123	123	
	Sari-sari WS		1	1		15	15		74	74	
	Tinambacan WS		1	1		30	30		147	147	
	Uguiao WS		1	1		20	20		98	98	
	Villa Consuelo WS		1	1		15	15		74	74	
	<b>Municipal Total</b>	4	11	15	20	270	290	100	1,327	1,427	
	Javier (Bugho)	A. Bonifacio BWSA		1	1		25	25		128	128
		Binulho BWSA	3	1	4	100	50	150	516	256	772
Caraye			1	1		50	50		256	256	
Comatin BWSA			1	1		55	55		281	281	
Guindapunan BWSA			1	1		20	20		102	102	
Malibogay			1	1		35	35		179	179	
Manarug			1	1		50	50		256	256	
Manhilid BWSA			1	1		75	75		383	383	
Odiang BWSA			1	1		60	60		307	307	
Pinocawan BWSA			1	1		20	20		102	102	
San Sotero BWSA			1	1		70	70		358	358	
Talisayan			1	1		25	25		128	128	
Uihay BWSA			1	1		45	45		230	230	
<b>Zone I</b>		1		1	25		25	129		129	
<b>Municipal Total</b>		4	13	17	125	580	705	645	2,966	3,611	

Table 4.1.4 Information on Existing Level II System

(cont'd)

Name of Municipality/ City	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
Kamanga	Aguding		1	1		29	29		102	102
	Ilibugog		1	1		49	49		264	264
	Libertad		1	1		15	15		77	77
	Lonoy		1	1		20	20		102	102
	Masarayao		1	1		25	25		128	128
	Rizal		1	1		89	89		498	498
	San Isidro		1	1		20	20		102	102
	<b>Municipal Total</b>		<b>7</b>	<b>7</b>		<b>220</b>	<b>220</b>		<b>1,123</b>	<b>1,123</b>
Ia Paz	Mun. WS	4	2	6	297	30	327	1,524	149	1,673
Leyte	Bachao RWSA		1	1		30	30		158	158
	Baco WWS		1	1		20	20		105	105
	Basud WWS		1	1		30	30		158	158
	Culasi WWS		1	1		40	40		211	211
	Kawayan WWS		1	1		40	40		211	211
	Libas WWS		1	1		15	15		79	79
	Maanda WWS		1	1		20	20		105	105
	Palarao RWA		1	1		90	90		474	474
	Pahid I		1	1		30	30		158	158
	Parasan WWS		1	1		15	15		79	79
	Salog WWS		1	1		10	10		53	53
	Tapol BWSA		1	1		10	10		53	53
	Tigbagan WWS		1	1		15	15		79	79
	Tinocogan WWS		1	1		20	20		105	105
	Toctoc WWS		1	1		30	30		158	158
<b>Municipal Total</b>		<b>15</b>	<b>15</b>		<b>415</b>	<b>415</b>		<b>2,486</b>	<b>2,486</b>	
Macarthur	Casuntingan & Tinawan		2	2		25	25		133	133
	Danao		1	1		10	10		53	53
	San Antonio & Sta. Isabel		2	2		25	25		133	133
	<b>Municipal Total</b>		<b>5</b>	<b>5</b>		<b>60</b>	<b>60</b>		<b>319</b>	<b>319</b>
Mahaplag	Ilimamara WS		1	1		11	11		57	57
	San Isidro WS		1	1		6	6		31	31
	<b>Municipal Total</b>		<b>2</b>	<b>2</b>		<b>17</b>	<b>17</b>		<b>88</b>	<b>88</b>
Matag-ob	Balagtas WS		1	1		40	40		197	197
	Bonoy WS	1		1	75		75	375		375
	Bulak WS		1	1		10	10		49	49
	Canibadbad WS		1	1		15	15		74	74
	Candelaria		1	1		40	40		197	197
	Cansoso WS		1	1		20	20		98	98
	Imelda WS		1	1		25	25		123	123
	Mafarate WS		1	1		25	25		123	123
	Mangahip WS	1		1	15		15	75		75
	Masaba WS		1	1		20	20		98	98
	Naulayan WS		1	1		20	20		98	98
	San Dionesio WS		1	1		20	20		98	98
	San Marcelino WS		1	1		25	25		123	123
	San Vicente WS		1	1		100	100		492	492
	Sta. Rosa WS		1	1		70	70		344	344
	Sta. Rosario WS		1	1		50	50		246	246
	<b>Municipal Total</b>	<b>2</b>	<b>14</b>	<b>16</b>	<b>90</b>	<b>480</b>	<b>570</b>	<b>450</b>	<b>2,360</b>	<b>2,810</b>
	Matalom	Cahagnan BWSA	1		1	75		75	357	
Cangganay BWSA			1	1		20	20		101	101
Monte Alegre			1	1		50	50		252	252
Sta. Fe WS			1	1		15	15		75	75
Sto. Niño BWSA		1		1	25		25	119		119
<b>Municipal Total</b>		<b>2</b>	<b>3</b>	<b>5</b>	<b>100</b>	<b>85</b>	<b>185</b>	<b>476</b>	<b>423</b>	<b>901</b>
Mayorga	Mayorga BWSA	1	2	3	15	30	45	72	146	218
Palompon	Buenavista WS		1	1		6	6		28	28
	Caduaan WS		1	1		15	15		69	69
	Cruz WS		2	2		12	12		56	56
	<b>Municipal Total</b>		<b>4</b>	<b>4</b>		<b>33</b>	<b>33</b>		<b>153</b>	<b>153</b>
San Isidro	Capitahan WS	2	1	3	40	15	55	178	71	249
Santa Fe	San Juan WS		1	1		30	30		154	154
Tabango	Mun. Government		3	3		275	275		1,375	1,375
Tackban City (Capital)	Tackban City		1	1		275	275		1,375	1,375
Tanauan	Ada BWSA		1	1		40	40		194	194
	Carabaisara BWSA		1	1		270	270		1,291	1,291
	Mahulod BWSA		1	1		70	70		335	335
	Sta. Elena		1	1		15	15		72	72
<b>Municipal Total</b>		<b>4</b>	<b>4</b>		<b>395</b>	<b>395</b>		<b>1,889</b>	<b>1,889</b>	

Table 4.1.4 Information on Existing Level II System

(cont'd)

Name of Municipality/ City	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
Willaba	Abigio		1	1		395	395		1,916	1,916
	Bangcal BWSA		1	1		20	20		97	97
	Cabungan, Silad & Suba		3	3		20	20		97	97
	Cagnocot BWSA		1	1		30	30		146	146
	Camporog WS		1	1		35	35		170	170
	Canquiason BWSA		1	1		10	10		49	49
	Casih-on BWSA		1	1		10	10		49	49
	Fatima BWSA	1		1	25		25	125		125
	Hibulangan BWSA		1	1		25	25		121	121
	Jordan BWSA		1	1		15	15		73	73
	Sulpa BWSA		1	1		30	30		146	146
	Tabunok BWSA		1	1		10	10		49	49
	<b>Municipal Total</b>		1	13	14	25	600	625	125	2,913
<b>Provincial Total</b>		30	238	268	1,131	12,928	14,059	5,657	63,839	69,496

#### 4.1.5 Level I Facilities

Level I facilities (point source) are common in rural barangays. Most of these facilities are different types of wells equipped with hand-pumps or developed spring with transmission line and one communal faucet. Rain collector is also used in some areas.

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 21,748 operational Level I facilities, 60% 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 (detailed 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 shallow wells for each municipality, 13,290 Level I facilities are classified as safe sources, while 8,494 facilities are under unsafe sources.

Percentage shares between public and private Level I facilities for rural water supply is 38% and 62%, respectively. The share of developed springs in public facilities is 12% (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.



