Chapter 4

EXISTING FACILITIES AND SERVICE COVERAGE

4. EXISTING FACILITIES AND SERVICE COVERAGE

4.1 Water Supply

4.1.1 General

Existing water supply facilities and conditions were surveyed by municipality under the category of urban and rural areas (as of October 1998 and regarded as a figure in 1997). Facilities are classified into three service levels, of which Level I facilities are further classified into safe and unsafe for drinking purpose.

The percentages of service coverage by different service level were estimated covering urban and rural areas by municipality. The served population is defined as "population served adequately with access to safe water sources/facilities." The rest of the population with unsafe sources/facilities and without access to water supply facilities was then defined as "underserved population" and "unserved population," respectively. The service coverage was figured out using estimated population in 1997.

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

As a provincial total, approximately 78% of the present population (of which 30% in urban area and 70% in rural area) is considered as adequately served (refer to 4.1, Supporting Report for the detailed study). Under the area classification, 74% of urban population and 80% of rural population have access to safe water sources/facilities, while the rest is underserved or unserved. About 562,400 persons or 73% of the served population depend on Level I facilities, while about 207,700 persons or 27% are served by Level III and/or Level II systems.

4.1.2 Types of Facilities and Definition of Service Level Standard

(1) Composition of water supply system/facility

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

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

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

(2) Safe and unsafe classification of water sources

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

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

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

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

(3) Service level standard

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

Level III: 1 household/connection

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

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

4.1.3 Level III Systems

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

There are 30 Level III systems in the province operated under different kinds of ownership (authority or association) as shown in Table 4.1.2 together with their service coverage in 1997 (details are referred to in Table 4.1.1, Supporting Report). These are:

- 5 Water Districts in the municipalities of Don Carlos, Kibawe, Maramag, Valencia and Malaybalay City;
- 7 Municipal waterworks in the municipalities of Baungon, Dangcagan, Kalilangan, Lantapan, Manolo-Fortich, Quezon and Sumilao;
- 18 systems operated by the RWSA in the municipalities of Impasugong (2 waterworks), Libona (5), Malaybalay (4), Manolo-Fortich, Pangantucan, Talakag and Valencia (4).

Malaybalay WD is the largest system in the province, covering 13 urban barangays and 1 rural barangay in the city of Malaybalay. It has a served population of 27,100 using surface water and deep well sources. Presently, the WD covers 88% of the urban area. Insufficient water sources and limited capacity of filtration plant are the current problems.

Aside from the WD, there are 4 other individual waterworks in the city of Malaybalay being operated by the respective RWSAs to supply water to their corresponding rural barangay. Served population of these waterworks ranges from 120 to 1,200.

Following Malaybalay WD is the Valencia WD, the second largest system in the province. The WD covers 1 urban and 4 rural barangays with served population of 24,400. Water source is a combination of spring and deep well. The WD has a plan to expand the system covering 1 urban and 1 rural barangay with financial support from the Land Bank. Aside from the WD, there are 4 other waterworks being operated by the RWSAs in the municipality of Valencia. These waterworks cover 1 urban and 3 rural barangays with served population ranging from 260 to 3,020.

In the municipality of Baungon, a waterworks operated by the municipal government is supplying water to 1 urban barangay with a served population of 1,000 representing to 21% of the urban population. Water source is a combination of spring and deep well. The project to

