

#### 4.1.3 Level III Systems

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

There are 32 Level III systems covering 26 municipalities/cities 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:

- 17 Water Districts covering 17 municipalities/cities of Bago, Binababagan, Cadiz, Escalante, Himamaylan, Hinigaran, Ilog, Kabankalan, La Carlota, La Castellana, Manapla, Pontevedra, Sagay, Silay, Talisay, Valladolid and Victorias;
- 8 Municipal waterworks in the municipalities/cities of Calatrava, Enrique B. Magalona, Moises Padilla, Murcia, Pulpandan, San Carlos, Sipalay and Toboso;
- 7 systems operated by associations in the municipalities/cities of Cadiz, Cauayan, Escalante and Sagay.

Cadiz City Water District (CCWD) is the largest system excluding Bacolod City WD (out of study area of PW4SP) in the province, covering 6 urban barangays with served population of about 33,300 including beneficiaries using communal faucets. Water source of the WD is a combination of spring and deep well. Apart from WD, there are two (2) small Level III systems operated by associations in Cadiz City. They cover 2 rural barangays with total served population of 3,500 including Level II users in provision of deep well sources.

Following CCDC is San Carlos City Waterworks, the second largest system in the province. The WD adopts a combined system with 455 communal faucets and covers 6 urban and 4 rural barangays with served population of about 27,500 broken down into 14,400 for individual house connections and 13,100 for communal faucets. Water source is a combination of spring and deep well.

La Carlota City WD is the third largest system, covering 4 urban and 6 rural barangays with served population of about 26,000 and its water source is a combination of spring and deep well.

Some municipalities/cities such as Binalbagan, Calatrava, Himamaylan, Kabankalan, Pontevedra, Sagay, Silay and Victorias have systems of which their served population ranges from about 10,000 to 20,000.

Likewise, the other municipalities/cities have Level III systems managed by WDs or LGUs, with their served population ranging from about 900 to 8,300 in provision of deep well and/or spring sources. These municipalities/cities are Bago, Cauayan, Enrique B. Magalona, Escante, Hinigaran, Ilog, La Castellana, Manapla, Moises Padilla, Murcia, Pulpandan, Sipalay, Talisay, Toboso and Valladolid.

Generally, waterworks with spring sources are simply managed without higher expertise needed and in provision of lower water charges.

Some Level-III systems, among the above, practice scheduled water supply (intermittent water supply) due to insufficient water source capacity. Even in case of enough water sources, intermittent water supply is forced due to insufficient capacity of the facilities (distribution pipe) against current water demand. Concerned municipalities/cities relevant to the problem are Cadiz, Calatrava, Toboso and Valladolid. Lack of due consideration in D/D stage for expansion of the system was also observed.

All waterworks has O&M staff (engineer/technician/plumber/water fee collector) and practice chlorination. They have ensured budget for O&M cost, but the income is insufficient for expansion of the system.

The other 5 municipalities such as Candoni, Hinoba-an, Isabela, Salvador Benedicto and San Enrique 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
Bago City	Bago City WD	DW/SP			2	3	5	954	204	1,158	5,724	1,224	6,948
Binalbagan	Binalbagan WD	DW	1,511	91	5	4	9	1,280	869	2,149	7,680	5,214	12,894
Cadiz City	Cadiz City WD	DW/SP	1,203	94	6		6	6,553		6,553	32,767		32,767
	Cadiz City WW	DW	5	100		1	1		306	306		1,500	1,500
	Cadiz City WWS	DW	5	100		1	1		300	300		1,500	1,500
	Municipal Total	DW/SP	1,213	94	6	2	8	6,553	606	7,159	32,767	3,000	35,767
Calatrava	Calatrava WS	SP	133	100	4	1	5	2,135	391	2,526	10,269	2,346	12,615
Cauayan	Laa Water Assn.	SP				1	1		150	150		900	900
Enrique B.	EBM Waterworks	DW	533	100	3	1	4	700	70	770	3,500	350	3,850
Escalante	Escalante WD	DgW/SP	2,535	20	1	5	6	794	220	1,014	4,764	1,320	6,084
	Escalante WW	DW/SP	157	100	1		1	146		146	759		759
	Municipal Total	DW/SP	2,692	24	2	5	7	940	220	1,160	5,523	1,320	6,843
Himamaylan	Himamaylan WD	DW	1,297	90	4	15	19	831	797	1,628	4,986	4,782	9,768
Hinigaran	Hinigaran WD	DW	292	85	4	20	24	158	357	515	948	2,142	3,090
Ilog	Ilog WD	SP			1		1	200		200	1,200		1,200
Kabankalan	Kabankalan City	DW/SP	1,624	85	1	12	13	30	2,297	2,327	180	13,782	13,962
La Carlota City	La Carlota City WD	DW/SP	3,500	100	4	6	10	2,770	1,560	4,330	16,620	9,360	25,980

Table 4.1.2 Information on Existing Level III System

(cont'd)

Name of Municipality/ City	Name of Operating Body	Water Consumption			Service Coverage								
		Type of Water Source	Water Consumption	Domestic Supply (%)	No. of Brgys. Served			No. of Household Served			No. of Population Served		
					Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
La Castellana	La Castellana WD	SP	919	100	1		1	493		493	2,958		2,958
Manapla	Manapla WD	DW	457	100	5		5	713		713	4,278		4,278
Moises Padilla	Moises Padilla	SP	495	81	7		7	476		476	2,445		2,445
Murcia	Murcia WW	DW/SP			5	1	6	1,339	148	1,487	6,982	888	7,870
Pontevedra	Pontevedra WD	SP	40	25	3	3	6	1,306	756	2,062	7,837	4,534	12,371
Pulupandan	Pulupandan WW				8	4	12	214	127	341	1,284	762	2,046
Sagay City	Lopez Sugar Corp.	DW	1,054	100	1		1	191		191	1,224		1,224
	Phil-Sagay WS	DW	168	100	1		1	160		160	1,290		1,290
	Sagay Central Inc.	DW/SP	393	100		1	1		213	213		2,104	2,104
	Sagay WD	DW/SP	4,134	50	4	7	11	2,038	1,084	3,122	10,516	5,593	16,109
	Municipal Total	DW/SP	5,749	64	6	8	14	2,389	1,297	3,686	13,030	7,697	20,727
San Carlos City	SCC Waterworks	DW/SP	2,907	100	6	4	10	2,520	200	2,720	13,585	770	14,355
Silay City	Silay City WD	DW	2,167	94	7	2	9	2,778	561	3,339	14,445	2,917	17,362
Sipalay	Sipalay WW	SP	145	93	4	1	5	235	49	284	1,410	294	1,704
Talisay City	Talisay WD	DW	792		14	1	15	1,370	7	1,377	8,220	42	8,262
Toboso	LGU-Toboso	SP	22		1	2	3	159	156	315	954	936	1,890
Valladolid	Valladolid WD	DW	117	100	1		1	318		318	1,610		1,610
Victorias City	Victorias WD	DW	2,415	100	9	3	12	2,400	580	2,980	14,400	3,480	17,880
Provincial Total			29,020	80	113	99	212	33,261	11,402	44,663	182,835	66,740	249,575

Note: 1. Type of Water Source: DW - Deep Well, Surf. - Surface Water (River), SP - Spring, IG - Infiltration Gallery.  
2. \* - Estimated at 100 lpcd.

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		
Bago City WD	1,158				1,158	1,158	34,710	
Binalbagan WD	2,056	32	118		2,206	2,206	55,740	45,330
Cadiz City WD	1,791		134		1,925	1,925	48,540	36,090
Escalante WD	1,014	6	50		1,070	1,070	35,160	76,050
Himamaylan WD	1,650	19	20	3	1,692	1,686	71,880	38,910
Hinigaran WD	516	3		1	520	520	30,660	8,760
Ilog WD	280				280	200	4,200	
Kabankalan City WD	2,040	32	235		2,307	2,307	108,000	48,720
La Carlota City WD	4,330				4,330	4,330	275,610	105,000
La Castellana WD	495	2	1		498	496	32,400	27,570
Manapla WD	713		17		730	730	11,760	13,710
Pontevedra WD	350	4	10	1	365	355		1,200
Sagay WD	2,945		177		3,122	3,122	104,520	124,020
Silay City WD	3,238	37	201		3,476	3,476	91,200	65,010
Talisay WD	1,176		62		1,238	1,238	65,100	23,760
Valladolid WD	318	4			322	322		3,510
Victorias WD	2,783		75		2,858	2,848	112,800	72,450

#### 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) encouraging the use of spring sources and are operated by LGUs or RWSAs.

There are total of 230 Level II systems in 27 municipalities/cities in the province. The majority is utilizing spring sources (198 systems), while 32 systems use deep/dug wells (details are referred to in Table 4.1.2, Supporting Report). The municipality of San Carlos City has the largest number, 44 systems or 19% of the total as shown in Table 4.1.4 together with service coverage in 1998.

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

**(1) Management practice**

Level II systems using electric pump impose water rates ranging from ₱60 to 200/HH/month as flat rate or ₱15/cu.m, while the rest using spring sources supplies water with flat rate (5 to 10/HH/month) or free of charge. Regarding repair works, some waterworks collects required money from beneficiaries and hire local contractor. Others request to barangay officials for assistance (details are referred to Supporting Report). This fact shows that that 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, while 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**

Most of Level II systems using electric pump practice scheduled water supply (2 to 12 hours a day) due to insufficient water source/capacity of the facilities or inability of full payment of electric charge. Technical problems are mainly caused by order-less expansion or tapping of additional communal faucets without due considerations, resulted in insufficient water flow/ reduction of water pressure.

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.