Table 4.1.5 Information on Existing Level I Facilities

Name of Municipality/City	Number of Safe Water Sources						Number of Unsafe Water Sources						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	Urban	Rural	Total	
																				Urban
Abakog	123	16	238		397	10	386			396	1,144	2,690	3,834	5,810	13,370	19,180				
Alangalang	43	544	963	21	1,571	362	10	254		626	1,020	4,939	5,959	5,337	25,386	30,722				
Albuera	14	1,210	68	52	1,344	807	114	1		922	782	3,180	3,962	3,863	15,519	19,382				
Alibonon	27	23	17	12	139	49	47	2		98	152	1,326	1,477	803	6,813	7,616				
Barugo	8	149	73	8	165	99	134	1		234	370	1,505	1,874	1,985	8,186	10,171				
Baso	76	23	5	7	161	49	10	7		66	841	1,777	2,619	4,098	9,082	13,180				
Baybay	35	39	15	68	157	26		11		37	1,022	2,275	3,297	5,080	11,101	16,181				
Burauen	13	466			479	311				311	151	3,118	3,269	803	15,745	16,548				
Calubian	20	137	137	11	305	92	29	1		122	3,375	3,375		16,768	16,768					
Capocoran	2	7	4	31	44	5	1			6	772	3,445	4,217	3,674	17,275	20,898				
Camiguin	1	7	18	6	32	5				5	1,663	3,940	5,603	8,114	19,661	27,772				
Dagupan	10	46	571	13	640	30	465			495	784	2,623	3,408	4,016	12,201	16,817				
Dubay	2	950			952	633	187			820	2,764	1,495	4,260	4,431	18,959	23,389				
Hinunangan	53	90	5	15	163	60				60	846	3,784	4,630	4,431	18,959	23,389				
Hindang	595	519	367	10	1,491	346	89	10		445	250	2,009	2,259	1,258	9,342	10,599				
Inopacan	3	137	1	12	153	92		8		100	184	1,338	1,323	956	5,714	6,660				
Isabel	54	15	22	27	118	10	7			17	1,867	2,931	4,798	9,167	13,423	22,592				
Jaro	55	5	205	14	69	36		1		37	146	637	783	729	3,126	3,855				
Javier (Bugho)	78	5	205	10	298	3				3	89	2,837	2,927	461	14,499	14,960				
Julita	4	188			192	126	38			164	557	1,004	1,562	2,620	4,871	7,491				
Kananga	10	64	44	67	185	42				42	4,067	4,067		20,742	20,742					
La Paz	21	196	10	10	237	130	6			138	305	1,531	1,836	1,562	7,625	9,188				
Levite	12	9	18	37	76	6	47			57	218	2,731	2,949	1,250	14,393	15,644				
Masambur	3	277			280	185				185	399	1,495	1,893	2,107	7,941	10,048				
Mahaplag	11	19	4	11	45	13	34			76	390	1,296	1,686	2,183	6,661	8,843				
Matagob	2	21	6	38	57	14				14	479	1,224	1,653	2,145	6,023	8,168				
Matulom	52	78	7	35	172	52				52	50	1,458	1,508	236	7,334	7,570				
Mayorga	102	57	159	103	319	18				18	351	1,381	1,732	1,684	6,666	8,379				
Menda	30	27	159	14	60	2				18	123	3,565	3,688	490	16,149	16,640				
Palo	42	4			46					46	975	2,514	3,490	4,662	11,643	16,303				
Palompon	16	259		32	307	172	71			409	975	2,514	3,490	4,662	11,643	16,303				
Pastrana	2	14			16	9	34			43	296	639	935	1,638	3,481	5,119				
San Isidro	53				53	36	290			338	234	1,275	1,508	1,038	6,016	7,054				
San Miguel	14	41	12	2	69	27	24			53	443	1,309	1,752	2,242	6,885	9,128				
Santa Fe	1	35		1	37	23	2			25	270	1,444	1,665	1,134	7,425	8,359				
Tabango	3	49	54	35	141	32	197			230	905	2,519	3,023	2,468	12,593	15,061				
Tibonabon		83			83	55	111			166	252	409	661	1,247	1,983	3,231				
Tacloban City (Capital)	1,097				1,097	732				732	2,105	2,105		11,220	11,220					
Talasan	203		22	33	258	136	338			474	1,682	1,844	3,566	8,629	9,008	17,636				
Tolosa	4	518	44		562	346				346	3	1,383	1,386	16	6,761	6,777				
Tunga	4	18	2		24	12	22			35	209	25	234	1,327	447	1,774				
Villaba	6	51	137		194	34				34	136	4,781	4,917	680	23,186	23,666				
Provincial Total	1,492	7,898	3,175	725	13,290	5,266	2,693	535		8,494	23,531	93,300	116,850	118,416	464,441	582,864				

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 the LGUs even for a simple replacement of parts (such as gasket). As for the existing public Level-I, the barangay council takes care of O&M using the IRA allotted to the barangay. In cases where a 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.

(1) Unsafe water sources

Most of the sources declared as unsafe are driven shallow wells which 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 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. For Level I facilities, the BWSAs or beneficiaries have responsibility on O&M, however, it is almost negligible. This can be gleaned from the presence of numerous non-functioning/abandoned wells constructed by DPWH. These conditions arise from lack of spare parts, drying up of water source and water quality problems such as colored water.

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.	540	5,581	952	7,583	14,656
	Percent	61%	82%	96%	95%	88%
Non-Functioning	No.	344	1,233	37	439	2,053
	Percent	39%	18%	4%	5%	12%
<b>Total Number</b>		884	6,814	989	8,022	16,709

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

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.

#### 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. 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 referred 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 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 11 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, 66% of the population is adequately served (82% of urban population and 59% of rural population).

The percentage of underserved population is estimated at 19% of the total population (12% of urban population and 23% of rural population) who are depending on unsafe sources/facilities. The existing provincial service coverage is shown in Figure 4.1.1 (refer to Supporting Report).

Among different service levels, Level I water supply facilities have predominant service coverage in all municipalities/city in the province. Percentage shares of population coverage by Level I public and private facilities in rural water supply are estimated at 90% and 10%, respectively (details are referred to the Supporting Report).

Level III systems take a major part of service coverage in urban water supply in limited municipalities/city, such as Babatngon (79% of urban population), Baybay (66%), Burauen (79%), Calubian (57%), Hindang (61%), Kananga (100%), Matalom (80%), Merida (71%), Palo (77%), Tacloban City (95%), Tanauan (85%) and Tolosa (97%).

Likewise, Level II system plays a major role in rural water supply in the municipality of Baybay (45%). However, the piped systems including Level III systems in the rural area are not fully developed in the entire province (6% for Level II and 5% for Level III systems).

Taking into account the municipal service coverage of the 42 municipalities/city of the province, 17 are above the average provincial service coverage of 66%. The highest coverage is Palo at 96% (98% for urban and 94% for rural area), then by Tacloban City at 92% (95% - urban and 63% - rural), Javier at 85% (72% - urban and 87% - rural), Hindang at 83% (95% - urban and 79% - rural) and Tolosa at 83% (98% - urban and 81% - rural).

In contrast to the above, 25 municipalities/city are below the provincial average. The lowest is San Isidro at 20%, followed by Jaro (26%), Mahaplag (36%), Palompon (38%) and Inopacan (44%). The low coverage of these municipalities is due to the large number of underserved population using unsafe water sources and/or unserved population.