Table 4.1.2 Information on Existing Level III System

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
Baungon	MIWS-LGU	DW/SP	101	100	1		1	172		172	1,032		1,032
Dangcagan	Poblacion Dangcagan	SP	79	95	1		1	160		160	867		867
Don Carlos	Don Carlos WD	DW/Sur	444	76	1	2	3	407	283	690	2,133	1,503	3,636
Impasugong	Capitan Bayong	SP				1	1		95	95		532	532
	La Fortuna WWA	SP	457	71	1	1	2	405	35	440	2,329	196	2,525
	Municipal Total	SP	11,514	80	1	2	3	405	130	535	2,329	728	3,057
Kalilangan	Kalilangan WS	SP	236	79	2	1	3	214	36	250	1,156	193	1,349
Kibawe	Kibawe WD	DW	309	74	3	2	5	533	72	605	2,772	369	3,141
Lantapan	Lantapan WWS	SP			2	3	5	180	121	301	1,015	667	1,682
Libona	Crossing WWA	DW	118	100		1	1		350	350		2,100	2,100
	Laturan WWA	DW	70	96		1	1		172	172		1,032	1,032
	Pongol WWA	DW	65	97		1	1		97	97		582	582
	San Jose WWA	DW	90	100		1	1		145	145		870	870
	Water Task Force Ass.	DW	108	100	1		1	175		175	935		935
	Municipal Total	SP	450	2,055	1	4	5	175	764	939	935	4,584	5,519
Malaybalay (Capital)	Aglayan WS	DW				1	1		110	110		660	660
	Bangcud WS	DW				1	1		20	20		120	120
	Malaybalay WD	DW/Sur	4,152	73	13	1	14	4,635	327	4,962	25,261	1,792	27,053
	San Jose WS	DW				1	1		50	50		300	300
	San Martin WS	SP				1	1		200	200		1,200	1,200
	Municipal Total	DW/Sur	4,152	73	13	5	18	4,635	707	5,342	25,261	4,072	29,333
Manolo Fortich	Del Monte Phil. Inc.	DW				1	1		1,038	1,038		7,967	7,967
	Manolo Fortich WW	DW/SP	1,926	95	1	6	7	770	2,110	2,880	4,281	11,668	15,949
	Municipal Total	DW/SP	1,926	95	1	7	8	770	3,148	3,918	4,281	19,635	23,916
Maramag	Maramag WD	SP	1,074	69	2	1	3	1,103	105	1,208	5,879	558	6,437
Pangantucan	Malipayon WS	SP			1		1	200		200	1,200		1,200
Quezon	LGU-Quezon	SP	5,379	100	2	3	5	1,440	353	1,793	7,639	1,889	9,528
Sumilao	Kisolon WS	SP	501	92	3		3	396		396	3,881		3,881
Talakag	San Antonio WS	SP			5		5	800		800	4,800		4,800
Valencia	Laligan RWSA	SP	172	100		1	1		286	286		1,501	1,501
	Lurugan RWSA	SP	278	100		1	1		570	570		3,021	3,021
	Guinoyoran RWSA	SP	253	100	1		1	457		457	2,376		2,376
	Sinayawan	DW				1	1		50	50		264	264
	Valencia WD	DW/SP	3,826	76	1	4	5	3,436	1,187	4,623	18,176	6,267	24,443
	Municipal Total	DW/SP	4,529	80	2	7	9	3,893	2,093	5,986	20,552	11,053	31,605
Provincial Total			19,636	85	41	37	78	15,483	7,812	23,295	85,732	45,251	130,983

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

augment the transmission line and expansion of distribution is under way awaiting the funds from the ADB-urban project.

In the municipality of Dangcagan, there is one Level III system with Level II service (combined source of spring and deep well) being operated by the municipality. Presently, only 900 persons (20% of urban population) are served. Expansion of the system with development of the spring source is required.

The municipality of Don Carlos has a WD covering 1 urban and 2 rural barangays using lake water and deep well sources. The present served population is 2,100 in the urban and 1,500 in the rural area. These correspond to only 9% of the urban and 5% of the rural population. The remaining use shallow wells. The promotion of the users to join WD is under way.

In the municipality of Impasugong, there are 2 waterworks that are operated by the RWSAs. La Fortuna WWA covers 1 urban and 1 barangays with a total served population of 2,500. The other one covers 1 rural barangay with a served population of 530. Both waterworks have springs as their water sources.

In the municipality of Kalilangan, 1 waterworks, which is operated by the municipal government, is supplying water to 2 urban and 1 rural barangays using a spring source. Total served population is only 1,400 persons (1,200 in urban and 200 in rural area). Majority of the people use free flowing Level I well. Presently, under the LGU-urban water supply project, there is a plan for expansion of the system.

In the municipality of Kibawe, 1 waterworks that is operated by the WD covers 3 urban and 2 rural barangays using deep well sources. The system adopts the combined system with communal faucets. The served population is 3,200 (64% of urban and 1% of rural population) including the beneficiaries using communal faucets. The WD is planning to expand the system through the financial assistance from LWUA.

The municipality of Lantapan has 1 waterworks being operated by the municipality. The system, combined with communal faucets, serves 2,300 persons in 2 urban and 3 rural barangays using a spring source. The present service coverage is only 8% of the urban and 4% of the rural population. The municipality is one of the recipient of the LGU-urban water supply project.

In the municipality of Libona, there are 5 waterworks, which are operated by the RWSAs. All waterworks utilize deep well sources. The current served population of these systems ranges from 600 to 2,100. Expansion of service to cover 11 barangays (including 10 rural barangays) is being planned using surface water through the financial support from ADB.