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				
Bago City	Barong Spring Dev.													
	Haroy Spring Dev.		1	1		40	40		200	200				
	Ilijan Spring Dev.		1	1		50	50		250	250				
	Libertad Spring Dev.		1	1		50	50		250	250				
	Limbo Spring Dev.		1	1		150	150		750	750				
	Louisiana Spring Dev.	1		1		25	25		125	125				
	Lunao Spring Dev.		1	1		90	90		450	450				
	Mailum Spring Dev.		1	1		250	250		1,250	1,250				
	Manghumay Spring													
	Manokan Spring Dev.		1	1		50	50		250	250				
	Monte Carlo Spring		1	1		115	115		575	575				
	Nalup-an Spring Dev.		1	1		50	50		250	250				
	Santo Niño Spring Dev.		1	1		150	150		750	750				
	Tabucol Spring Dev.		1	1		100	100		500	500				
	<b>Municipal Total</b>	<b>1</b>	<b>11</b>	<b>12</b>		<b>1,120</b>	<b>1,120</b>		<b>5,600</b>	<b>5,600</b>				
	Cadiz City	C. Villacin		1	1		30	30		150	150			
		Daga		1	1		50	50		250	250			
Luna			1	1		5	5		25	25				
Magsaysay			1	1		70	70		350	350				
<b>Municipal Total</b>		<b>4</b>	<b>4</b>	<b>4</b>		<b>155</b>	<b>155</b>		<b>775</b>	<b>775</b>				
Calatrava	Ani-e SD		1	1		50	50		250	250				
	Cabungahan SD		1	1		35	35		175	175				
	Castellano Proper	1		1		35	35		175	175				
	Ilaya		1	1		40	40		200	200				
	Lalong SD		1	1		40	40		200	200				
	Lemery		1	1		80	80		400	400				
	Lipat-on		1	1		90	90		450	450				
	Minapasuk SD		1	1		30	30		150	150				
	Paghumayan		1	1		25	25		125	125				
	Refugio WS		1	1		25	25		125	125				
	San Benito		1	1		25	25		125	125				
	Telim		1	1		25	25		125	125				
	<b>Municipal Total</b>	<b>1</b>	<b>11</b>	<b>12</b>		<b>500</b>	<b>500</b>		<b>2,500</b>	<b>2,500</b>				
	Candoni	Banga WS		1	1		70	70		350	350			
		Cabia-an BWSA		1	1		25	25		125	125			
Caningay WS			1	1		100	100		500	500				
Gatuslao BWSA			1	1		50	50		250	250				
Gatuslao Proper SD						10	10		50	50				
Haba WS			1	1		125	125		625	625				
Payawan BWSA			1	1		25	25		125	125				
Pob. East Water Assn.		1		1		40	40		200	200				
Pob. West Water Assn.		1		1		25	25		125	125				
<b>Municipal Total</b>		<b>2</b>	<b>6</b>	<b>8</b>		<b>65</b>	<b>405</b>	<b>470</b>	<b>325</b>	<b>2,025</b>	<b>2,350</b>			
Cauayan	Abaca Proper		1	1		45	45		225	225				
	Abaca Spring Dev.		1	1		45	45		225	225				
	Baclao Spring Dev.		1	1		25	25		125	125				
	Basak Spring Dev.		1	1		155	155		775	775				
	Bulata Spring Dev.		1	1		50	50		250	250				
	Caliling (Luyakan SD)	1		1		60	60		300	300				
	Caliling BWSA	1		1		150	150		750	750				
	Camalanda-an Spring	1		1		55	55		275	275				
	Elihan		1	1		75	75		375	375				
	Inayawan BWSA	1		1		250	250		1,250	1,250				
	Isio Spring Dev.	1		1		50	50		250	250				
	Lina-on Phase I		1	1		60	60		300	300				
	Lina-on Phase II		1	1		50	50		250	250				
	Lina-on Spring Dev.		1	1		175	175		875	875				
	Mambugsay WS		1	1		50	50		250	250				
	Masaling BWSA	1		1		125	125		625	625				
	Molobolo Spring Dev.		1	1		125	125		625	625				
	Tomina Spring Dev.		1	1		45	45		225	225				
	Tuyom Spring Dev.	1		1		200	200		1,000	1,000				
	Yao-yao Spring Dev.					140	140		700	700				
	<b>Municipal Total</b>	<b>7</b>	<b>12</b>	<b>19</b>		<b>890</b>	<b>1,040</b>	<b>1,930</b>	<b>4,450</b>	<b>5,200</b>	<b>9,650</b>			
Escalante	Dolding Limas (Pvt.)		1	1		10	10		50	50				
	Hacienda Fe WS		1	1		45	45		225	225				
	Hacienda Javellana		1	1		25	25		125	125				
	Mabini WS		1	1		40	40		200	200				

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	
Escalante	Old Mabini WS		1	1		20	20		100	100	
	Old Poblacion WWSA	1		1	25		25		125	125	
	Pinapugasan WS		1	1		30	30		150	150	
	Urbasa WS		1	1		45	45		225	225	
	<b>Municipal Total</b>	<b>1</b>	<b>7</b>	<b>8</b>	<b>25</b>	<b>215</b>	<b>240</b>		<b>1,200</b>	<b>1,200</b>	
Himamaylan	Aguisan	1		1	85		85	425		425	
	Caradio-an		1	1		170	170		850	850	
	Libacao WS		1	1		40	40		200	200	
	Nabali-an		1	1		260	260		1,300	1,300	
	San Antonio WS		1	1		85	85		425	425	
	Saraet		1	1		125	125		625	625	
	Suay WS	1		1	25		25	125		125	
	<b>Municipal Total</b>	<b>2</b>	<b>5</b>	<b>7</b>	<b>110</b>	<b>680</b>	<b>790</b>	<b>550</b>	<b>3,400</b>	<b>3,950</b>	
Hinigaran	Aranda WS		1	1		200	200		1,000	1,000	
Hinoba-an (Asia)	Alim		1	1		50	50		250	250	
	Bacuyangan Spring	1		1	35		35	175		175	
	Bulwangan Spring Dev.		1	1		125	125		625	625	
	Damutan Spring Dev.		1	1		25	25		125	125	
	Spur 3 Spring Dev.		1	1		25	25		125	125	
	Talacagay Spring Dev.		1	1		125	125		625	625	
	<b>Municipal Total</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>35</b>	<b>350</b>	<b>385</b>	<b>175</b>	<b>1,750</b>	<b>1,925</b>	
Ilog	Calubang WSA		1	1		40	40		200	200	
	Delicioso BWSA		1	1		85	85		425	425	
	<b>Municipal Total</b>		<b>2</b>	<b>2</b>		<b>125</b>	<b>125</b>		<b>625</b>	<b>625</b>	
Isabela	Amin WS		1	1		40	40		200	200	
	Bulad WS		1	1		65	65		325	325	
	Cabcab WS		1	1		35	35		175	175	
	Camp Clark		1	1		35	35		175	175	
	Cansalongon		1	1		105	105		525	525	
	Libas WS		1	1		15	15		75	75	
	Limalima		1	1		110	110		550	550	
	Makilignit WS		1	1		15	15		75	75	
	Mangablay WS		1	1		40	40		200	200	
	Mansablay, Calasag WS		1	1		60	60		300	300	
	Maytubig WS		1	1		125	125		625	625	
	Riverside WS		1	1		105	105		525	525	
	Rumirang WS		1	1		215	215		1,075	1,075	
	San Agustin WS		1	1		170	170		850	850	
	Sebucawan WS		1	1		30	30		150	150	
	Sikatuna		1	1		25	25		125	125	
	<b>Municipal Total</b>		<b>16</b>	<b>16</b>		<b>1,190</b>	<b>1,190</b>		<b>5,950</b>	<b>5,950</b>	
Kabankalan City	Bantayan BWSA	1		1	25		25	125		125	
	Binicuil BWSA	1		1	50		50	250		250	
	Camingawan (Ma-		1	1		25	25		125	125	
	Camingawan (Noac)		1	1		50	50		250	250	
	Carol-an BWSA		1	1		25	25		125	125	
	Daan Banwa BWSA		1	1		75	75		375	375	
	Hinapunan & Malana		1	1		50	50		250	250	
	Locotan BWSA		1	1		25	25		125	125	
	Magballo BWSA		1	1		25	25		125	125	
	Oringao (Bolicao &		1	1		125	125		625	625	
	Oringao (Bunga &		1	1		10	10		50	50	
	Oringao Water Con-		1	1		150	150		750	750	
	Orong		1	1		375	375		1,875	1,875	
	Salong BWSA		1	1		25	25		125	125	
	Tagukon BWSA		1	1		75	75		375	375	
	Tampalon WS		1	1		100	100		500	500	
	Tan-awan BWSA		1	1		25	25		125	125	
	<b>Municipal Total</b>	<b>2</b>	<b>15</b>	<b>17</b>	<b>75</b>	<b>1,160</b>	<b>1,235</b>	<b>375</b>	<b>5,800</b>	<b>6,175</b>	
	La Carlota City	Balabag WS		1	1		200	200		1,000	1,000
		Brgy. II WS	1		1	10		10	50		50
Yubo WS			1	1		100	100		500	500	
<b>Municipal Total</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>10</b>	<b>300</b>	<b>310</b>	<b>50</b>	<b>1,500</b>	<b>1,550</b>		
La Castellana	Biaknabato WS		1	1		40	40		200	200	
	Biaknabato (So. Calap-		1	1		10	10		50	50	
	Camandag WS		1	1		75	75		375	375	
	Manganoy WS		1	1		25	25		125	125	
	Mansalanao WS		1	1		30	30		150	150	
	Sag-ang WS		1	1		20	20		100	100	
<b>Municipal Total</b>		<b>6</b>	<b>6</b>		<b>200</b>	<b>200</b>		<b>1,000</b>	<b>1,000</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	
La Castellana	Sax-ang, Had. Agustina					10	10			50	50
	<b>Municipal Total</b>		5	5		265	265			1,325	1,325
Manapla	Chambery		1	1		100	100			500	500
	Punta Salong (Brgy.		1	1		75	75			375	375
	Punta Salong (Hda.		1	1		30	30			150	150
	Punta Salong (Magsico)		1	1		25	25			125	125
	<b>Municipal Total</b>		4	4		230	230			1,150	1,150
Moises Padilla	Guinpana-an WS	1		1	30		30	150			150
	Inolingan WS		1	1		40	40			200	200
	Macagahay WS		1	1		15	15			75	75
	Magallon Cadre WS		1	1		25	25			125	125
	Quintin Remo WS		1	1		10	10			50	50
	Quintin Remo, Lower					45	45			225	225
	Quintin Remo, So.					35	35			175	175
	Quintin Remo, So.					20	20			100	100
	Quintin Remo, Upper					25	25			125	125
	<b>Municipal Total</b>	1	4	5	30	215	245	150		1,075	1,225
Murcia	Alegria WS		1	1		20	20			100	100
	Amayco WS		1	1		35	35			175	175
	Amayco WS (So. Ili-					20	20			100	100
	Caliban WS		1	1		100	100			500	500
	Canlandog		1	1		60	60			300	300
	Minoyan WS		1	1		40	40			200	200
	Pandanon-Silos		1	1		200	200			1,000	1,000
	San Miguel		1	1		300	300			1,500	1,500
	Santa Rosa Spring Dev.		1	1		115	115			575	575
	Santa Rosa (New Site)					15	15			75	75
	Zone 1 Spring Dev.	1		1	25		25	125			125
	<b>Municipal Total</b>	1	7	8	25	885	910	125		4,425	4,550
	Pontevedra	Burgos WS		1	1		15	15			75
Mabini WS			1	1		40	40			200	200
Zamora WS			1	1		30	30			150	150
<b>Municipal Total</b>			3	3		85	85			425	425
Sagay City	Lopez Jaena		1	1		35	35			175	175
	Lopez Jaena Water		1	1		20	20			100	100
	Puey Spring Dev.		1	1		30	30			150	150
	<b>Municipal Total</b>		3	3		85	85			425	425
Salvador Benedicto	Bago WS		1	1		40	40			200	200
	Bagong Silang Spring		1	1		100	100			500	500
	Bunga		1	1		330	330			1,650	1,650
	Igmaya-an WS		1	1		50	50			250	250
	Kumaliki		1	1		250	250			1,250	1,250
	Pandanon WS		1	1		60	60			300	300
	Pandanon WS (So.					10	10			50	50
	Pinowayan Spring Dev.		1	1		40	40			200	200
	<b>Municipal Total</b>		7	7		880	880			4,400	4,400
San Carlos City	Bagonbon (So. Bat-		1	1		10	10			50	50
	Bagonbon (So.					10	10			50	50
	Bagonbon (So. Mabu-					20	20			100	100
	Bagonbon (So.					15	15			75	75
	Bagonbon (So. Mu-					10	10			50	50
	Bagonbon (So. Pag-					10	10			50	50
	Bagonbon (So. Walos)					10	10			50	50
	Bagonbon (So. Walos,					15	15			75	75
	Buluangan (So. Naba-		1	1		70	70			350	350
	Codcod (So. Cabagta-		1	1		15	15			75	75
	Codcod (So. Catuang)					50	50			250	250
	Codcod Spring Dev.					100	100			500	500
	Guadalupe (So. Cadu-		1	1		30	30			150	150
	Guadalupe (So. Tagda)					25	25			125	125
	Nataban (So. Handa-		1	1		15	15			75	75
	Nataban (So. Maragoos)					35	35			175	175
	Palampas (So. Abaca)		1	1		10	10			50	50
	Palampas (So. Cabu-					15	15			75	75
	Palampas (So. Guin-ob)					10	10			50	50
	Palampas (So. Lanta-					30	30			150	150
Palampas (So. Manga)					20	20			100	100	
Palampas (So. Manok)					15	15			75	75	
Palampas (So. Pama-					20	20			100	100	