Table 4.1.7 Water Supply Service Coverage by Municipality

Name of Municipality/City	Area	Population (1998)	Population Coverage						Percentage of Population Coverage							
			Served by Safe Source			Underserved/Unserved			Served by Safe Source			Underserved/Unserved				
			Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total	Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total
Abuyog	Urban	13,539	4,597		5,810	10,407	2,696	456	3,152	34		43	77	20	5	23
	Rural	36,391		4,028	13,370	17,398	15,938	3,635	18,993		11	37	48	42	10	52
	Total	49,930	4,597	4,028	19,180	27,805	18,054	4,091	22,145	9	8	38	56	36	8	44
Alangalang	Urban	10,561		5,337	5,337	4,869	355	5,224			51	51	51	46	3	49
	Rural	32,030		25,386	25,386	3,824	2,820	6,644			79	79	79	12	9	21
	Total	42,591		30,722	30,722	8,693	3,175	11,869			72	72	72	20	7	28
Albuera	Urban	7,078		667	3,863	4,530	1,846	702	2,548		9	55	64	26	10	36
	Rural	27,846		830	15,519	16,349	5,904	5,593	11,497		3	56	59	21	20	41
	Total	34,924		1,497	19,382	20,879	7,750	6,296	14,045		4	55	60	22	18	40
Bababingon	Urban	7,128	5,659	132	803	6,594	281	253	534	79	2	11	93	4	4	7
	Rural	14,029		1,852	6,813	8,665	3,605	1,759	5,364		13	49	62	26	13	38
	Total	21,157	5,659	1,984	7,616	15,259	3,886	2,012	5,898	27	9	36	72	18	10	28
Banugo	Urban	6,298	2,771		1,985	4,756	1,320	222	1,542	44		22	76	21	4	24
	Rural	21,415		327	8,186	10,265	9,319	1,831	11,150	8	2	38	48	44	9	52
	Total	27,713	4,523	327	10,171	15,021	10,639	2,053	12,692	16	1	37	54	38	7	46
Bato	Urban	7,072	716		219	4,998	5,033	785	1,254	2,039	10	3	58	71	11	29
	Rural	23,771		409	9,082	9,491	3,611	10,669	14,280		2	38	40	15	45	60
	Total	30,843	716	628	13,180	14,524	4,396	11,923	16,319	2	2	43	47	14	39	55
Baybay	Urban	22,866	15,019	596	5,080	20,695		2,171	2,171	66	3	22	91		9	9
	Rural	65,800	9,428	29,475	11,101	50,004	1,956	13,840	15,796	14	45	17	76	3	21	24
	Total	88,666	24,447	30,071	16,181	70,699	1,956	16,011	17,967	28	34	18	80	2	18	20
Burauen	Urban	14,992	11,777	395	803	12,975	535	1,482	2,017	79	3	5	87	4	10	13
	Rural	38,858	1,165	465	15,745	17,375	10,057	11,426	21,483	3	1	41	45	26	29	55
	Total	53,850	12,942	860	16,548	30,350	10,592	12,909	23,500	24	2	31	56	20	24	44
Calubian	Urban	524	297			297		227	227	57			57		43	43
	Rural	34,107	3,182	1,092	16,368	20,642	5,068	8,397	13,465	9	3	48	61	15	25	39
	Total	34,631	3,479	1,092	16,368	20,939	5,068	8,624	13,692	10	3	47	60	15	25	40
Capoocan	Urban	5,188	614		3,674	4,288	560	340	900	12		71	85	11	7	17
	Rural	22,979	1,610		17,225	18,335	1,265	2,879	4,144	7		75	82	6	15	18
	Total	28,167	2,224		20,898	23,122	1,826	3,219	5,045	8		74	82	6	11	18
Carigara	Urban	12,102	1,571		8,114	9,685	1,754	663	2,417	13		67	80	14	5	20
	Rural	32,438	4,501	250	19,661	24,412	2,537	5,489	8,026	14	1	61	75	8	17	25
	Total	44,540	6,072	250	27,775	34,097	4,291	10,443	14	1	62	77	77	10	14	23
Dagupan	Urban	4,269	126		4,016	4,142		127	127	3		94	97		3	3
	Rural	23,687	3,150	250	12,801	16,201	6,492	994	7,486	13	1	54	68	27	4	32
	Total	27,956	3,276	250	16,817	20,343	6,492	1,121	7,613	12	1	60	73	23	4	27

Table 4.1.7 Water Supply Service Coverage by Municipality (Cont'd.)

Name of Municipality/ City	Area	Population (1998)	Population Coverage						Percentage of Population Coverage							
			Served by Safe Source			Underserved/Unserved			Served by Safe Source			Underserved/Unserved				
			Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total	Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total
Dulag	Urban	23,148	253		13,712	13,965	9,173	10	9,183	1		59	60	40	0	40
	Rural	12,694		7,402	7,402	5,225	66	5,292			58	58	58	41	1	42
	Total	35,842	253	21,114	21,367	14,398	77	14,475	1		59	60	60	40	0	40
Hilongos	Urban	8,819	1,472	131	4,431	6,034	1,420	1,366	2,785	17	1	50	68	16	15	32
	Rural	43,281	4,795	2,554	18,959	26,308	6,428	10,545	16,973	11	6	44	61	15	24	39
	Total	52,100	6,267	2,885	23,389	32,341	7,848	11,911	19,759	12	5	45	62	15	23	38
Hindang	Urban	3,639	2,213		1,258	3,471		169	169	61		35	95	5	5	5
	Rural	13,119		1,025	9,342	10,367	1,078	1,074	2,752	8	8	71	79	8	13	21
	Total	16,758	2,213	1,025	10,599	13,837	1,078	1,842	2,921	13	6	63	83	6	11	17
Inopacan	Urban	2,269			956	956	456	838	1,313			42	42	20	38	58
	Rural	17,899		2,260	5,714	7,974	3,201	6,724	9,925		13	32	45	18	38	55
	Total	20,168		2,260	6,669	8,929	3,657	7,582	11,239		11	33	44	18	38	56
Isabel	Urban	13,879	2,646		9,167	11,813	1,442	624	2,066	19		66	85	10	4	15
	Rural	24,035	4,104		13,425	17,529	1,783	4,723	6,506	17		56	73	7	20	27
	Total	37,914	6,750		22,592	29,342	3,225	5,347	8,572	18		60	77	9	14	23
Jaro	Urban	7,124	3,428	100	729	4,257	343	2,524	2,867	48	1	10	60	5	35	40
	Rural	26,239		1,327	3,126	4,453	1,681	20,105	21,786		5	12	17	6	77	83
	Total	33,363	3,428	1,427	3,855	8,710	2,025	22,628	24,653	10	4	12	26	6	68	74
Javier (Bugho)	Urban	2,690	826	645	461	1,932	95	662	758	31	24	17	72	4	25	28
	Rural	20,803	613	2,966	14,499	18,078		2,725	2,725	3	14	70	87		13	13
	Total	23,493	1,439	3,611	14,960	20,010	95	3,387	3,483	6	15	64	85	0	14	15
Julita	Urban	4,327			2,620	2,620	1,702	5	1,707			61	61	39	0	39
	Rural	8,530		4,871	4,871	3,600	59	3,659			57	57	57	42	1	43
	Total	12,857		7,491	7,491	5,302	64	5,366			58	58	58	41	0	42
Kananga	Urban	7,140	7,140			7,140			100			100				
	Rural	34,949	1,913	1,123	20,742	23,778	4,086	7,085	11,171	5	3	59	68	12	20	32
	Total	42,089	9,053	1,123	20,742	30,918	4,086	7,085	11,171	22	3	49	73	10	17	27
La Paz	Urban	4,150		1,524	1,562	3,086	774	289	1,064		37	38	74	19	7	26
	Rural	13,600		149	7,625	7,774	3,568	2,258	5,826		1	56	57	26	17	43
	Total	17,750		1,673	9,188	10,861	4,342	2,547	6,889		9	52	61	24	14	39
Leyte	Urban	3,998	786		1,250	2,036	834	1,128	1,962	20		31	51	21	28	49
	Rural	31,118	21	2,186	14,393	16,600	6,139	8,379	14,518	0	7	46	53	20	27	47
	Total	35,116	807	2,186	15,644	18,637	6,972	9,379	16,479	2	6	45	53	20	27	47
Mactarthur	Urban	3,293		2,107	2,107	869	317	1,186			64	64	64	26	10	36
	Rural	15,886		319	7,941	8,260	5,070	7,626			2	50	52	32	16	48
	Total	19,179		319	10,048	10,367	5,940	2,872	8,812		2	52	54	31	15	46

Table 4.1.7 Water Supply Service Coverage by Municipality (Cont'd.)