In the municipality of Manolo Fortich, there are 2 waterworks that is operated by the municipal government and the private sector. The municipal waterworks is supplying water to 1 urban and 6 rural barangays with a served population of 16,000 using spring and deep well sources. The system covers 78% of the urban population at present. Expansion of the system

is covered by the ADB-assisted project. Other waterworks, the Del Monte Phil. Inc.-operated system is catering to 1 rural barangay with a served population of 8,000 using deep wells.

In the municipality of Maramag, the WD supplies water to 2 urban and 1 rural barangay with a served population of about 6,400 (5,900 in urban and 500 in rural area) using spring source. Presently, the WD serves only 11% of the urban population. Many Level II systems also serve urban barangays. Upgrading from Level II to Level III is required in the future.

In the municipality of Pangantucan, 1 waterworks that is operated by the RWSA covers 1 urban barangay with a served population of 1,200 (5% of urban population) using spring source. Majority of the urban barangay is served by Level II systems. Upgrading of such systems is a requisite with the use of spring sources.

In the municipality of Quezon, 1 waterworks, which is operated by the municipality serves 2 urban and 3 rural barangays. Water source is spring in application of pumping. Total population served is 9,500 (7,600 in urban and 1,900 in rural area).

In the municipality of Sumilao, 1 waterworks with communal faucets that is operated by the municipality serves 3 urban barangays. The present served population is 5,500 (including the beneficiaries using communal faucets) representing 50% of the urban population. Water source is spring located in the municipality of Impasug-ong. The existing intake facility is not properly protected and hence, easily affected by contaminants.

In the municipality of Talakag, 1 waterworks, which is operated by the RWSA covers 5 urban barangays with served population of 4,800 (12% of urban population).

The other 6 municipalities, such as, Cabanglasan, Damulog, Kadingilan, Kitaotao, Malitbog and San Fernando have no Level III system/s both in urban and rural area at present.

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		
Don Carlos WD	690	15	128		833	833	57,600	13,320
Kibawe WD	607	6	95	2	710	710	300,960	9,273
Malaybalay WD	4,964	81	531		5,576	5,576	196,128	124,562
Maramag WD	1,208	35	356		1,599	1,599	122,340	32,220
Valencia WD	4,623		880		5,503	5,503	116,910	114,780

4.1.4 Level II Systems

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

There are a total of 152 Level II systems in all municipalities/city in the province. Majority of these is utilizing spring sources (132 systems), while 19 systems use deep wells and 1 system in Libona uses surface water (details are referred to in Table 4.1.2, Supporting Report). Malaybalay City has the largest number, 23 systems or 15% of the total. as reflected in Table 4.1.4 together with service coverage in 1997. Most of the waterworks with pumping system have limited water supply for less than 6 hours per day due to insufficient capacity of facility and inability to fully pay the electric charges. Some of the systems using spring source encountered supply interruption caused by bursting of pipes due to inappropriate pipe installation and high water pressure. This supply interruption has also resulted to dirty water.

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

(1) Management practice

About 30% of the waterworks impose flat rate water charge of 5 to 20 Pesos/HH/month and the rest supplies water free of charge. Regarding repair works, they resort to requesting assistance from the MEO or Water Division of the province, when necessary. This fact shows that that the current management practices will lead to any one of these systems to become non-operational sooner or later. This is because the financial savings to cope with future repair and depreciation of existing facilities are not duly considered under the current management practice, and furthermore, cost recovery by the operating bodies is a prerequisite in sector management.

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

(2) Technical skill for O&M of facilities

Utilization of spring source usually leads to less attention to the daily O&M practice, owing to gravity flow of water to the service area. However, inappropriate care of spring