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
San Carlos City	Palampas (So. Tongo-				15	15		75	75	
	Palampas (So. Tunga)				30	30		150	150	
	Palampas (So. Vascona)				55	55		275	275	
	Palampas Spring Dev.				45	45		225	225	
	Prosperidad (So.		1	1	45	45		225	225	
	Prosperidad (So. Ulay)				15	15		75	75	
	Punao (So. Aglahus)		1	1	25	25		125	125	
	Punao (So. Hagunoy)				10	10		50	50	
	Punao (So. Mabayahay)				10	10		50	50	
	Punao (So. Maloloy-on)				20	20		100	100	
	Punao (So. Talave)				60	60		300	300	
	Punao Spring Dev.				40	40		200	200	
	Quezon (So. Balabag)		1	1	15	15		75	75	
	Quezon (So. Berhin,				30	30		150	150	
	Quezon (So. Berhin,				20	20		100	100	
	Quezon (So. Gasang-				30	30		150	150	
	Rizal (So. Anayban)		1	1	20	20		100	100	
	Rizal (So. Ansulag,				25	25		125	125	
	Rizal (So. Ansulag,				15	15		75	75	
	Rizal (So. Camanyan-				25	25		125	125	
Rizal (So. Medina)				35	35		175	175		
<b>Municipal Total</b>		10	10		1,145	1,145		5,725	5,725	
San Enrique	Tibsoc WS (Phase I)		1	1	50	50		250	250	
	Tibsoc WS (Phase II)				15	15		75	75	
	<b>Municipal Total</b>		1	1	65	65		325	325	
Silay City	Guimbala-on		1	1	115	115		575	575	
	Lantad		1	1	790	790		3,950	3,950	
	<b>Municipal Total</b>		2	2	905	905		4,525	4,525	
Sipalay	Barangay 4 WS	1		1	20	20	100		100	
	Camindangan Spring		1	1	80	80		400	400	
	Cartagena		1	1	75	75		375	375	
	Mambaroto Sprin Dev.		1	1	50	50		250	250	
	<b>Municipal Total</b>	1	3	4	20	205	225	100	1,025	1,125
Talisay City	Cabatangan		1	1	20	20		100	100	
	Concepcion	1		1	100	100	500		500	
	Katilingban Sprin dev.		1	1	80	80		400	400	
	<b>Municipal Total</b>		2	3	100	100	200	500	500	1,000
Toboso	Bug-ang WS		1	1	70	70		350	350	
	Gen. Luna (Burgos) WS		1	1	25	25		125	125	
	Gen. Luna (Maaswa)		1	1	40	40		200	200	
	Gen. Luna (Proper) WS		1	1	30	30		150	150	
	Magticol WS		1	1	20	20		100	100	
	Salamanca (Bunacan)		1	1	35	35		175	175	
	Salamanca WS		1	1	30	30		150	150	
	San Isidro		1	1	75	75		375	375	
	San Jose WS	1		1	90	90	450		450	
	Tabun-ac WS		1	1	20	20		100	100	
<b>Municipal Total</b>	1	9	10	90	345	435	450	1,725	2,175	
Valladolid	Lacaron		1	1	75	75		375	375	
<b>Provincial Total</b>		23	159	182	1,475	12,945	14,420	7,250	64,850	72,100

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 in spite of sufficient water source.



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

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

#### 4.1.5 Level I Facilities

Level I facilities (point source) are common in rural barangays. Major 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 in Supporting Report). Served population in 1998 is also estimated as shown in the same table.

Of the 30,805 operational Level I facilities, 39% are shallow wells. According to the study on safe/unsafe percentage for shallow well, 30% of the shallow wells are estimated to be unsafe as the provincial average (detailed are referred to in Supporting Report 4.1.5). All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. In application of the unsafe percentage to shallow wells for each municipality, 22,486 Level I facilities are classified as safe sources, while 8,319 facilities are under unsafe sources.

Percentage shares between public and private Level I facilities for rural water supply is 53% and 47%, respectively. The share of developed springs in public facilities is 7% (details are referred to Supporting Report).

Problem areas observed on Level I facilities and necessary countermeasures for the improvement are summarized in terms of potable condition and functioning.

Most of 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, operating bodies for the facilities are not organized or non-functioning. Order-less private tapping to transmission line (spring water source) are also found at some Level I facilities, which caused insufficient water supply/water pressure.

Table 4.1.5 Information on Existing Level I Facilities

Name of Municipality/City	Number of Safe Water Sources						Number of Unsafe Water Sources						Served by Safe Source					
	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
Bago City	266	708		18	992	303				303	3,254	13,549	16,804	16,988	70,998	87,986		
Binalbagan	496	153	200	2	851	65	313		14	392	2,557	3,064	5,621	13,577	16,330	29,907		
Cadiz City	1,266	55	377	1	1,699	23	191		1	215	270	14,996	15,266	1,350	78,280	79,630		
Calatrava	127	29	252	126	534	13			4	17	120	9,600	9,720	578	47,616	48,194		
Candoni	17	46	19	11	93	20	18		48	86	259	1,312	1,571	1,368	7,070	8,438		
Cauayan	17	46	19	11	93	20	20		48	68	1,566	6,410	7,976	8,268	34,678	42,946		
Enrique B. Magalona	27	236	41	2	306	101	12			113	3,855	3,421	7,277	20,240	18,989	39,229		
Escalante	309	176	596	49	1,130	75			6	81	5,591	7,585	13,176	28,683	28,759	67,442		
Himamaylan	34	19	95	4	152	8			3	11	4,167	6,232	10,399	22,920	34,275	57,195		
Hinigaran	319	968	651	1	1,939	415	707		14	1,136	1,218	7,495	8,713	6,722	40,475	47,197		
Hinobanan (Asia)	1	306	62	17	386	131	29		2	162	2,108	2,971	5,079	10,960	15,866	26,826		
Ilog	108	271	189	4	572	116	342		72	530	3,288	1,317	4,605	17,295	6,849	24,144		
Isabela	6	570	67	23	666	244	123		3	370	1,382	3,419	4,801	7,020	18,018	25,038		
Kabankalan City	93	403	1,160	149	1,805	173	1,811		46	2,030	5,788	5,548	11,337	31,894	30,848	62,742		
La Carlota City	120	190	49	17	376	82	1			83	941	2,890	3,831	5,070	15,375	20,445		
La Castellana	68	322	83	32	505	138	88		3	229	2,182	4,578	6,760	11,477	23,396	34,873		
Manapla	118	158	184		460	68	5		6	80	866	5,777	6,643	4,557	31,194	35,751		
Moises Padilla	280	34	4		318	14				14	1,335	2,825	4,161	6,744	14,748	21,492		
Murcia	365	44	69	28	506	19				19	1,727	5,147	6,874	8,826	26,968	35,794		
Pontevedra	255	291	32	19	597	125	72		4	201	1,822	2,580	4,402	9,272	13,520	22,792		
Pulupandan	196	302	171		669	129	62			191	2,325	1,647	3,972	12,088	8,318	20,406		
Sagay City	90	188	10	11	299	80	5		86	171	4,777	9,695	14,472	25,272	49,347	74,619		
Salvador Benedicto			38	67	105							2,352	2,352		12,327	12,327		
San Carlos City	119	26	2	30	177	11	6		26	43	2,330	6,461	8,791	11,837	31,852	43,689		
San Enrique	11	557			568	239				239	1,412	1,543	2,955	7,340	8,211	15,552		
Silay City	372	480	382	27	1,261	206	226		60	492	6,477	8,345	14,822	34,910	43,813	78,722		
Sinalay	931	532	411	50	1,924	228	27		57	312	3,097	6,379	9,476	16,136	33,746	49,882		
Talaysay City	691	197	19		907	84	19		13	116	4,362	5,683	10,045	22,248	29,324	51,572		
Toboso	74	74	176	74	398	32	21		112	165	400	4,424	4,825	2,022	23,361	25,384		
Valladolid	833	510	463		1,806	218	90			308	3,545	2,116	5,661	17,937	10,898	28,835		
Victorias City	144	132	113	1	390	57	90			147	6,997	2,598	9,595	36,664	13,926	50,590		
<b>Provincial Total</b>	<b>7,753</b>	<b>8,020</b>	<b>5,934</b>	<b>774</b>	<b>22,481</b>	<b>3,437</b>	<b>4,258</b>	<b>1</b>	<b>628</b>	<b>8,324</b>	<b>80,019</b>	<b>161,962</b>	<b>241,981</b>	<b>420,264</b>	<b>849,374</b>	<b>1,269,638</b>		

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

Considering the current situation of beneficiaries, 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 cases declared as unsafe sources are driven shallow wells which are unprotected against seepage of surface water and 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 a lot of non-functioning public wells in the province as shown in Table 4.1.6.