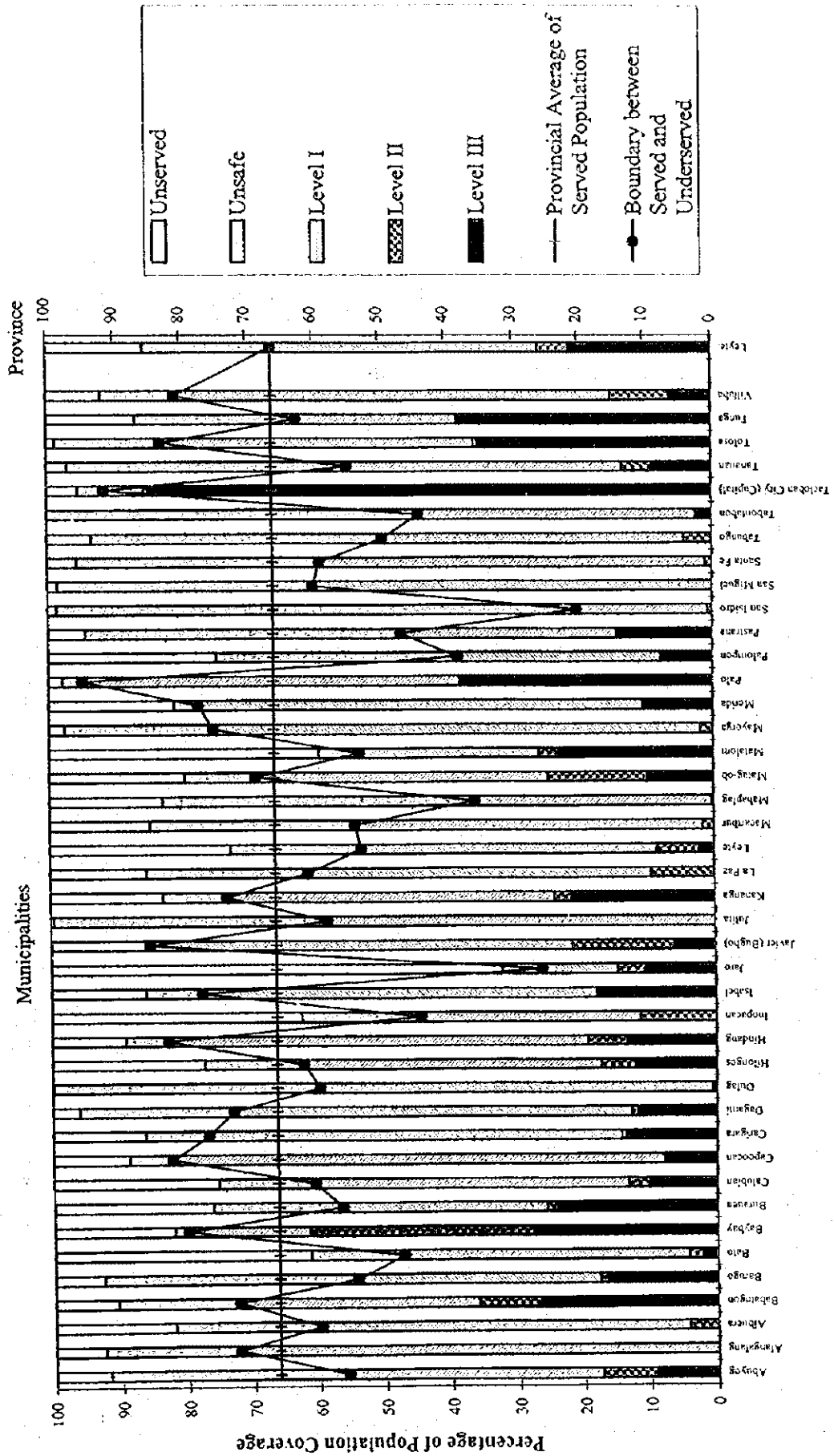
Name of Municipality/City	Area	Population (1998)	Population Coverage						Percentage of Population Coverage							
			Served by Safe Source			Underserved/Unserved			Served by Safe Source			Underserved/Unserved				
			Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total	Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total
Mahaplag	Urban	3,784			2,183	2,183	1,103	498	1,601				58	29	13	42
	Rural	21,081	88	6,961	6,749	10,633	3,700	14,332		0		32	50	18	68	
	Total	24,865	88	8,843	8,931	11,736	4,198	15,934		0		36	47	17	64	
Matag-ob	Urban	3,980	386	2,145	2,981	582	418	999	10	11	54	75	15	10	25	
	Rural	14,587	1,435	6,023	9,818	1,439	3,329	4,769	10	16	41	67	10	23	33	
	Total	18,567	1,821	8,168	12,799	2,021	3,747	5,768	10	15	44	69	11	20	31	
Matalom	Urban	3,756	3,020	476	236	3,732	24	0	24	80	13	6	99	1	0	1
	Rural	24,476	3,537	7,334	11,299	1,714	11,463	13,177	14	2	30	46	7	47	54	
	Total	28,232	6,557	7,570	15,031	1,738	11,463	15,201	23	3	27	53	6	41	47	
Mayorga	Urban	2,328		72	1,684	1,756	543	30	572		3	72	75	23	1	25
	Rural	9,092	146	6,096	6,842	2,010	240	2,250		2	74	75	22	3	25	
	Total	11,420	218	8,379	8,597	2,553	270	2,823		2	73	75	22	2	25	
Merida	Urban	3,376	2,391	490	2,881	113	382	495	71		15	85	3	11	15	
	Rural	21,396	181	16,149	16,330	800	4,266	5,066	1		75	76	4	20	24	
	Total	24,772	2,572	16,640	19,212	913	4,648	5,360	10		67	78	4	19	22	
Palo	Urban	22,908	17,659	4,703	22,422	336	150	486	77		21	98	1	1	2	
	Rural	23,525		21,644	21,644	1,033	848	1,881			92	92	4	4	8	
	Total	46,433	17,659	26,407	44,066	1,369	998	2,367	38		57	95	3	2	5	
Palompon	Urban	11,774	3,050	4,662	7,712	2,544	1,518	4,062	26		40	66	22	13	34	
	Rural	41,542	884	153	11,641	12,678	16,940	11,925	28,864	2	0	28	31	41	29	
	Total	53,316	3,934	153	16,303	20,390	19,484	13,442	32,326	7	0	31	38	37	25	
Pastrana	Urban	2,913	86	1,638	1,724	1,092	96	1,189	3		56	59	37	3	41	
	Rural	12,798	2,150	3,481	5,631	6,390	777	7,167	17		27	44	50	6	56	
	Total	15,711	2,236	5,119	7,355	7,483	873	8,356	14		33	47	48	6	53	
San Isidro	Urban	5,210		178	1,038	1,216	3,946	48	3,994		3	20	23	76	1	
	Rural	30,775		71	6,016	6,087	24,234	404	24,688		0	20	20	79	1	
	Total	35,985		249	7,054	7,303	28,230	452	28,682		1	20	20	78	1	
San Miguel	Urban	3,227		2,242	2,242	963	21	985			69	69	30	1	31	
	Rural	11,967		6,885	6,885	4,894	188	5,082			58	58	41	2	42	
	Total	15,194		9,128	9,128	5,858	209	6,066			60	60	39	1	40	
Santa Fe	Urban	2,144		1,134	1,134	852	158	1,010			53	53	40	7	47	
	Rural	12,603		7,425	7,579	4,541	484	5,024		1	59	60	36	4	40	
	Total	14,747		8,559	8,713	5,393	641	6,034		1	58	59	37	4	41	
Tabango	Urban	4,890		2,468	2,468	2,187	235	2,422			50	50	45	5	50	
	Rural	28,296		1,375	12,593	13,968	12,409	19,191	14,528		5	45	44	44	7	
	Total	33,186		1,375	15,061	16,436	14,596	21,541	16,750		4	45	44	6	50	

Table 4.1.7 Water Supply Service Coverage by Municipality

Name of Municipality/ City	Area	Population (1998)	Population Coverage						Percentage of Population Coverage						
			Served by Safe Source			Undersewed/Unsewed			Served by Safe Source			Undersewed/Unsewed			
			Level III	Level II	Level I	Total	Unsafe Sources	Unsewed	Total	Level III	Level II	Level I	Total	Unsafe Source	Unsewed
Tabonabon	Urban	2,452	188		1,247	1,435	1,017	1,017	8		51	59	41		41
	Rural	5,327		1,983	1,983	3,344	3,344			37	37	37	63		63
	Total	7,779	188		3,231	3,419	4,360	4,360	2		42	44	56		56
Tacloban City (Capital)	Urban	168,865	160,163			160,163	8,702	8,702	95		56	63	37		37
	Rural	19,980		1,375	11,220	12,595	7,385	7,385		7	56	63	37		37
	Total	188,845	160,163	1,375	11,220	172,758	7,385	8,702	85	1	6	91	4	5	9
Tanauan	Urban	14,674	143		8,629	8,772	5,753	150	1	59	60	39	1	40	
	Rural	27,771	3,575	1,889	9,008	14,472	12,163	1,137	13	7	32	52	44	4	48
	Total	42,445	3,718	1,889	17,636	23,243	17,915	1,286	9	4	42	55	42	3	45
Tolosa	Urban	1,682	1,635		16	1,651	11	21	31	97	1	98	1	1	2
	Rural	12,646	3,383	98	6,761	10,242	2,243	161	27	1	53	81	18	1	19
	Total	14,328	5,018	98	6,777	11,893	2,254	182	35	1	47	83	16	1	17
Tunga	Urban	4,219	1,638		1,327	2,965	1,141	114	39	31	31	70	27	3	30
	Rural	3,094	1,154		447	1,601	642	851	37	14	14	52	21	27	48
	Total	7,313	2,792		1,774	4,566	1,783	964	38		24	62	24	13	38
Villaba	Urban	3,182	1,600	275	680	2,555	448	179	50	9	21	80	14	6	20
	Rural	32,998	600	2,913	23,186	26,699	3,548	2,750	2	9	70	81	11	8	19
	Total	36,180	2,200	3,188	23,866	29,254	3,996	2,929	6	9	66	81	11	8	19
Provincial Total	Urban	461,477	253,870	5,860	118,416	378,146	54,408	28,923	55	1	26	82	12	6	18
	Rural	989,458	53,133	63,937	464,448	581,518	227,268	180,672	5	6	47	59	23	18	41
	Total	1,450,935	307,003	69,797	582,864	959,664	281,676	209,595	21	5	40	66	19	14	34