Table 4.1.4 Information on Existing Level II System

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
Baungon	Liboran WS		1	1		120	120		720	720
	Lingating WS		1	1		108	108		648	648
	Nicdao WS	1		1	35		35	210		210
	Municipal Total	1	2	3	35	228	263	210	1,368	1,578
Cabanglasan	Anlugan WW		1	1		42	42		252	252
	Cananga-an WW		1	1		72	72		432	432
	Capinonan WW		1	1		90	90		540	540
	Dalacutan WW		1	1		30	30		180	180
	Freedom WW		1	1		42	42		252	252
	Iba WS		1	1		30	30		180	180
	Imbatug WW		1	1		72	72		432	432
	Jasaan WS		1	1		70	70		420	420
	Lambagan WS		1	1		42	42		252	252
	Mandaing WS		1	1		60	60		360	360
	Mauswagon WW		1	1		48	48		288	288
	Paradise WW		1	1		48	48		288	288
	Poblacion WS	1		1	65		65	390		390
	Municipal Total	1	12	13	65	646	711	390	3,876	4,266
Dangcagan	San Vicente WS		1	1		50	50		200	200
Damulog	Macapari WS		1	1		65	65		325	325
	New Compostela WS		1	1		125	125		625	625
	Poblacion WS	1		1	35		35	175		175
	Pocopoco WS		1	1		73	73		365	365
	Municipal Total	1	3	4	35	263	298	175	1,315	1,490
Don Carlos	Kibatang WS		1	1		70	70		420	420
	Manlamonay WS		1	1		62	62		312	312
	New Nongnongan WS	1		1	72		72	432		432
	Pualas WS	1		1	90		90	540		540
	San Antonio East WS		1	1		30	30		180	180
	Municipal Total	2	3	5	162	162	324	972	912	1,884
Impasugong	Bolunay WS		1	1		30	30		168	168
	Dumalaguing WS		1	1		48	48		269	269
	Hagpa WS		1	1		25	25		140	140
	Kalabugao WS		1	1		132	132		792	792
	Sayawan WS		1	1		42	42		235	235
	Municipal Total		5	5		277	277		1,604	1,604
Kadingilan	Malinao WS		1	1		140	140		700	700
	Poblacion WS	1		1	270		270	1,620		1,620
	Sibonga WS		1	1		68	68		340	340
	Municipal Total	1	2	3	270	208	478	1,620	1,040	2,660
Kalilangan	Bangbang WSA		1	1		72	72		432	432
	Barorawon WSA		1	1		15	15		90	90
	Canituan WS Org.	1		1	48		48	288		288
	KIWASA		1	1		75	75		375	375
	Upper Kinura WSA	1		1	42		42	252		252
	Municipal Total	2	3	5	90	162	252	540	897	1,437
Kitaotao	KCES				48		48	288		288
	Plaza Site				48		48	288		288
	Teacher Village				72		72	432		432
	Municipal Total				168		168	1,008		1,008
Lantapan	Basak WS		1	1		90	90		496	496
	Bantuanon WS		1	1		162	162		893	893
	Bugcaon WS		1	1		105	105		592	592
	Capt. Juan WS		1	1		60	60		331	331
	Kaatuan WS		1	1		120	120		661	661
	Kawayan WS		1	1		60	60		331	331
	Kibangay WS		1	1		210	210		1,157	1,157
	Kulasihan WS		1	1		35	35		197	197
	Victory WS		1	1		72	72		397	397
	Municipal Total		9	9		914	914		5,055	5,055
Libona	Kiliog WS		1	1		30	30		180	180
	Kinawe WS		1	1		48	48		288	288
	Kiong-kog WS		1	1		42	42		252	252
	Libona WSS		7	7		885	885		4,425	4,425
	Municipal Total		10	10		1,005	1,005		5,145	5,145
Malaybalay (Capital)	Busdi WS		1	1		100	100		500	500
	Caburacanan WS		1	1		72	72		360	360
	Can-ayan WS		1	1		102	102		510	510

Table 4.1.4 Information on Existing Level II System (Cont'd)