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.	4,196	6,794	3,557	4,663	19,210
	Percent	77	89	93	93	88
Non-Functioning	No.	1,253	876	283	329	2,741
	Percent	23	11	7	7	12
<b>Total Number</b>		<b>5,449</b>	<b>7,670</b>	<b>3,840</b>	<b>4,992</b>	<b>21,951</b>

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

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.

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 NSO population census results (1980, 1990 and 1995) and 1995 Census-based Regional and Provincial Population projection prepared by NSO. 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 comparison among the questionnaire, the 1990 population census data; "Households by Main Source of Drinking Water and City/Municipality" and 1998 study conducted by PHO.
- The rest of the population was considered served by Level I facilities assuming that 50% of private facilities was shared by neighbors to supplement insufficiency of public facilities.

Average number of households sharing at each Level I public/private facility was calculated at an average of 13 households/facility under the above assumptions (details are referred to in Supporting Report).

Table 4.1.7 presents the profile of the service coverage in terms of served, underserved and unserved. As a provincial total, 76% of the population is adequately served (81% of urban population and 73% of rural 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			Underseved/Unseved			Served by Safe Source			Underseved/Unseved		
			Level III	Level II	Level I	Total	Unseved Source	Unseved	Total	Level III	Level II	Level I	Total	Unseved Source
Bago City	Urban	31,401	5,724	16,988	22,712	6,031	2,657	8,689	18	54	72	19	8	28
	Rural	107,841	1,224	5,600	70,998	19,533	10,486	30,019	1	5	66	18	10	28
	Total	139,242	6,948	5,600	87,986	100,534	25,565	13,144	5	4	63	18	9	28
Binalbagan	Urban	25,124	7,680	13,577	21,257	3,141	726	3,867	31	54	85	13	3	15
	Rural	31,539	5,214	16,330	21,619	7,059	2,861	9,920	17	0	69	22	9	31
	Total	56,663	12,894	29,907	42,876	10,199	3,587	13,787	23	0	53	18	6	24
Cadiz City	Urban	35,329	32,767	550	1,350	34,667	233	430	662	2	4	7	1	2
	Rural	95,235	3,000	1,300	78,280	82,580	6,509	6,146	3	1	82	7	6	13
	Total	130,564	35,767	1,850	79,630	117,247	6,741	6,576	27	1	61	5	5	10
Calatrava	Urban	12,055	10,269	578	10,847	1,208	1,208	85	5	5	90	10	10	10
	Rural	58,972	2,346	2,500	47,616	52,462	1,636	4,874	4	4	81	3	8	11
	Total	71,027	12,615	2,500	48,194	63,309	1,636	6,082	18	4	68	2	9	11
Candoni	Urban	2,806		325	1,368	1,693	805	308	1,113	12	49	29	11	40
	Rural	14,575		2,025	7,070	9,095	4,262	1,218	5,480	14	49	62	9	38
	Total	17,381		2,350	8,438	10,788	5,067	1,526	6,593	14	49	62	9	38
Cauayan	Urban	22,680		4,450	8,268	12,718	7,761	2,201	9,962	20	36	56	10	44
	Rural	63,911	900	5,200	34,678	40,778	14,294	8,339	23,133	8	54	64	14	36
	Total	86,591	900	9,650	42,946	53,496	22,056	11,039	33,095	11	50	62	25	38
Enrique B. Magalona	Urban	30,366	3,500	75	20,240	23,815	6,151	400	6,551	12	67	78	1	22
	Rural	28,025	350	18,989	19,339	7,044	1,643	8,686	1	0	68	25	6	31
	Total	58,391	3,850	75	39,229	43,154	13,195	2,043	15,237	7	0	67	23	26
Escalante	Urban	37,146	5,523	1,250	28,683	34,331	1,859	956	2,815	0	77	92	5	8
	Rural	47,945	1,320	1,200	38,759	41,279	2,935	3,731	6,666	3	81	86	6	14
	Total	85,091	6,843	1,325	67,442	75,610	4,794	4,887	9,481	8	79	89	6	11
Himamaylan	Urban	32,115	4,986	550	22,920	28,456	1,605	2,054	3,659	16	2	71	5	11
	Rural	53,077	4,782	4,600	34,275	43,657	1,356	8,064	9,420	9	65	82	3	18
	Total	85,192	9,768	5,150	57,195	72,113	2,961	10,118	13,079	11	6	67	3	15
Hinigaran	Urban	13,109	948	6,722	7,670	4,586	852	5,439	7	51	59	35	7	41
	Rural	60,563	2,142	1,000	40,475	43,617	13,663	3,263	16,946	4	2	67	23	28
	Total	73,672	3,090	1,000	47,197	51,287	18,269	4,116	22,385	4	1	64	25	30
Hinoba-an (Asia)	Urban	16,355		175	10,960	11,135	4,592	628	5,220	1	67	68	4	32
	Rural	24,720		1,750	15,866	17,616	4,574	2,531	7,104	7	64	71	19	29
	Total	41,075		1,925	26,826	28,751	9,165	3,159	12,324	5	65	70	22	30
Ilog	Urban	27,123	1,200	625	6,849	7,474	6,842	2,466	9,308	4	4	45	15	55
	Rural	16,782		625	24,144	25,969	14,834	3,102	17,936	3	1	55	34	41
	Total	43,905	1,200	625	24,144	25,969	14,834	3,102	17,936	3	1	55	34	41
	Urban	11,140		7,020	7,020	2,471	1,650	4,120	63	63	63	22	15	37

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/Uninsured			Served by Safe Source			Underserved/Uninsured				
			Level III	Level II	Level I	Total	Unsafe Source	Uninsured	Total	Level III	Level II	Level I	Total	Unsafe Source	Uninsured	Total
Isabela	Rural	39,419		5,950	18,018	23,968	8,727	6,724	15,451		15	46	61	22	17	39
	Total	50,559		5,950	25,038	30,988	11,198	8,374	19,571		12	50	61	22	17	39
	Urban	50,036	180	375	31,894	32,449	13,844	17,587	0	1	64	65	28	7	35	
Kabankalan City	Rural	98,089	13,782	5,800	30,848	50,430	32,825	14,834	47,659	14	6	31	33	15	49	
	Total	148,125	13,962	6,175	62,742	82,879	46,669	18,577	65,246	9	4	42	56	32	44	
	Urban	22,873	16,620	50	5,070	21,740	151	982	1,133	73	0	22	95	1	4	5
La Carlota City	Rural	33,931	9,360	1,500	15,375	26,235	3,889	3,808	7,696	28	4	45	77	11	11	23
	Total	56,804	25,980	1,550	20,445	47,975	4,040	4,789	8,829	46	3	36	84	7	8	16
	Urban	21,730	2,958		11,477	14,435	4,758	2,536	7,295	14		53	66	22	12	34
La Castellana	Rural	41,697		1,325	23,396	24,721	7,302	9,675	16,976	3	3	56	59	18	23	41
	Total	63,427	2,958	1,325	34,873	39,156	12,060	12,211	24,271	5	2	55	62	19	19	38
	Urban	9,572	4,278		4,557	8,835	658	79	737	45		48	92	7	1	8
Manapla	Rural	37,724		1,150	31,194	32,344	5,063	317	5,380	3	3	83	86	13	1	14
	Total	47,296	4,278	1,150	35,751	41,179	5,721	396	6,117	9	2	76	87	12	1	13
	Urban	10,820	2,445	300	6,744	9,489	118	1,213	1,331	23	3	62	88	1	11	12
Moises Padilla	Rural	21,079		1,075	14,748	15,823	329	4,927	5,256	5	5	70	75	2	23	25
	Total	31,899	2,445	1,375	21,492	25,312	447	6,140	6,587	8	4	67	79	1	19	21
	Urban	17,738	6,982	125	8,826	15,933	41	1,764	1,805	39	1	50	90	0	10	10
Murcia	Rural	40,765	888	4,775	26,968	32,631	1,053	7,081	8,134	2	12	66	80	3	17	20
	Total	58,503	7,870	4,900	35,794	48,564	1,093	8,845	9,939	13	8	61	83	2	15	17
	Urban	19,475	7,837		9,272	17,109	1,783	583	2,366	40		48	88	9	3	12
Pontevedra	Rural	24,726	4,534	425	13,520	18,479	3,890	2,356	6,247	18	2	55	75	16	10	25
	Total	44,201	12,371	425	22,792	35,588	5,673	2,940	8,613	28	1	52	81	13	7	19
	Urban	16,271	1,284		12,088	13,372	2,893	5	2,899	8	74	74	82	18	0	18
Pulupandan	Rural	10,059	762		8,318	9,080	958	21	979	8		83	90	10	0	10
	Total	26,330	2,046		20,406	22,452	3,851	27	3,878	8		78	85	15	0	15
	Urban	50,250	13,030	840	25,272	39,142	8,900	2,208	11,108	26	2	50	78	18	4	22
Sagay City	Rural	89,369	7,697	775	49,347	57,819	23,215	8,336	31,550	9	1	55	65	26	9	35
	Total	139,619	20,727	1,615	74,619	96,961	32,114	10,544	42,658	15	1	53	69	23	8	31
	Urban															
Salvador Benedicto	Rural	18,587		4,400	12,327	16,727	1,860	1,860	1,860	24		66	90	10	10	10
	Total	18,587		4,400	12,327	16,727	1,860	1,860	1,860	24		66	90	10	10	10
	Urban	28,943	13,585		11,837	25,422	3,521	3,521	3,521	47		41	88	12	12	12
San Carlos City	Rural	77,504	770	18,855	31,852	51,477	12,597	13,429	26,027	1	24	41	66	16	17	34
	Total	106,447	14,355	18,855	43,689	76,899	12,597	16,950	29,548	13	18	41	72	12	16	28
	Urban															