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. For household toilets, data were compiled 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 69% of the total number of households. The rest is underserved or unserved. Data for the underserved and unserved is combined in the inventory, hence no information is available for households without toilet facility (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 69% are Dulag (94%), Pastrana (91%), La Paz and Tunga (87%), Baybay (85%), Hindang (83%), Palo (82%), Hilongos (81%), Leyte (79%), Burauen and Julita (78%), Macarthur and Matag-ob (76%), Isabel, Mayorga and Palompon (75%), Santa Fe and Tanauan (74%), Matalom and Merida (73%), Tabontabon and Tunga (71%), Albucra (70%) and Inopacan (69%). On the other hand, the first 7 municipalities that registered the lowest service coverage are Javier (24%), Mahaplag (31%), Tabango (50%), Barugo and Jaro (55%) and Capoocan and Dagami (56%). It was observed that in municipalities/city that have high water supply service coverage (Hindang, Palo), high sanitation coverage occurs and correspondingly, in low water supply service coverage (Jaro, Mahaplag), low sanitation coverage 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, about 77% of the total households are served. A lower served household of 66% 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.

**Figure 4.2.1 Provincial Service Coverage of Household Toilet Facilities, 1998**

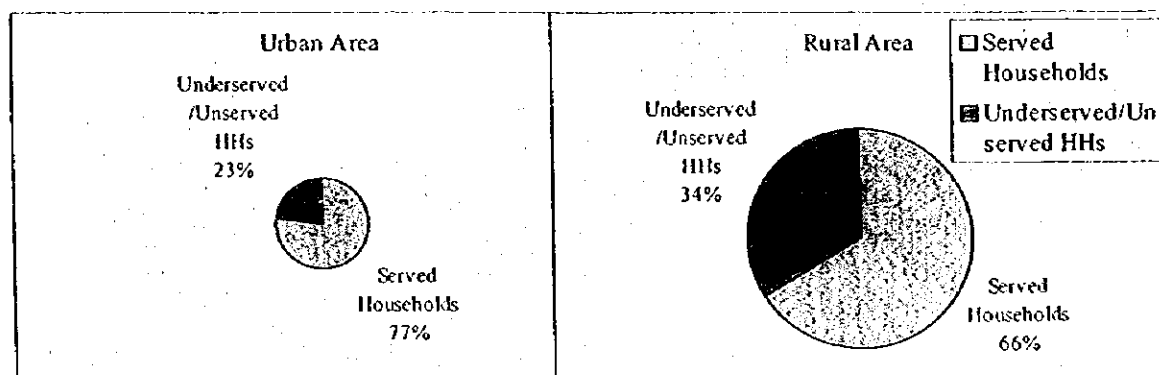


Table 4.2.1 Sanitation Facilities and Service Coverage of Household Toilets, Urban and Rural, 1998

Municipality	No. of Households, 1998			Household Toilet Facilities and Service Coverage											
	Urban	Rural	Total	Urban				Rural				Municipal Total			
				HHs Served by Sanitary Toilets		Underserved/Unservd HHs		HHs Served by Sanitary Toilets		Underserved/Unservd HHs		HHs Served by Sanitary Toilets		Underserved/Unservd HHs	
				Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs
Abuyog	2,669	7,322	9,991	2,264	85	405	15	4,508	62	2,814	38	6,772	68	3,219	32
Alangalang	2,019	6,232	8,251	1,922	95	97	5	3,513	56	2,719	41	5,135	66	2,816	31
Albuera	1,433	5,706	7,139	1,016	71	417	29	3,976	70	1,730	30	1,992	70	2,147	30
Bababgon	1,347	2,729	4,076	851	63	426	37	1,653	61	1,076	39	2,504	61	1,572	39
Barugo	1,173	3,937	5,110	940	80	233	20	1,866	47	2,071	53	2,806	55	2,304	45
Bato	1,452	4,652	6,104	1,409	97	43	3	2,658	57	1,994	43	4,067	67	2,037	33
Baybay	4,601	13,434	18,085	3,387	74	1,214	26	11,937	89	1,547	11	15,324	85	2,761	15
Buraoca	2,823	7,695	10,518	2,441	87	379	13	5,237	75	1,958	25	8,181	78	2,337	22
Calubian	106	7,032	7,138	63	59	43	41	4,061	58	2,971	42	4,124	58	3,014	42
Capococan	1,090	4,596	5,686	1,074	99	16	1	2,123	46	2,473	54	3,197	56	2,489	44
Canigara	2,450	6,501	8,981	1,934	78	546	22	3,261	50	3,240	50	5,195	58	3,786	42
Dagami	834	4,854	5,688	637	76	197	24	2,530	52	2,324	48	3,167	56	2,521	44
Dulag	4,667	2,564	7,231	4,655	100	12	0	2,164	84	400	16	6,819	94	412	6
Hilongos	1,683	8,639	10,322	1,652	98	31	2	6,748	78	1,891	22	8,400	81	1,922	19
Hindang	723	2,821	3,544	576	80	147	20	2,363	84	458	16	2,939	83	605	17
Inopacan	438	3,566	4,004	360	82	78	18	2,416	68	1,150	32	2,776	69	1,228	31
Isabel	2,827	5,248	8,075	2,271	80	556	20	3,799	72	1,449	28	6,070	75	2,005	25
Jaro	1,428	5,344	6,772	794	56	634	44	2,933	55	2,411	45	3,727	55	3,045	45
Javier (Bugho)	521	4,071	4,592	442	85	79	15	648	16	3,423	84	1,090	24	3,502	76
Julita	921	1,759	2,680	862	94	59	6	1,216	69	543	31	2,078	78	602	22
Kananga	1,381	6,833	8,234	1,171	85	210	15	4,347	63	2,506	37	5,518	67	2,716	33
La Paz	809	2,731	3,540	711	88	98	12	2,373	87	358	13	3,084	87	456	13
Leyte	697	5,905	6,602	644	92	53	8	4,571	77	1,334	23	5,215	79	1,387	21
Macarthur	624	2,992	3,616	494	79	130	21	2,272	76	720	24	2,766	76	850	24
Mahaplag	676	4,101	4,777	453	67	223	33	1,045	25	3,056	75	1,498	31	3,279	69
Matag-ob	796	2,965	3,761	509	64	287	36	2,364	80	601	20	2,873	76	888	24
Matalom	789	4,866	5,655	595	75	194	25	3,541	73	1,325	27	4,136	73	1,519	27
Mayorga	486	1,875	2,361	315	65	171	35	1,456	78	419	22	1,774	75	590	25
Merida	848	4,723	5,571	463	55	385	45	3,624	77	1,099	23	4,087	73	1,484	27
Palo	4,443	4,550	8,998	3,064	69	1,384	31	4,327	95	213	5	7,401	82	1,597	18
Palompon	2,463	8,972	11,435	2,343	95	120	5	6,287	70	2,685	30	8,630	75	2,805	25
Pastrana	527	2,348	2,875	502	95	25	5	2,105	90	243	10	2,607	91	268	9
San Isidro	1,173	6,520	7,693	706	60	457	40	4,185	64	2,335	36	4,891	64	2,802	36
San Miguel	638	2,275	2,913	558	87	80	13	1,419	62	856	38	1,977	68	936	32
Santa Fe	416	2,452	2,868	139	33	277	67	1,950	81	472	19	2,119	74	749	26
Tabango	1,000	5,659	6,659	652	65	343	35	2,669	47	2,990	53	3,321	50	3,338	50
Tabontabon	495	1,098	1,593	393	79	102	21	739	67	359	33	1,132	71	461	29
Tacloban City	31,099	3,749	34,848	22,149	71	9,957	32	273	7	2,463	66	22,422	64	12,420	36
Tanauan	2,860	5,810	8,670	2,513	88	347	12	3,839	67	1,921	33	6,402	74	2,268	26
Tolosa	335	2,586	2,921	266	79	69	21	1,783	69	803	31	2,049	70	872	30
Tunga	664	517	1,181	581	88	83	13	450	87	67	13	1,031	87	150	13
Villaba	638	6,804	7,442	352	55	286	45	4,651	68	2,153	32	5,003	67	2,439	33
Provincial Total	89,097	199,103	288,200	69,126	77	20,978	24	130,470	66	67,620	34	199,596	69	83,598	31