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
Malavbalav (Capital)	Capitan Angel WS		1	1		36	36		216	216
	Dalwangan WS		1	1		126	126		630	630
	Imbayao WS		1	1		90	90		540	540
	Indalasa WS		1	1		48	48		288	288
	Kibalabag WS		1	1		45	45		270	270
	Kulaman WS		1	1		60	60		300	300
	Linabo WS		1	1		24	24		144	144
	Magsaysay WS		1	1		40	40		240	240
	Maligaya WS		1	1		60	60		360	360
	Managok WS		1	1		36	36		180	180
	Manalog WS		1	1		36	36		180	180
	Mapayag WS		1	1		60	60		360	360
	Mapulo WS		1	1		60	60		360	360
	Miglamin WS		1	1		80	80		400	400
	Pat-pat WS		1	1		36	36		180	180
	Silae WS		1	1		66	66		330	330
	Simaya WS		1	1		78	78		390	390
	Sinanglanan WS		1	1		48	48		240	240
	St. Peter WS		1	1		48	48		240	240
	Zamboangita WS		1	1		90	90		450	450
	Municipal Total		23	23		1,441	1,441		7,668	7,668
Malitbog	Kalingking BWSA		1	1		60	60		300	300
	Kiabo BWSA		1	1		30	30		180	180
	Mindagat BWSA		1	1		48	48		288	288
	Omagling BWSA		1	1		28	28		150	150
	Sampiano BWSA		1	1		30	30		180	180
	San Luis BWSA		1	1		48	48		300	300
	Silo-o BWSA		1	1		20	20		120	120
	Sumalsag BWSA	1		1	21		21	112		112
	Municipal Total	1	7	8	21	264	285	112	1,518	1,630
Manolo Fortich	Alae-Mambatangan-		3	3		162	162		972	972
	Dahilayan WS		1	1		49	49		294	294
	Dalirig WS		1	1		210	210		1,260	1,260
	Kalugmanan WS		1	1		35	35		210	210
	Lindaban WS		1	1		30	30		180	180
	Lingi-on WS		1	1		60	60		360	360
	Maluko WS		1	1		180	180		1,080	1,080
	Guilang-Guilang WS		1	1		45	45		270	270
	Santiago WS		1	1		30	30		150	150
	Ticala WS		1	1		30	30		150	150
	Municipal Total		5	5		277	277		1,604	1,604
Maramag	Anahawon		1	1		58	58		308	308
	Bayabason		1	1		120	120		637	637
	Camp I	1		1	216		216	1,151		1,151
	Dagumbaan	1		1	580		580	3,091		3,091
	Danggawan		1	1		48	48		255	255
	Dologon	1		1	120		120	640		640
	Kiharong	1		1	67		67	357		357
	Kisanday	1		1	250		250	1,333		1,333
	Kolambugon	1		1	120		120	640		640
	Kuya	1		1	250		250	1,333		1,333
	La Roxas	1		1	290		290	1,546		1,546
	Panadtalan		1	1		230	230		1,221	1,221
	Panalsalan		1	1		150	150		797	797
	San Miguel	1		1	280		280	1,492		1,492
	San Roque		1	1		180	180		956	956
	Tubigun		1	1		180	180		956	956
	Municipal Total	9	7	16	2,173	966	3,139	11,583	5,130	16,713
Pangantucan	Adtuyon WS									
	Bacusanon WS	1		1	64		64	384		384
	Barandias WS	1		1	67		67	386		386
	Concepcion WS		1	1		24	24		144	144
	Gandingan WS		1	1		30	30		180	180
	Kimanait WS	1		1	168		168	1,008		1,008
	Lantay WS		1	1		60	60		360	360
	Mendis WS		1	1		35	35		210	210
	Nabaliwa WS	1		1	38		38	228		228

Table 4.1.4 Information on Existing Level II System (Cont'd)

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
Pangantucan	New Eden WS		1	1		50	50		285	285
	Pigtauranan WS		1	1		38	38		228	228
	Poblacion WS	1		1	35		35	175		175
	Fortulin WS		1	1		20	20		125	125
	Municipal Total	5	7	12	372	257	629	2,181	1,532	3,713
Quezon	Cawayan WWS		1	1		20	20		120	120
	Dumalama WWS		1	1		32	32		192	192
	Linabo WWS		1	1		21	21		130	130
	Magsaysay WS		1	1		42	42		252	252
	Marangerang WWS		1	1		74	74		445	445
	Palacapao WWS		1	1		30	30		185	185
	Puntian WWS		1	1		25	25		150	150
	San Roque WWS		1	1		25	25		150	150
	Sta. Cruz WWS		1	1		50	50		285	285
	Municipal Total		8	8		299	299		1,789	1,789
San Fernando	Iglusad WS		1	1		42	42		252	252
	Little Baguio WSS	1		1	60		60	360		360
	Nacabuklad WS		1	1		30	30		180	180
	Municipal Total	1	2	3	60	72	132	360	432	792
Sumilao	Lico-an WS		1	1		50	50		800	800
	Poblacion WS	1		1	270		270	1,620		1,620
	Puntian WS		1	1		48	48		336	336
	San Roque WS		1	1		72	72		432	432
	Municipal Total	1	3	4	270	170	440	1,620	1,568	3,188
Talakag	San Isidro WWS		1	1		75	75		450	450
	Brgy. 5 WWS	1		1	42		42	252		252
	Municipal Total	1	1	2	42	75	117	252	450	702
Valencia	Banlag WS		1	1		180	180		1,080	1,080
	BaroboWS		1	1		45	45		270	270
	Concepcion WS		1	1		24	24		144	144
	Kabayugan WS		1	1		30	30		106	106
	Lilingayon WS		1	1		240	240		1,440	1,440
	Lumbayao WS		1	1		120	120		678	678
	Mt. Nebo WS		1	1		130	130		780	780
	Pulahan WS		1	1		70	70		370	370
	Tugaya WM		1	1		186	186		1,116	1,116
	Municipal Total		9	9		1,025	1,025		5,984	5,984
Provincial Total		26	130	156	3,763	9,335	13,098	21,023	52,529	73,552