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			Underseved/Unseved			Served by Safe Source			Underseved/Unseved												
			Level III	Level II	Level I	Total	Unseved Source	Unseved	Total	Level III	Level II	Level I	Total	Unseved Source	Unseved	Total								
San Enrique	Urban	9,865			7,340	7,340		2,525				2,525				74			74		26			26
	Rural	11,801		325	8,211	8,536		3,265				3,265				3			72		28			28
	Total	21,666		325	15,552	15,877		5,789				5,789				2			73		27			27
Silay City	Urban	57,862	14,445		34,910	49,355		7,996	511		8,507	25				60			85		14			15
	Rural	71,515	2,917	4,525	43,813	51,255		18,300	1,961		20,260	4				61			72		26			28
	Total	129,377	17,362	4,525	78,722	100,609		26,296	2,471		28,768	13				61			78		20			22
Sipalay	Urban	21,546	1,410	100	16,136	17,646		2,286	1,615		3,900	7				75			82		11			18
	Rural	44,093	294	1,025	33,746	35,065		2,600	6,428		9,028	1				77			80		6			20
	Total	65,639	1,704	1,125	49,882	52,711		4,886	8,042		12,928	3				76			80		7			20
Talisay City	Urban	33,189	8,220	500	22,248	30,968		1,351	871		2,221	25				67			93		4			7
	Rural	38,914	42	500	29,324	29,866		5,595	3,452		9,048	0				75			77		14			23
	Total	72,103	8,262	1,000	51,572	60,834		6,946	4,323		11,269	11				72			84		10			16
Toboso	Urban	7,279	954	510	2,022	3,486		2,507	1,285		3,793	13				28			48		34			52
	Rural	34,201	936	1,725	23,361	26,022		2,903	5,276		8,179	3				68			76		8			24
	Total	41,480	1,890	2,235	25,384	29,509		5,410	6,561		11,971	5				61			71		13			29
Valladolid	Urban	21,066	1,610		17,937	19,547		1,519			1,519	8				85			93		7			7
	Rural	11,540		375	10,898	11,273		267			267					94			98		2			2
	Total	32,606	1,610	375	28,835	30,820		1,786			1,786	5				88			95		5			5
Victorias City	Urban	60,419	14,400		36,664	51,064		8,836	519		9,355	24				61			85		15			15
	Rural	23,889	3,480		13,926	17,406		4,411	2,072		6,483	15				58			73		18			27
	Total	84,308	17,880		50,590	68,470		13,247	2,591		15,838	21				60			81		16			19
Provincial Total	Urban	755,683	182,835	9,050	420,264	612,149		107,392	36,142		143,534	24				56			81		14			19
	Rural	1,372,087	66,740	80,380	849,374	996,494		226,914	148,679		375,593	5				62			73		17			27
	Total	2,127,770	249,575	89,430	1,269,638	1,608,643		334,306	184,821		519,127	12				60			76		16			24

The percentage of underserved population is estimated at 9% of the total population (5% of urban population and 11% of rural population) who are depending on unsafe sources/facilities.

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

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

Percentage shares of population coverage by Level I public and private facilities in rural water supply are estimated at 94% and 6%, respectively (details are referred to in Supporting Report).

Level III systems take a major part of service coverage in urban water supply in limited municipalities/city, such as Cadi City (93%), Calatrava (85%) and La Carlota City (73%).

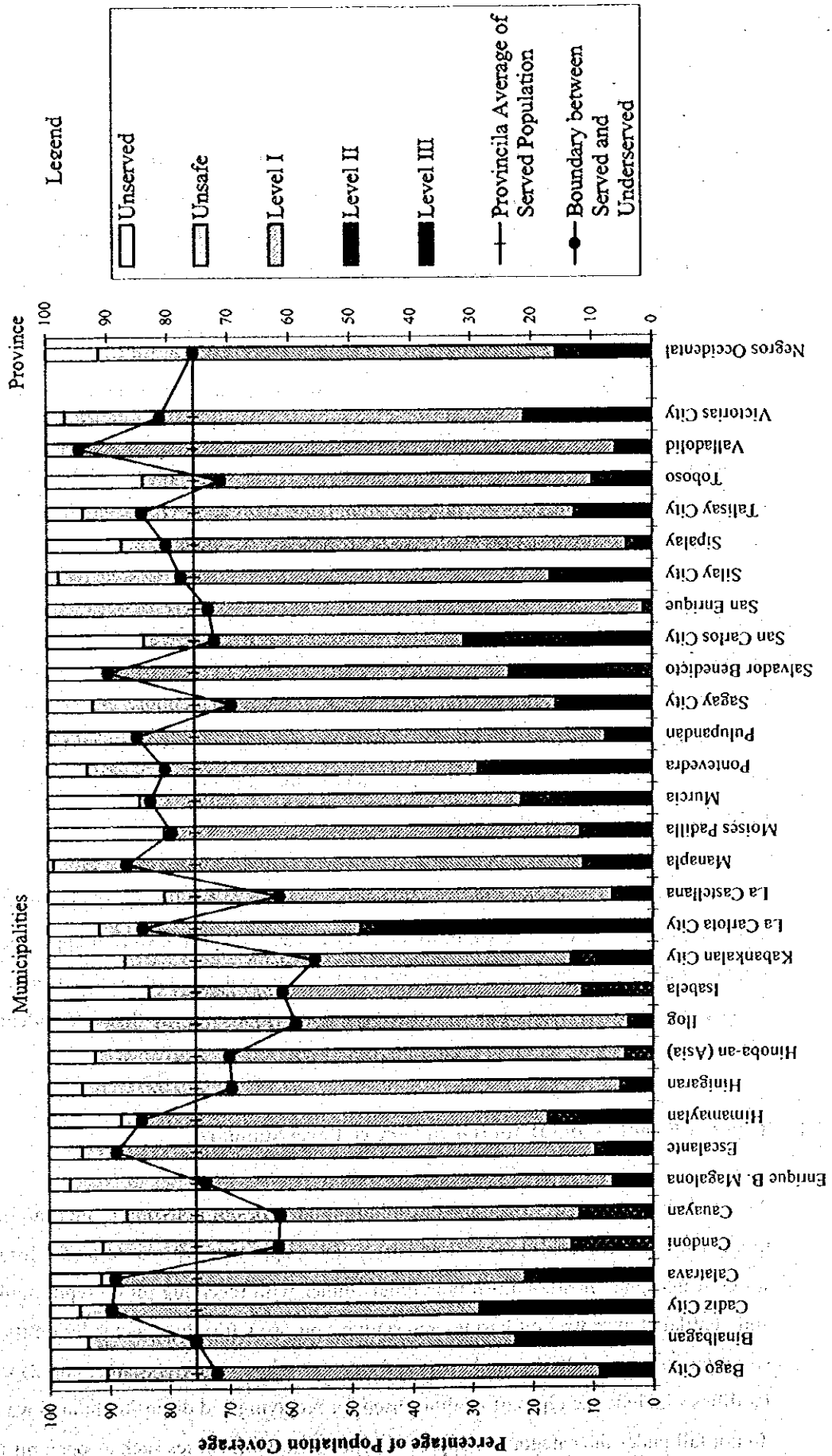
With regard to Level II system in rural areas, mostly 1 to 14% of service coverage are observed excluding 24% at Salvador Benedicto and San Carlos City. Presently, piped system including Level III systems have not been fully developed in the entire province (4% for Level II and 12% for Level III systems).

Taking into account the municipal service coverage, of the 31 municipalities/cities of the province, 16 are above the average provincial service coverage of 76% in terms of served population. The highest coverage is seen in Valladolid at 95% (93% for urban and 98% for rural area), followed by Cadiz City at 90% (98% for urban and 87 for rural area), Salvador Benedicto at 90% (rural area), Calatrava at 89% (90% for urban and 89% for rural area), Escalante at 89% (92% for urban and 86% for rural area) and Manapla at 87% (92% for urban and 86% for rural area).

In contrast to the above, 14 municipalities are below the provincial average. The lowest is Kabankalan City at 56% (65% for urban and 51% for rural area), followed by Ilog at 59% (68% for urban and 45% for rural area). The low coverage of these municipalities is considered to arise from a large number of underserved population using unsafe water sources.



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 75% of the total number of households. The rest is underserved or unserved. Of this, about 32% is without toilet facility (refer to 4.2.1, Supporting Report and 4.2.3, Sanitation Facilities and Service Coverage, Data Report).

Municipalities/cities that have higher or equal service coverage from the provincial average of 75% are Bago City and Hinoba-an (88%), Kabankalan City and La Carlota City (86%), Pulupandan and Ilog (84%), Escalante (83%), Cauayan, Sagay City and San

Carlos City (81%), Isabela and Salvador Benedicto (80%), Candoni and Victorias City (78%), Pontevedra (76%) and San Enrique (75%).

On the other hand, the first 5 municipalities that registered the lowest service coverage are Enrique B. Magalona and Silay City (61%), Cadiz City (63%), Murcia (64%) and Moises Padilla (65%). It was observed that in municipalities that have high water supply service coverage (Salvador Benedicto, La Carlota City, Pulupandan), high sanitation coverage occurs and correspondingly, in low water supply service coverage (La Castellana, Silay City, Toboso), 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 80% of the total household is served. A lower served household of 73% 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.

## (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 5,868 toilet units found in 1,172 schools. Sanitary toilets adequately serve 40% of the students. The rest, 60% is underserved or unserved. Meanwhile, sanitary toilets adequately serve 39% 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 92 students per sanitary toilet, which well above 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.

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.