(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 4,499 toilet units found in 1,279 schools. Sanitary toilets adequately serve 57% of the students. The rest, 43% is underserved or unserved. Meanwhile, sanitary toilets adequately serve 58% 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 about 59 students per sanitary toilet, which is below 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 235 public toilets found in public markets, bus/jeepney terminals and parks/playgrounds in the province. About 99% of these public toilets is sanitary, while only 1% or 3 public toilets are considered unsanitary. 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.

#### 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.

Table 4.2.2 School Toilet Service Coverage by Municipality

Municipality/City		Number of School	Total No. of Student	Number of Toilet		Service Coverage			
				Sanitary	Unsanitary	Served	%	Unserved	%
Abuyog	Public	60	10,883	80		3,200	29	7,683	71
	Private	2	1,643	156		1,643	100		
	Total	62	12,526	236		4,843	39	7,683	61
Atangalang	Public	44	6,360	194		6,360	100		
	Private	2	360	14		360	100		
	Total	46	6,720	208		6,720	100		
Albuera	Public	23	8,307	102		4,050	49	4,227	51
	Private	1	280	2		80	29	200	71
	Total	24	8,587	104		4,160	48	4,427	52
Babatgon	Public	23	5,554	53		2,120	38	3,434	62
	Private	1	170	2		80	47	90	53
	Total	24	5,724	55		2,200	38	3,524	62
Barugo	Public	34	6,432	14		560	9	5,872	91
	Private	1	430	8		320	74	110	26
	Total	35	6,862	22		880	13	5,982	87
Bato	Public	25	7,767	108		4,320	56	3,447	44
	Private	1	544	14		544	100		
	Total	26	8,311	122		4,864	59	3,447	41
Baybay	Public	75	18,568	139		5,560	30	13,008	70
	Private	4	852	6		240	28	612	72
	Total	79	19,420	145		5,800	30	13,620	70
Burauen	Public	59	8,905	287		8,905	100		
	Private								
	Total	59	8,905	287		8,905	100		
Calubian	Public	28	6,064	139		5,560	92	504	8
	Private								
	Total	28	6,064	139		5,560	92	504	8
Capoecan	Public	23	5,876	103	18	4,320	74	1,556	26
	Private			46					
	Total	23	5,876	154	18	4,320	74	1,556	26
Carigara	Public	31	3,786	171		3,786	100		
	Private	1	958	2		80	8	878	92
	Total	32	4,744	173		3,866	81	878	19
Dagani	Public	37	6,150	144		5,760	94	390	6
	Private	1	435	1		40	9	395	91
	Total	38	6,585	145		5,800	88	785	12
Dulag	Public	40	2,503	196		2,503	100		
	Private								
	Total	40	2,503	196		2,503	100		
Hilongos	Public	46	7,925	168		6,720	85	1,205	15
	Private	1	253	8		253	100		
	Total	47	8,178	176		6,973	85	1,205	15
Hindang	Public	20	3,439	44		1,760	51	1,679	49
	Private	1	607	2		80	13	527	87
	Total	21	4,046	46		1,840	45	2,206	55
Inopocan	Public	23	4,172	83		3,520	84	652	16
	Private	1	201	50		201	100		
	Total	24	4,373	138		3,721	85	652	15
Isabel	Public	25	7,858	68		2,720	35	5,138	65
	Private	3	1,188	16		640	54	548	46
	Total	28	9,046	84		3,360	37	5,686	63
Jaro	Public	39	7,724	30		1,200	16	6,524	84
	Private	1	489	4		160	33	329	67
	Total	40	8,213	34		1,360	17	6,853	83
Javier (Bugho)	Public	24	4,182	104	7	4,160	99	22	1
	Private	2	374	4		160	43	214	57
	Total	26	4,556	108	7	4,320	95	236	5
Julita	Public	18	2,805	35	8	1,400	50	1,405	50
	Private								
	Total	18	2,805	35	8	1,400	50	1,405	50
Kananga	Public	24	8,630	72	2	2,880	33	5,750	67
	Private	2	637	6		240	38	397	62
	Total	26	9,267	78	2	3,120	34	6,147	66
La Paz	Public	29	4,768	90		3,600	76	1,168	24
	Private								
	Total	29	4,768	90		3,600	76	1,168	24

Table 4.2.2 School Toilet Service Coverage by Municipality

(cont'd)

Municipality/City	Number of School	Total No. of Student	Number of Toilet		Service Coverage				
			Sanitary	Unsanitary	Served	%	Unserved	%	
Leyte	Public	30	10,747	60	4	2,400	22	8,347	78
	Private								
	Total	30	10,747	60	4	2,400	22	8,347	78
Macarthur	Public	16	3,523	43		1,720	49	1,803	51
	Private								
	Total	16	3,523	43		1,720	49	1,803	51
Mahaplag	Public	29	5,809	28	16	1,120	19	4,689	81
	Private								
	Total	29	5,809	28	16	1,120	19	4,689	81
Matag-ob	Public	19	3,669	32		1,280	35	2,389	65
	Private								
	Total	19	3,669	32		1,280	35	2,389	65
Matalom	Public	30	6,312	108		4,320	68	1,992	32
	Private	1	488	2		80	16	408	84
	Total	31	6,800	110		4,400	65	2,400	35
Mayorga	Public	14	2,613	16	12	640	24	1,973	76
	Private								
	Total	14	2,613	16	12	640	24	1,973	76
Merida	Public	24	5,224	154		5,224	100		
	Private								
	Total	24	5,224	154		5,224	100		
Palo	Public	33	4,996	42		1,680	34	3,316	66
	Private	2	234					234	100
	Total	35	5,230	42		1,680	32	3,550	68
Palompon	Public	50	5,510	57		2,280	41	3,230	59
	Private	3	240	6		240	100		
	Total	53	5,750	63		2,520	44	3,230	56
Pastrana	Public	21	3,504	25		1,000	29	2,504	71
	Private								
	Total	21	3,504	25		1,000	29	2,504	71
San Isidro	Public	21	5,111	29		1,160	23	3,951	77
	Private	1	23	2		23	100		
	Total	22	5,134	31		1,183	23	3,951	77
San Miguel	Public	22	3,914	53		2,120	54	1,794	46
	Private	1	60	2		60	100		
	Total	23	3,974	55		2,180	55	1,794	45
Santa Fe	Public	15	3,468	48		1,920	55	1,548	45
	Private								
	Total	15	3,468	48		1,920	55	1,548	45
Tabango	Public	27	6,733	271		6,733	100		
	Private								
	Total	27	6,733	271		6,733	100		
Tabontabon	Public	12	1,974	38	4	1,520	77	454	23
	Private								
	Total	12	1,974	38	4	1,520	77	454	23
Tacloban City (Capital)	Public	37	6,150	144		5,760	94	390	6
	Private	14	2,613	16		640	24	1,973	76
	Total	51	8,763	160		6,400	73	2,363	27
Tausan	Public	30	6,367	180		6,367	100		
	Private	1	389	6		240	62	149	38
	Total	31	6,756	186		6,607	98	149	2
Tolosa	Public	14	3,868	87		3,480	90	388	10
	Private								
	Total	14	3,868	87		3,480	90	388	10
Tunga	Public	5	2,406	58		2,320	96	86	4
	Private								
	Total	5	2,406	58		2,320	96	86	4
Villaba	Public	30	6,855	139		5,560	81	1,295	19
	Private	2	1,359	7		280	21	1,079	79
	Total	32	8,214	146		5,840	71	2,374	29
Provincial Total	Public	1,229	247,411	4,046	71	143,598	58	103,813	42
	Private	50	14,827	382		6,684	45	8,143	55
	Total	1,279	262,238	4,428	71	150,282	57	111,956	43