box and pipeline results to various problems, e.g. turbid water, less water flow by clogging at spring box and pipeline, etc. Physical damage may also happen to the transmission line exposed on the ground in the mountainous area due to landslide, etc. associated with heavy rainfall, when proper protection of pipeline is not taken up.

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

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

4.1.5 Level I Facilities

Level I facilities (point source) are common in rural barangays, majority of which are privately owned. 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 1997 is also estimated as shown in the same table.

Of the 12,140 operational Level I facilities, 21% are shallow wells. According to the data from PHO, as a provincial average, 50% of the shallow wells are estimated to be unsafe. All deep wells, covered/improved dug wells and developed springs are regarded as safe water sources. By applying the unsafe percentage to the number of shallow wells for each municipality, 8,784 Level I facilities are classified as safe sources, while 3,357 facilities are belong to unsafe sources.

Percentage shares between public and private Level I facilities for rural water supply is 13% and 87%, respectively. The share of developed springs in public facilities is 46% (details are referred to Supporting Report).

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

(1) Unsafe water sources

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

These shallow wells shall be provided with concrete apron on the ground surface and proper drainage facility at the surrounding area. Relocation of wells or pollution sources may be another countermeasure. For new construction of shallow wells, proper site selection and appropriate construction method shall be applied together with periodic monitoring of water quality.

Table 4.1.5 Information on Existing Level I Facilities

Name of Municipality	Number of Safe Water Sources					Number of Unsafe Water Sources					Served by Safe Source					
											Number of Household			Number of Population		
	Deep Well	Shallow Well	Covered/ Improved Dug Well	Developed Spring	Total	Shallow Well	Open Dug Well	Undeveloped Spring	Rain Water Collector	Total	Urban	Rural	Total	Urban	Rural	Total
Baungon	12	27		101	140	27				27	500	2,651	3,151	2,702	14,075	16,777
Cabanglasan	15	1		5	21	1				1	511	3,878	4,389	2,881	21,174	24,056
Damulog	4	4	45	15	68	4				4	480	1,918	2,398	2,401	9,839	12,240
Dangcagan	10	11	29	10	60	11	318		15	344	471	455	925	2,551	2,486	5,038
Don Carlos	41	965	53	17	1,076	965			18	983	2,046	3,100	5,146	10,722	16,462	27,185
Impasugong	37	2		17	56	2				2	376	3,147	3,523	2,162	17,622	19,784
Kadingilan	9	4	18	33	64	4			55	59	245	2,499	2,744	1,236	13,094	14,330
Kalilangan	140	2	1	21	164	2	95			97	2,120	825	2,945	11,445	4,415	15,861
Kibawe	3	2	213	24	242	2			31	33		4,658	4,658		23,848	23,848
Kitaotao	8	30		74	112	30			6	36	1,196	4,311	5,507	5,801	22,285	28,087
Lantapan	3	2		10	15	2				2	1,979	2,732	4,711	11,159	15,056	26,215
Libona	55	2	7	13	77	2	128		2	132	63	1,745	1,807	335	9,648	9,983
Malaybalay (Capital)	165	27	192	60	444	27	493			520		7,212	7,212		39,523	39,523
Malitbog	77		43	34	154		4		9	13	422	2,198	2,620	2,160	11,716	13,875
Manolo Fortich	36	5		18	59	5				5	135	6,562	6,696	701	36,484	37,185
Maramag	17	31		13	61	31	101		764	896	630	110	740	3,357	587	3,944
Pangantucan	41			34	75		3		36	39	2,871	1,834	4,705	15,734	9,903	25,637
Quezon	42	19	1,147	2	1,210	19			4	23	1,119	10,204	11,323	5,930	54,592	60,522
San Fernando	99	21	23	34	177	21	2			23	1,966	3,650	5,616	10,162	19,564	29,726
Sumilao	7	1		7	15	1				1	639	630	1,269	3,559	3,473	7,032
Talakag	19	2		18	39	2			2	4		5,502	5,502		29,653	29,653
Valencia	381	115	3,840	121	4,457	115				115	2,624	14,821	17,446	13,883	78,256	92,139
Provincial Total	1,221	1,271	5,611	681	8,784	1,271	1,144		942	3,357	20,392	84,642	105,034	108,883	453,757	562,640

(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.	248	477	973	2,064	3,762
	Percent	58%	78%	81%	96%	86%
Non-Functioning	No.	178	133	228	87	626
	Percent	42%	22%	19%	4%	14%
Total Number		426	610	1,201	2,151	4,388

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, etc.