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

Municipality City	No. of Households, 1998			Household Toilet Facilities and Service Coverage											
	Urban	Rural	Total	Urban				Rural				Municipal Total			
				HHs Served by Sanitary Toilets		Underserved/Un-served HHs		HHs Served by Sanitary Toilets		Underserved/Un-served HHs		HHs Served by Sanitary Toilets	Underserved/Un-served HHs		
				Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs
Bago City	6,016	20,550	26,566	5,488	91	528	9	17,959	87	2,621	13	23,447	88	3,149	12
Binalbagan	4,731	5,917	10,648	3,482	74	1,249	26	3,882	66	2,035	34	7,364	69	3,284	31
Cadiz City	7,066	18,244	25,310	5,287	75	1,779	25	10,704	59	7,540	41	15,991	63	9,319	37
Calatrava	2,506	11,890	14,396	1,894	76	612	24	8,633	73	3,257	27	10,527	73	3,869	27
Candoni	531	2,704	3,235	429	81	102	19	2,104	78	600	22	2,533	78	702	22
Cauayan	4,295	11,813	16,108	3,514	82	781	18	9,592	81	2,221	19	13,106	81	3,002	19
E. B. Magalona	5,784	5,050	10,834	3,595	62	2,189	38	3,030	60	2,020	40	6,625	61	4,209	39
Escalante	7,241	9,383	16,624	6,379	88	862	12	7,404	79	1,979	21	13,783	83	2,841	17
Himamaylan	5,839	9,650	15,489	4,078	70	1,761	30	6,549	68	3,101	32	10,627	69	4,862	31
Hinigaran	2,375	11,215	13,590	1,813	76	562	24	8,292	74	2,923	26	10,105	74	3,485	26
Hinoba-an (Asia)	3,145	4,629	7,774	2,761	88	384	12	4,052	88	577	12	6,813	88	961	12
Ilog	5,156	3,227	8,383	4,382	85	774	15	2,676	83	551	17	7,058	84	1,325	16
Isabela	2,193	7,480	9,673	1,972	90	221	10	5,808	78	1,672	22	7,780	80	1,893	20
Kabankalan City	9,081	17,642	26,723	8,590	95	491	5	14,288	81	3,354	19	22,878	86	3,845	14
La Carlota City	4,244	6,378	10,622	3,921	92	323	8	5,215	82	1,163	18	9,136	86	1,486	14
La Castellana	4,131	8,160	12,291	2,885	70	1,246	30	5,434	67	2,726	33	8,319	68	3,972	32
Manapla	1,820	6,986	8,806	1,253	69	567	31	4,763	68	2,223	32	6,016	68	2,790	32
Moises Padilla	2,143	4,038	6,181	1,415	66	728	34	2,580	64	1,458	36	3,995	65	2,186	35
Murcia	3,471	7,780	11,251	2,296	66	1,175	34	4,946	64	2,834	36	7,242	64	4,009	36
Pontevedra	3,826	4,719	8,545	3,039	79	787	21	3,455	73	1,264	27	6,494	76	2,051	24
Pulupandan	3,129	1,992	5,121	2,556	82	573	18	1,755	88	237	12	4,311	84	810	16
Sagay City	9,499	17,558	27,057	8,418	89	1,081	11	13,616	78	3,942	22	22,034	81	5,023	19
Salvador Benedicto		3,547	3,547					2,822	80	725	20	2,822	80	725	20
San Carlos City	5,697	15,721	21,418	4,669	82	1,028	18	12,783	81	2,938	19	17,452	81	3,966	19
San Enrique	1,897	2,218	4,115	1,477	78	420	22	1,625	73	593	27	3,102	75	1,013	25
Silay City	10,735	13,622	24,357	9,166	85	1,569	15	5,778	42	7,844	58	14,944	61	9,413	39
Sipalay	4,136	8,335	12,471	3,571	86	565	14	5,327	64	3,008	36	8,898	71	3,573	29
Talisay City	6,508	7,541	14,049	4,865	75	1,643	25	4,918	65	2,623	35	9,783	70	4,266	30
Toboso	1,441	6,477	7,918	1,064	74	377	26	4,731	73	1,746	27	5,795	73	2,123	27
Valladolid	4,163	2,241	6,404	2,913	70	1,250	30	1,466	65	775	35	4,379	68	2,025	32
Victorias City	11,530	4,457	15,987	8,975	78	2,555	22	3,438	77	1,019	23	12,413	78	3,574	22
<b>Provincial Total</b>	<b>144,329</b>	<b>261,194</b>	<b>405,523</b>	<b>116,147</b>	<b>80</b>	<b>28,182</b>	<b>20</b>	<b>189,625</b>	<b>73</b>	<b>71,569</b>	<b>27</b>	<b>305,772</b>	<b>75</b>	<b>99,751</b>	<b>25</b>

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

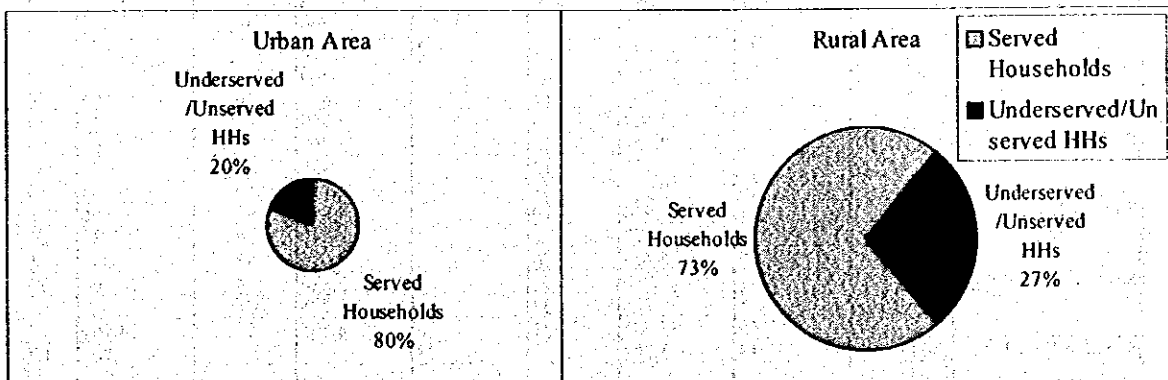


Table 4.2.2 School Toilet Service Coverage by Municipality

Municipality/City	Number of School	Total No. of Student	Number of Toilet		Service Coverage				
			Sanitary	Unsanitary	Served	%	Unserved	%	
Raon City	Public	43	32,768	340	11	13,600	42	19,168	58
	Private	3	800	89		800	100		
	Total	46	33,568	429	11	14,400	43	19,168	57
Binalbagan	Public	36	13,743	208	1	8,320	61	5,423	39
	Private	5	2,383	61		2,383	100		
	Total	41	16,126	269	1	10,703	66	5,423	34
Cadiz City	Public	61	30,176	190		7,600	25	22,576	75
	Private	5	1,796	12		480	27	1,316	73
	Total	66	31,972	202		8,080	25	23,892	75
Calatrava	Public	49	16,888	199	16	7,960	47	8,928	53
	Private								
	Total	49	16,888	199	16	7,960	47	8,928	53
Candoni	Public	18	5,344	26		1,040	19	4,304	81
	Private	1	244	2		80	33	164	67
	Total	19	5,588	28		1,120	20	4,468	80
Cauayan	Public	71	20,387	157		6,280	31	14,107	69
	Private	4	1,450	5		200	14	1,250	86
	Total	75	21,837	162		6,480	30	15,357	70
Enrique B. Magalona	Public	27	12,481	58		2,320	19	10,161	81
	Private	2	691	4		160	23	531	77
	Total	29	13,172	62		2,480	19	10,692	81
Escalante	Public	34	19,209	198	48	7,920	41	11,289	59
	Private	2	596	10		400	67	196	33
	Total	36	19,805	208	48	8,320	42	11,485	58
Himamaylan	Public	50	21,392	257	6	10,280	48	11,112	52
	Private	5	1,609	10		400	25	1,209	75
	Total	55	23,001	267	6	10,680	46	12,321	54
Hinigaran	Public	33	16,694	353	8	14,120	85	2,574	15
	Private	6	2,282	25		1,000	44	1,282	56
	Total	39	18,976	378	8	15,120	80	3,856	20
Hinoba-an (Asia)	Public	26	11,666	112	34	4,480	38	7,186	62
	Private	2	971	12		480	49	491	51
	Total	28	12,637	124	34	4,960	39	7,677	61
Ilog	Public	30	10,249	66		2,640	26	7,609	74
	Private	5	2,044	4		160	8	1,884	92
	Total	35	12,293	70		2,800	23	9,493	77
Isabela	Public	32	11,729	256		10,240	87	1,489	13
	Private	6	737	9		360	49	377	51
	Total	38	12,466	265		10,600	85	1,866	15
Kabankalan City	Public	84	33,994	171		6,840	20	27,154	80
	Private	15	3,682	81		3,240	88	442	12
	Total	99	37,676	252		10,080	27	27,596	73
La Carlota City	Public	26	15,075	198		7,920	53	7,155	47
	Private	4	655	47		655	100		
	Total	30	15,730	245		8,575	55	7,155	45
La Castellana	Public	33	15,170	440		15,170	100		
	Private	2	657	8		320	49	337	51
	Total	35	15,827	448		15,490	98	337	2
Manapla	Public	15	9,889	113		4,520	46	5,369	54
	Private	2	331	7	2	280	85	51	15
	Total	17	10,220	120	2	4,800	47	5,420	53
Moises Padilla	Public	22	7,058	129	12	5,160	73	1,898	27
	Private	2	771	5		200	26	571	74
	Total	24	7,829	134	12	5,360	68	2,469	32
Murcia	Public	28	13,542	84		3,360	25	10,182	75
	Private	5	1,045	12		480	46	565	54
	Total	33	14,587	96		3,840	26	10,747	74
Pontevedra	Public	23	10,354	19		760	7	9,594	93
	Private	3	421	12		421	100		
	Total	26	10,775	31		1,181	11	9,594	89
Pulupandan	Public	7	4,956	120		4,800	97	156	3
	Private	2	477	6		240	50	237	50
	Total	9	5,433	126		5,040	93	393	7
Sagay City	Public	61	27,980	97	6	3,880	14	24,100	86
	Private	8	725	34		725	100		
	Total	69	28,705	131	6	4,605	16	24,100	84
Salvador Benedicto	Public	14	3,707		28			3,707	100
	Private								
	Total	14	3,707		28			3,707	100

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	%	
San Carlos City	Public	62	24,352	146	10	5,840	24	18,512	76
	Private	8	3,151	32		1,280	41	1,871	59
	Total	70	27,503	178	10	7,120	26	20,383	74
San Enrique	Public	10	4,237	41		1,640	39	2,597	61
	Private	2	431	4		160	37	271	63
	Total	12	4,668	45		1,800	39	2,868	61
Silay City	Public	32	22,627	101		4,040	18	18,587	82
	Private	3	749	283		749	100		
	Total	35	23,376	384		4,789	20	18,587	80
Sipalay	Public	41	15,405	154		6,160	40	9,245	60
	Private	5	1,693	8		320	19	1,373	81
	Total	46	17,098	162		6,480	38	10,618	62
Talisay City	Public	25	15,535	156	41	6,240	40	9,295	60
	Private	4	623	10	2	400	64	223	36
	Total	29	16,158	166	43	6,640	41	9,518	59
Toboso	Public	25	10,158	86		3,440	34	6,718	66
	Private	1	372	5		200	54	172	46
	Total	26	10,530	91		3,640	35	6,890	65
Valladolid	Public	11	6,241	12		480	8	5,761	92
	Private	3	744	6		240	32	504	68
	Total	14	6,985	18		720	10	6,265	90
Victorias City	Public	22	19,695	301		12,040	61	7,655	39
	Private	6	2,098	52		2,080	99	18	1
	Total	28	21,793	353		14,120	65	7,673	35
Provincial Total	Public	1,051	482,701	4,788	221	189,090	39	293,611	61
	Private	121	34,228	855	4	18,893	55	15,335	45
	Total	1,172	516,929	5,643	225	207,983	40	308,946	60