Table 4.2.3 Public Toilet Facilities and Service Coverage in 1998

Municipality/City	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/Playground		Number of Sanitary Toilet	%	Number of Unsanitary Toilet	%
Abuyog	2	3	12				17	17	100		
Alangalang	3						3	3	100		
Albuera	2						2	2	100		
Babangon	1	1	2				4	4	100		
Barugo	2	1					3	3	100		
Bato	3						3	3	100		
Baybay	6	2	5				13	13	100		
Burauen	2						2	2	100		
Calabian	1		1				2	2	100		
Capococan											
Carigara	4						4	4	100		
Dugami	1						1	1	100		
Dufag	1	1					2	2	100		
Hilongos	3		11				14	14	100		
Hindang	3		2				5	5	100		
Inopacan	2						2	2	100		
Isabel	1	1	1	1			4	3	75	1	25
Jaro	1						1	1	100		
Javier (Bugho)	2						2	2	100		
Jubita											
Kananga	3	3	17			2	25	23	92	2	8
La Paz	1	1	6				8	8	100		
Leyte	1	1					2	2	100		
McCarthy	2						2	2	100		
Mahaplag	1	1					2	2	100		
Matag-ob	1	1					2	2	100		
Matalom	2						2	2	100		
Mayorga	1						1	1	100		
Merida	5						5	5	100		
Palo	1						1	1	100		
Palompon			53				53	53	100		
Pastrana	2	2					4	4	100		
San Isidro	1		16				17	17	100		
San Miguel	1						1	1	100		
Santa Fe	1						1	1	100		
Tabango		2					2	2	100		
Tabontabon	1						1	1	100		
Tacloban City (Capital)	4	2	2				8	8	100		
Tanauan	4		1				5	5	100		
Tolosa	1						1	1	100		
Tunga	1						1	1	100		
Villaba	5	1	1				7	7	100		
<b>Provincial Total</b>	<b>79</b>	<b>23</b>	<b>130</b>	<b>1</b>		<b>2</b>	<b>235</b>	<b>232</b>	<b>99</b>	<b>3</b>	<b>1</b>

Chapter

5

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**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 administering 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.

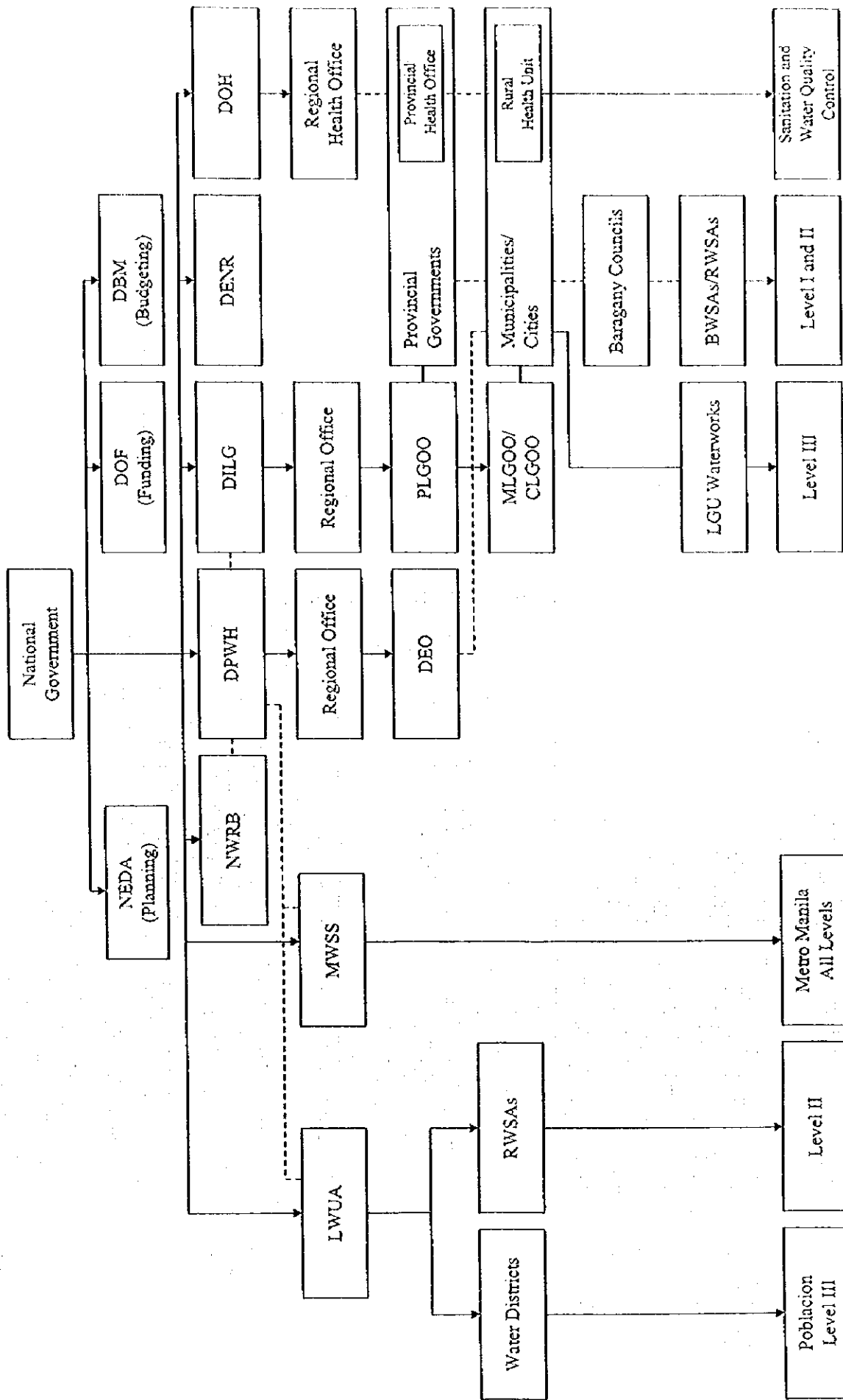


Figure 5.3.1 Functional Relationships

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**

Activity	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, availing these funds are regulated with conditions, e.g., from zero to 50 percent of development costs will be subsidized but limited only to Level I systems for 5<sup>th</sup> and 6<sup>th</sup> 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 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 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 Planning 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 its diminishing 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 the 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's 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 Sangguniang Panlalawigan, as a legislative body of the province, enacts ordinances, approves resolutions and appropriates funds for general welfare of the province and its inhabitants. It approves ordinances which ensure the efficient and effective delivery of the basic services 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 the provincial government directly involved in WATSAN activities, are the Provincial Planning and Development Office (PPDO), the Provincial Engineering Office (PEO), the Provincial Health Office (PHO). Other administrative offices are 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 integrated economic, social, physical, and other development plans and policies for the consideration of the Provincial Development Council. It looks into the income and expenditure pattern of the province for consideration of the Local Finance Committee. It serves as the Secretariat of the Provincial Development Council, the Babatngon Port Development Task Force, the Local Finance Committee and other special committees. This office is composed of

the following sections (refer to Figure 5.5.1, Supporting Report for the organizational structure):

- **Administrative Section** -- The function is to provide efficient administrative support services to the Technical Staff. It has 10 plantilla positions, one of which is detailed to the Office of the Governor. One casual employee is in this section.
- **Technical Section** - The section is composed of 11 plantilla positions, one of which is vacant. The staff of 10 persons is augmented by four permanent appointed employees and one casual employee of other provincial offices who are detailed to the PPDO. The section is responsible for project development, coordination and monitoring of foreign-funded programs (UNICEF, CPCIV, USAID LPP) and secretariat work for the Governor's development-oriented activities.