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 the 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 involving 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 1997, base year for planning purpose, was estimated referring to NSO population census results (1980, 1990 and 1995), 1995 Census-based National and Regional Population projection prepared by NSO and Provincial Physical Framework Plan/Comprehensive Provincial Land Use Plan. However, population distribution in 1995 census by urban and rural barangay prepared by NSO was adjusted to meet ac-

tual conditions in the classification of barangays. Details are referred to Section 8.3.1 Population Projection.

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

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

The average number of households sharing at each Level I public/private facility was calculated at an average of 19 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, 78% of the population is adequately served (74% of urban population and 80% of rural population).

The percentage of underserved population is estimated at 18% of the total population (21% of urban population and 17% 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 a predominant service coverage in most of all municipalities/city in the province.

Percentage shares of population coverage by Level I public and private facilities in rural water supply are estimated at 25% and 75%, 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 Malaybalay (88% of urban population), Talakag (85%), Manolo Fortich (78%), Kibawe (64%), Valencia (56%) and Quezon (53%).

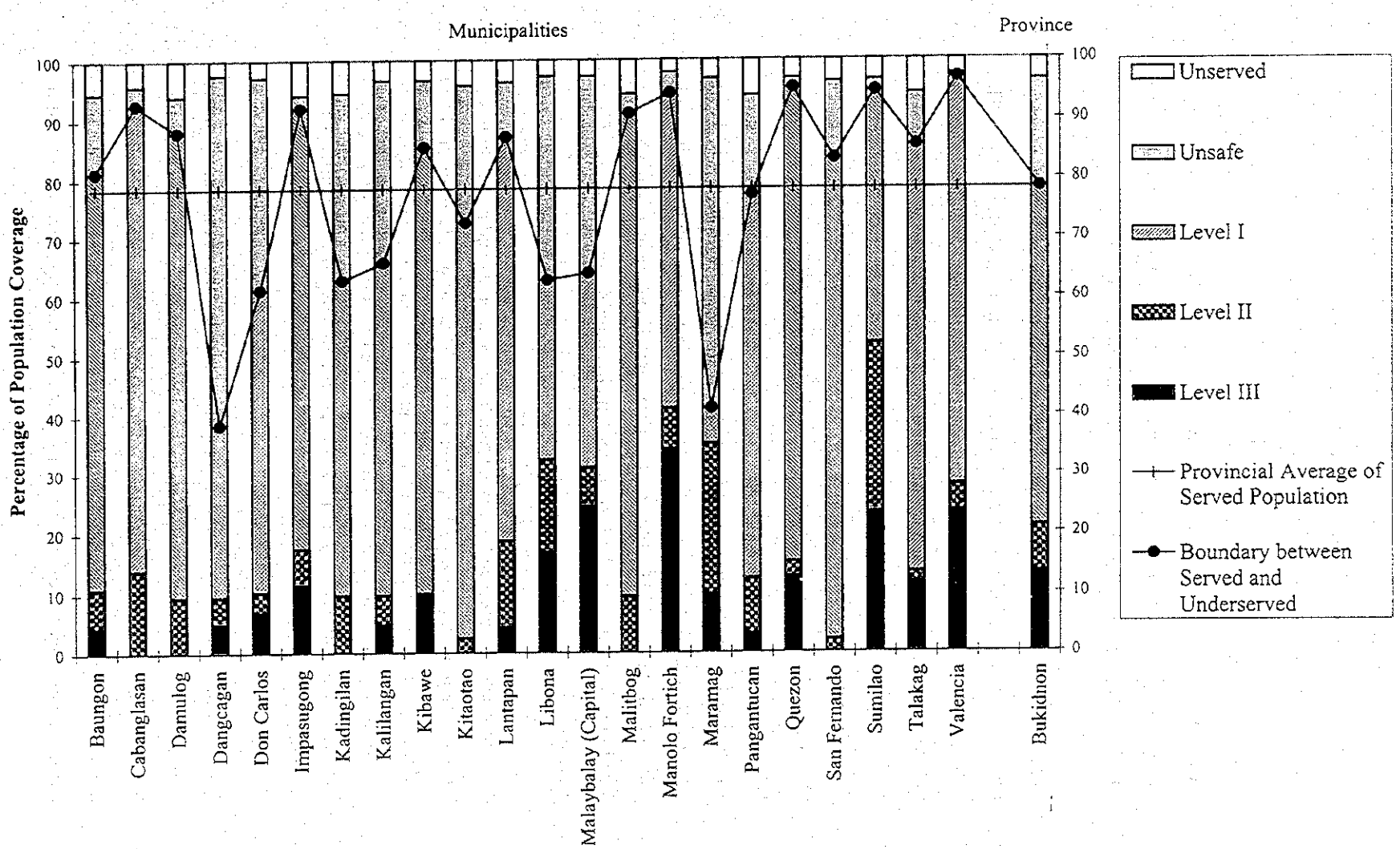
Table 4.1.7 Water Supply Service Coverage by Municipality