There are 468 public toilets found in public markets, bus/jeepney terminals and parks/playgrounds in the province. About 92% of these public toilets are sanitary, while only 7% is 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 4.2.3 Public Toilets Facilities and Service Coverage in 1998

Name of Municipality/City	Number of Sanitary Toilets			Number of Unsanitary Toilets			Total Number of PU Toilets	Served		Underserved	
	Public Markets	Bus/Jeepney Terminals	Parks/Playground	Public Markets	Bus/Jeepney Terminals	Parks/Playground		Number of Sanitary Toilets	%	Number of Unsanitary Toilets	%
Bago City	12	2	22				36	36	100		
Binalbagan	4	3	2				9	9	100		
Cadiz City	30	8	6				44	44	100		
Calatrava	6		16	6			28	22	79	6	21
Candoni	2	2	2				6	6	100		
Cauayan	14		3	2			19	17	89	2	11
Enrique B. Magalona	2						2	2	100		
Escalante	6		2				8	8	100		
Himamaylan	6		6				12	12	100		
Hinigaran	1		2				3	3	100		
Himoba-an (Asia)				2			2			2	100
Ilog	6						6	6	100		
Isabela	2	2	6				10	10	100		
Kabankalan City	14	12	2	14			42	28	67	14	33
La Carlota City	10	8	2				20	20	100		
La Castellana	6	4	5				15	15	100		
Manapla	2		4	2			8	6	75	2	25
Moises Padilla	2		6				8	8	100		
Murcia	4		2				6	6	100		
Pontevedra	2		4				6	6	100		
Pulupandan	4		4				8	8	100		
Sagay City	12	2	10	10			34	24	71	10	29
Salvador Benedicto											
San Carlos City	9	6	30				45	45	100		
San Enrique	2		2				4	4	100		
Silay City	28	2	4				34	34	100		
Sipalay	8	4	2				14	14	100		
Talisay City	3		2				5	5	100		
Toboso	2		2				4	4	100		
Valladolid	2		6				8	8	100		
Victorias City	2	4	16				22	22	100		
<b>Provincial Total</b>	<b>203</b>	<b>59</b>	<b>170</b>	<b>36</b>			<b>468</b>	<b>432</b>	<b>92</b>	<b>36</b>	<b>8</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 administrating the NG assistance to LGUs in the implementation of devolved infrastructure programs/projects, and institutional capacity and capability building of the LGUs (refer to 5.2, Data Report for the full text of NEDA Resolution No.4, 5 and 6).

### 5.3 Sector Institutions

(1) Existing Institutional Arrangements

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

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

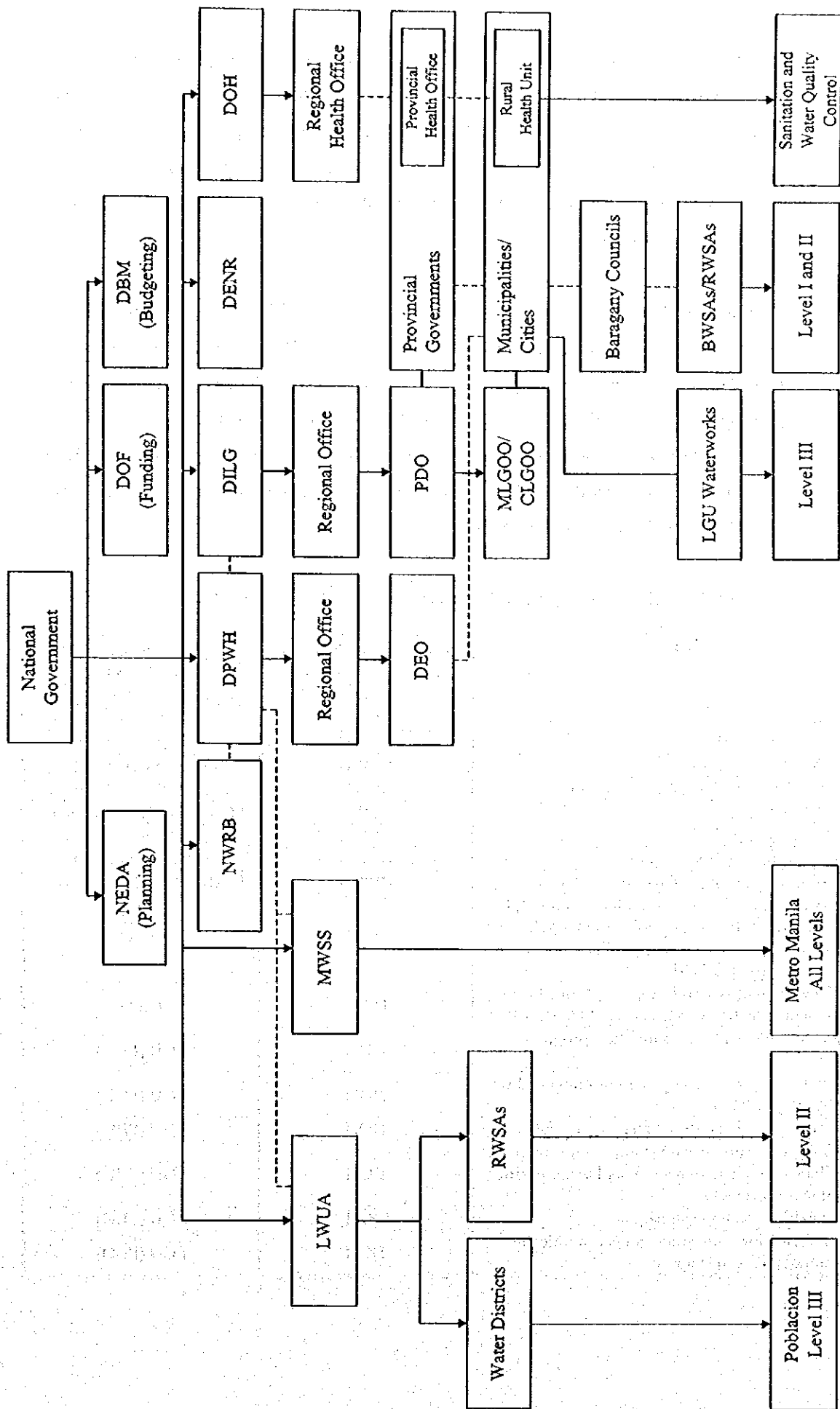


Figure 5.3.1 Functional Relationships

At the local level, field offices of national government agencies are present to guide and assist LGUs. The water districts/waterworks and BWSAs/RWSAs deal with the actual delivery of water in different service levels. Also, some LGUs operate provincial and/or 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. Loans from government or private financing institutions may also be alternative resources.

In addition, grant funds from National Government are provided to LGU under its social infrastructure development. However, availment of 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 had a water supply 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 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 Presidential Decree No. 424 in 1974. The NWRB formulates policies, evaluates and coordinates water resources programs, regulates 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 powers and performs such duties and activities of the provincial government, including ensuring the delivery of basic services and the provision of adequate facilities as well as functions in pursuing general supervision and control over all programs, projects and services.

The Sangguniang Panlalawigan (SP), as the legislative body of the province, enacts ordinances, approves resolutions and appropriates funds for the general welfare of the province and its inhabitants. It approves ordinances that ensure the efficient and effective delivery of the basic services and facilities, including the establishment and maintenance of a waterworks system or a district waterworks for supplying water to inhabitants of component municipalities and cities.

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

#### 1) Provincial Planning and Development Office (PPDO)

The PPDO is responsible for: formulating integrated economic, social, physical and other development plans, and policies for consideration of the provincial government and development council; conducting continuing studies, researches, and training programs necessary to evolve plans and programs for implementation; monitoring and evaluating the implementation of the different development programs, projects and activities in the local government unit; analyzing the income and expenditures patterns and drafting provincial fiscal plans and policies; promoting people participa-

tion in development planning within the local government unit concerned; and other tasks related to the provincial development and investment activities. This office (Negross Occidental) is composed of three (3) divisions, namely: Administrative Division, Planning Division and Research, Evaluation & Statistics Division (refer to the organization chart in Supporting Report, Figure 5.5.1), details of which are shown below:

- Administrative Division – This division's main function is to provide efficient administrative as well as timely and adequate support services to the other two divisions of the office. It has seven (7) staff members.
- Planning Division – This division, together with the Research Division, provides generally technical and administrative support/facilitation to the various committees of the PDC. It also provides administrative and technical support in the drafting of the annual development and investment plan, comprehensive medium-term plan, physical framework plan and other plans for PDC consideration. It undertakes project proposals/project study preparation and evaluation, conducts ocular surveys and investigation, monitoring of infra projects and reviews municipal/city comprehensive land-use plans. This division is staffed by seven (7) personnel.
- Research, Evaluation and Statistics Division – This division prepares statistical reports and other documents necessary for the evaluation, planning and programming of development projects. It supports other divisions by supplying updated data and statistics. It also facilitates the evaluation and prioritization of project proposals. This division provides technical and administrative support and facilitation to the Development Administration, Environmental Development Economic and Social Development Committees. The division conducts monitoring and evaluation of various development projects, training, research and special studies. It is staffed by twelve (12) employees.

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

The PEO is responsible for administration, coordination, supervision and control of construction, maintenance, improvement and repair of roads, bridges, waterworks and other engineering and public works projects of the provincial government. It formulates policies, objectives, plans and programs, techniques and procedures/practices in infrastructure development and provides engineering services such as investigation and surveys, design and project management. The office (Negross Occidental) has six (6) divisions, namely: Administrative; Planning, Designing and Programming; Construction, Maintenance, Rehabilitation and Repair; Water Project; Quality Con-

trol; and Motor Pool (refer to the organization chart - Figure 5.5.2, Supporting Report).

- **Administrative** – It directs and supervises the management services of the office, coordinates the work of sections/ units of the office and expedites and attends to administrative details. It is divided into two sections, Supply Management Section and Records Management Section. It has twenty-five (25) staff members.
- **Planning, Designing and Programming Division** – The division is responsible for the detailed engineering activities such as highway designing, architectural designing, surveying, statistics, and inventory of all provincial roads, bridges and minor structures, monitoring of ongoing construction and rehabilitation activities of the office and renders technical assistance to other local government units. The division is divided into two sections, the Architectural Section and Roads & Bridges Section. Eleven (11) staff members man this division.
- **Construction, Maintenance, Rehabilitation and Repair Division** – The division undertakes the construction, improvement, maintenance and repair of roads, bridges and other engineering and public works projects of the province. The division has, in addition to Rock Crusher Section, three field Sections (for Area I, II and III) undertaking construction, improvement and maintenance of roads, bridges and other provincial infrastructure in their responsible areas (as determined by municipal boundaries).
- **Water Project Division** – This division is responsible for implementation of WATSAN project in the province. It investigates, surveys, designs and prepares plans and programs of works of proposed water development projects. The division also supervises and monitors the construction of ongoing projects that includes water works and irrigation assigned by the Provincial Engineer and Provincial Official. It is composed of sixteen (16) staff members.
- **Quality Control Division** – This division endures strict adherence to quality requirements of all projects. It has a workforce of eight (8) staff members.
- **Motor Pool Division** – This division maintains all equipment (i.e. heavy equipment, light equipment for construction/ rehabilitation and maintenance, and other vehicles) in running conditions. The division also facilitates the dispatch of equipment to respective areas of assignment/ projects.