## 2) Provincial Engineer's Office (PEO)

This office is responsible for administrating, coordinating, supervising and controlling the construction, maintenance, improvement and repair of roads, bridges and other engineering and public projects of the province. It is also the responsibility of the PEO to extend technical assistance and advice to the municipalities as well as barangays of the province in planning, construction and repairs of infrastructure. The office has four divisions: i) Administrative, ii) Planning Architectural Design, Statistical & Programming, iii) Construction, Maintenance & Improvement, and iv) Equipment Pool (refer to Figure 5.5.2, Supporting Report for the organizational structure). The responsibilities of these units are shown below:

- **Planning Architectural Design Statistical & Programming Division** -- The division is responsible for formulating and integrating infrastructure plans, programs and projects of the provincial government which involve construction works. It also conducts designing, planning and programming of provincial/national projects assigned to the PEO. Twenty-five (25) staff members man the division.
- **Construction, Maintenance & Improvement Division** -- This division's function is to provide overall technical supervision of activities related to the maintenance of roads and 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 total staff component of 61 regular employees and about 100 casual workers.
- **Equipment Pool Division** -- This division maintains heavy equipment including drilling rig, light equipment and other vehicles all in running conditions. The division also facilitates the dispatch of equipment to respective area of assignment/project. There are 58 personnel in this division.

3) Provincial Health Office (PHO)

The provision of health services to the people in the province is both preventive and curative. The organizational set up and services accountability have been divided into: field operations which is under the supervision of the Provincial Health Officer; and hospital services which is under the Chief of Hospitals. The PHO provides technical assistance to rural health units (RHUs) and to barangay health stations (BHSSs). It also assists in the promotion and maintenance of public sanitation to include prevention and monitoring of water-borne-related diseases. The office also conducts field health information campaigns and renders health intelligence services. There are nine (9) district hospitals operated by the province. These are located in Palo, Abuyog, Baybay, Hilongos, Carigara, Burauen, Calubian, Palompon and Ormoc City. The major services offered include administrative, medical, nursery, ancillary and dietary. Apart from district hospitals, the province also operated five (5) ten-bed Community hospitals in Tabango, Villaba, Matalom, Babatngon and Kananga (refer to Figure 5.5.2, Supporting Report for the organizational structure)

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

The PGO provides, through the Barangay Affairs Office, direct fund assistance to barangays in implementing barangay projects, which may include WATSAN facilities. The PGO's assistance comes in upon request of the barangay whose request cannot be considered by the municipal government. The Barangay Affairs Office under the PGO has 5 licensed civil engineers that plans, designs and coordinates the implementation of barangay projects.

The PTO is the custodian and manager of the funds of the province. It takes charge of the disbursement of all and such other funds the custody of which may be entrusted to the province by law or other competent authority. It collects other fees and charges. 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 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 provincial government. It coordinates budget concerns with the treasurer, the accountant, and the planning and development coordinator. It also provides prompt 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 reviews financial transactions in accordance with existing auditing rules and regulations and recommends measures to improve the utilization of government funds and properties. The quality control function has been relegated to this office to ensure that transactions involving quality control are met.

The PGSO formulates measures for consideration of the Sangguniang Panlalawigan and provides technical assistance to the Governor in carrying out measures to ensure the delivery of basic services and provision of adequate facilities, which require general serves expertise and technical support services. It is responsible for the acquisition/ procurement of supplies and materials as identified in the overall procurement fiscal plan. It collates and disseminates information on prices, shipping and other costs of supplies and other items commonly used by the provincial government.

#### 5) Provincial Development Council

Each local unit shall have a comprehensive multi-sectoral development plan to be initiated by its development council and approved by its Sanggunian. For this purpose, the development council at the provincial, municipal, city or barangay levels assist the corresponding Sanggunian in setting the direction of economic and social development, coordinating development efforts within its territorial jurisdiction.

### (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 tasked to formulate and integrated economic, social and physical development plan for the consideration of the Municipal Development Council (MDC). It is also mandated to monitor and evaluate the implementation of different development programs and activities in the municipality. The regular activities of MPDO include: preparation of the municipal comprehensive plans and other planning documents; assessment, monitoring and evaluation of different projects of the municipal government; and assistance in the integration and coordination of all sectoral plans.

The MEO is responsible for the administration, coordination, and the supervision of all construction, repair and maintenance of public works in the municipality. It initiated, reviews and recommends innovation in policies and objectives, plans, programs, techniques, procedures and practices in infrastructure development, including zoning policies in the municipality. It performs engineering surveys to gather data for designs, layout or construction of waterworks system sanitation facilities, and other infrastructure projects.

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 with the Supervising Sanitary Inspector of the province.

## 2) Barangay

The LGC has designated barangays as independent units of local government. The Barangay Council (BC) acts as a legislative body of the barangay. The barangays receive their shares in the IRA from the National Government. Apart from this, 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 the inhabitants. 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) District Engineer's Office (DEO) of DPWH

There are five (5) DEOs 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 some DEOs.

2) **DILG Provincial/Municipal/City Offices**

The Provincial Director and the Municipal/City Local Government Operation Officer belong to DILG, and are tasked to provide general administration and institution-building support to LGUs and other government agencies to strengthen their capacity to deliver basic services.

3) **NEDA Regional Office and Regional Development Council**

Various public and private sector organizations coordinate with NEDA to establish the system for regional sector master planning and the monitoring system thereof. The NEDA Regional Office acts as Secretariat of the Regional Development Council and ensures that sector plans are consistent with regional and national priorities. The office requires project proposals/plans and programs of the province needing technical and funding assistance from national government and foreign institutions to be approved and endorsed by the Provincial Development Council.

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 Operating Bodies**

1) **Barangay Waterworks and Sanitation Associations (BWSAs)**

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 water supply facilities. They are also responsible for setting up their own financial contributions through collection of monthly dues for the operation and maintenance of the system. The BWSA's organizational size depends 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 bookkeeper, and caretaker/s.



In 1998, through CPC IV, BWSAs have been organized (32 BWSAs were formed in 8 municipalities - 4 barangay each). Also, during 1997 - 1999, Level I and II have been implemented in 29 municipalities (class 5<sup>th</sup> & 6<sup>th</sup>) of Leyte province under PAF-II. In this implementation, 10% of the total cost as counterpart from the respective municipality was required (90% from PAF II).

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 vis-a-vis 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. Presently, eleven (11) WDs are supplying water to their franchise areas of the province through Level III systems.

3) LGU waterworks

In the province, ten (10) municipal LGU waterworks are distributing water through Level III water supply systems to the residents and establishments in the municipal urban areas outside of WD franchise areas. All these LGU waterworks belong to a certain office of the municipality and the operation and maintenance of facilities are being carried out by municipal employees. All these waterworks are collecting fees from water users for facility operation and maintenance.

(5) Private Sector

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) World Bank

The World Bank supported the First Water Supply, Sewerage and Sanitation Sector Project or FW4SP. This project provided capital funds for rural water supply system in Luzon provinces and sanitation system nationwide based on completed provincial master

plans. 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. The project concept called for a community-based approach through BWSAs. For the province, this project provided capability building and skills training to Rural Sanitary Inspectors. Also, plastic toilet bowls were allocated to municipalities to include chlorine for water treatment. Meanwhile, the Water for Life Project was implemented in selected municipalities who were able to submit plans on water-related concerns for construction of water facilities.

(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).

With an assistance from UNICEF, the Fourth Country Program for Children (CPC IV) through the provincial government of Leyte, implemented water and sanitation projects by way of constructing 12 units of ferro-cement rainwater tank collectors in Palo, Leyte, Carigara, San Miguel, Mayorga, Barugo, Calubian, San Isidro, Tunga, Tabanga, Jaro and Baybay, and spring development projects in the municipalities of Javier and Jaro. Also, construction of the model Ventilated Improved Pit (VIP) latrines in barangays where water is scarce was undertaken. During skills training on BWSA and other WATSAN-related activities, a hands-on training for the construction of sanitary toilets was done. The UNICEF likewise distributed other supplies and materials such as 5,000 PHC bottles; bags of cement; 14 moulders and repair kits to all the 41 municipalities of Leyte province.

Other external agencies' activities on WATSAN projects are shown in the Supporting Report. And the terms and conditions, priority areas, programs and projects by donor are shown in Table 5.6.1, Supporting Report.