### 3) Provincial Health Office (PHO)

All health programs are implemented by the LGUs in accordance with the policies and guidelines of the Dept. of Health (DOH) and under the supervision of the Provincial Health Office (PHO). The health services of the PHO are divided into two com-

ponents -- the field health service which is in-charge of the preventive aspects of health service and the hospital operations which takes care of the curative side of health. Both are under the supervision of the Provincial Health Officer. The PHO provides technical assistance to all local health offices. The different programs of the DOH are coursed from the Regional Field Office, Region VI -- to the PHO -- to the LGUs. The Environmental Health Coordinator, who is under the Field Health Service Division of the PHO, spearheads in the promotion and maintenance of public sanitation and water quality surveillance province-wide. There are thirteen (13) public hospitals -- one Provincial, ten District and two Community Hospitals (refer to the organization chart - Figure 5.5.3, Supporting Report).

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

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

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

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

The PGSO provides effective direction and coordination of the various administrative and support services necessary for the operation of the different provincial offices. It

is responsible for the acquisition/procurement of supplies and materials as identified in the overall fiscal plan. It conducts regular bidding of supplies, materials and equipment, collates and disseminates information on prices and other costs of supplies and other items commonly used by the provincial government including the hospitals.

#### 5) Provincial Development Council (PDC)

The main functions of the PDC are: to formulate long/medium-term and annual socio-economic development plans and corresponding policies; to appraise and prioritize development programs and projects; to monitor and evaluate the project implementation and program execution; and to perform such other functions as may be provided by law or competent authority. The PDC is headed by the Governor and is composed of the following: representative of the Congressman; city/municipal Mayors, the Chairman of the SP Committee on Appropriation, and thirteen (13) representatives from NGOs.

### (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. The municipal offices that are relevant to the sector are the Municipal Planning & Development Office (MPDO), Municipal Engineer's Office (MEO) and Municipal Health Office (MHO) – Major tasks of these offices are shown below. Other offices such as Accounting and Budget are also involved in the sector projects.

- MPDO is in-charge of municipal planning and development. It is mandated to formulate integrated economic, social and physical development plan and corresponding policies for the Municipal Development Council (MDC).
- MEO is responsible for formulating/ integrating infrastructure plans, programs/ projects of the municipal government, and it regularly performs engineering surveys for designs/ layouts and inspects the works of contractors.
- MHO, through Rural Health Units/ Barangay Health Stations (RHUs/ BHSSs), provides health services to the barangay residents, and also undertakes water quality testing through Rural Sanitary Inspector (RSI).

2) Sangguniang Barangay

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

(3) Field Offices of Central Sector Agencies

1) DPWH District Engineer's Office (DEO)

There are four (4) District Engineering Office (DEO) of DPWH in the province. The DEO is mandated to undertake and evaluate the planning, design and construction, and work supervision functions for all public works within the district. They coordinate with other departments, agencies, institutions and LGUs within the district in the implementation of infrastructure projects. No water supply projects are directly implemented by DPWH presently; however, the DEO still provides assistance for barangays in constructing Level I and II water supply systems that are financed by the Congressional Development Fund.

2) DILG Provincial Director's Office/Municipal/City Local Government Operations Offices (PDO/MLGOO/CLGOO)

The PDO/MLGOO/CLGOO is tasked to provide general administration and institution-building support to the WATSAN implementers to strengthen their capacity to deliver basic services. Training on WATSAN topics is headed by this office in close coordination with the PPDO at the provincial level, the MPDC/CPDC at the municipal/city level.

3) NEDA Regional Office and Regional Development Council

NEDA Regional Office coordinates with DILG to establish the system for regional sector master planning and the monitoring system. The NEDA Regional Office acts as a secretariat of the Regional Development Council and ensures that sector plans are consistent with regional and national priorities. The office requires project proposals/ plans and programs to be approved and endorsed by the Provincial Development Council, whose task is to incorporate, consolidate, and prioritize municipal plans, programs and projects.



The NEDA Regional Office No.6 has already prepared the Regional (Region VI) Master Plan (period: 1999-2004). The PPDO itself was involved in the preparation of this plan, specifically on the part of the province.

**(4) Community Institutions and Water Supply System Operation Bodies**

**1) Barangay Waterworks and Sanitation Association (BWSA)**

The BWSA is an organization of water supply and sanitation beneficiaries in a barangay, which owns and manages the water supply system/s that are not covered by Water Districts. RA 6716 requires its formation to ensure the provision of adequate, potable, and accessible water supply to its members through the proper operation and maintenance of Level I and II facilities. Presently, some BWSAs are still functional (about 80% are nonfunctional due to the lack of organizational viability and facility maintenance). The size of the BWSA depends on the number of facilities, and the need, culture and situation in a particular barangay; its structure is simple, consisting of the Board of Directors, a treasurer, bookkeeper, and caretaker/s.

**2) Water Districts (WDs)**

Water Districts are formed in accordance with 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. The LWUA also exercises regulatory functions over 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. The province has 17 WDs, which supply water through Level III systems to the respective franchise areas in the province. As of 1997, 18.82% of the total population of the province has been served by Level III water supply systems, which are managed either by WDs or LGU Waterworks.

**3) LGU Waterworks**

In the province, 11 LGU waterworks have been established for delivering Level III water supply services to residents and establishments in the areas not served by WDs. These waterworks are presently undertaking the operation and maintenance of their respective Level III water supply systems by themselves. The fees are collected from water users in order to recover costs of operation and maintenance of facilities.

#### (5) Private Sector and NGO

In general, many water and sanitation systems have been implemented by the private sector, NGOs, and community-based organizations which oftentimes undertake the operation and maintenance of the systems. During the past decade, NGOs and the private sector have been involved in water supply development through investments, technical studies and construction of water supply and sanitation facilities. Thirteen (13) NGOs are active in the province. Several NGOs are currently involved in WATSAN projects/activities.

### 5.6 External Support Agencies Active in the Sector

#### (1) Multilateral Agencies

The World Bank supported the First Water Supply, Sewerage and Sanitation Sector Project (FW4SP). This project provided capital funds (US\$58.0M) for rural water supply system in Luzon provinces and sanitation system nationwide based on completed provincial master plans. The project concept called for a community-based approach through BWSAs. The project was implemented from 1991 to 1995 with an extension up to 1997. Subsequently, the Capacity Enhancement Program (CEP) with DILG as implementing agency was conducted until the end of 1997. In addition, the Bank prepared a new loan for DILG implementation - the Local Government Unit Urban Water Supply & Sanitation Project (LGU-UWSSP). This project aims to support the water supply requirement in the urban centers of approximately 250 small and medium-sized municipalities nationwide, benefiting about 6 million people. The project consists of three components, namely: i) Water and Sanitation Facilities Component, ii) Institutional Development Component and iii) Technical Assistance Component. The project is to be implemented from 1999 to 2006 in three phases, and estimated cost is US\$ 250 M. Further information on LGU-UWSSP is described in the Chapter 9.

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

will be completed by the year 2001. More information on this project (RW3SP) is shown in Chapter 9.

UNDP assists the Institution Building for Decentralized Implementation of Community-Managed Water Supply and Sanitation Project or IBWSSP known as UNDP PHI/93/010 Project under the Fifth Country Program (1994-1997). This project directly responds to the government's Poverty Alleviation Program. UNDP provides assistance in strengthening the institution involved in the delivery of water supply and sanitation services with emphasis on support to local government units, NGOs, and communities through the BWSAs. The project will complement earlier efforts by UNDP (through the UNDP/World Bank Water and Sanitation Program) to promote appropriate cost effective technologies in water and sanitation and to improve the training capacity of the sector. The project covered seven (7) provinces; 180 sub-projects were implemented in the objective areas during implementation period 1994-1997.

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.

## (2) Bilateral Agencies

The Japan International Cooperation Agency (JICA) has been extending a grant aid program for the Rural Environmental Sanitation Project, which was jointly implemented by DPWH and DOH. The project covered construction of rural water systems (Level I and Level II) and elementary school toilet facilities. Phase I (pilot project) of the project was implemented from 1985 through 1986 in four (4) provinces in Luzon, Phase II from 1990 through 1992 in eight (8) provinces (including Iloilo, Antique, Capiz and Aklan from Region VI). Phase III covered ten (10) provinces in Region IV, V and X, and the implementation started in 1996 to complete by the end of 1998. With DPWH, rural water supply systems were constructed at the evacuation centers for the Pinatubo refugees. JICA also supported the ground water development study in Cavite province (with LWUA) and the institutional development activities for MWSS. The PW4SPs for nine (9) provinces in Luzon area, ten (10) provinces in Mindanao area and six (6) provinces in Visayas area were completed through previous technical cooperation.

The Overseas Economic Cooperation Fund (OECF), now the Japan Bank for International Cooperation (JBIC), provided financial assistance for the RWS IV Project. It provided a loan of up to Y 5.08B, with a counterpart fund of P 400M. The project covered construction/rehabilitation of Level I systems, construction of workshop building and procurement of various equipments. JBIC has also been supporting the Provincial Cites Water Supply Project of LWUA and the Angat Water Supply Optimization Project of MWSS. DILG requested OECF last year (1998) to provide a loan for the Rural Water Supply and Sanitation Project V (RWSSP V) for the 6 provinces in Luzon (based on JICA assisted PW4SPs). The project will achieve additional service coverage both for water supply and sanitation as follows: 549,100 persons with water supply, 9,579 households provided with latrines, 18,750 students with 375 school toilets and 72 public toilets.

The Australian International Development Assistance Bureau (AIDAB) supported the Central Visayas Water and Sanitation Project through a \$ 14.65M grant. The LGUs and the Regional Development Council implemented the project. Project components include: planning and monitoring information systems; infrastructure planning and rehabilitation; and institution building with an emphasis on community management based on experience from other AIDAB-funded projects. The project period was extended until 1997.

The terms and conditions, priority areas, programs and projects by donor are shown in Table 5.6.1, Supporting Report.

### **5.7 Project Management Arrangement, and Issues and Problems**

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