Name of Municipality	Area	Population (1997)	Population Coverage							Percentage of Population Coverage						
			Served by Safe Source				Underseved/Unserved			Served by Safe Source				Underseved/Unserved		
			Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total	Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total
Baungon	Urban	4,960	1,032	210	2,702	3,944	540	476	1,016	21	4	54	80	11	10	20
	Rural	18,906		1,368	14,075	15,443	2,654	809	3,463		7	74	82	14	4	18
	Total	23,866	1,032	1,578	16,777	19,387	3,194	1,285	4,479	4	7	70	81	13	5	19
Cabanglasan	Urban	4,013		390	2,881	3,271	262	480	742		10	72	82	7	12	18
	Rural	26,540		3,876	21,174	25,050	683	807	1,490		15	80	94	3	3	6
	Total	30,553		4,266	24,056	28,322	945	1,286	2,231		14	79	93	3	4	7
Damulog	Urban	3,870		175	2,401	2,576	961	333	1,294		5	62	67	25	9	33
	Rural	11,746		1,315	9,839	11,154		592	592		11	84	95		5	5
	Total	15,616		1,490	12,240	13,730	961	925	1,886		10	78	88	6	6	12
Dangcagan	Urban	4,548	867	612	2,551	4,030	364	153	518	19	13	56	89	8	3	11
	Rural	12,909		200	2,486	2,686	9,954	269	10,223		2	19	21	77	2	79
	Total	17,457	867	812	5,038	6,717	10,318	422	10,740	5	5	29	38	59	2	62
Don Carlos	Urban	23,145	2,133	972	10,722	13,827	8,763	555	9,318	9	4	46	60	38	2	40
	Rural	30,211	1,503	912	16,462	18,877	10,355	979	11,334	5	3	54	62	34	3	38
	Total	53,356	3,636	1,884	27,185	32,705	19,117	1,534	20,651	7	4	51	61	36	3	39
Impasugong	Urban	5,475	2,329		2,162	4,491	412	572	984	43		39	82	8	10	18
	Rural	21,110	728	1,604	17,622	19,954	188	968	1,156	3	8	83	95	1	5	5
	Total	26,585	3,057	1,604	19,784	24,445	600	1,540	2,140	11	6	74	92	2	6	8
Kadingilan	Urban	4,794		1,620	1,236	2,856	1,414	525	1,938		34	26	60	29	11	40
	Rural	22,227		1,040	13,094	14,134	7,146	947	8,093		5	59	64	32	4	36
	Total	27,021		2,660	14,330	16,990	8,560	1,472	10,031		10	53	63	32	5	37
Kalilangan	Urban	17,250	1,156	540	11,445	13,141	3,754	354	4,109	7	3	66	76	22	2	24
	Rural	11,049	193	897	4,415	5,505	4,935	609	5,544	2	8	40	50	45	6	50
	Total	28,299	1,349	1,437	15,861	18,647	8,689	963	9,652	5	5	56	66	31	3	34
Kibawe	Urban	4,347	2,772	52		2,824	1,124	399	1,523	64	1		65	26	9	35
	Rural	27,352	369		23,848	24,217	2,455	681	3,135	1		87	89	9	2	11
	Total	31,699	3,141	52	23,848	27,041	3,579	1,079	4,658	10	0	75	85	11	3	15
Kitaotao	Urban	9,891		1,008	5,801	6,809	2,486	595	3,082		10	59	69	25	6	31
	Rural	30,209			22,285	22,285	6,822	1,102	7,924			74	74	23	4	26
	Total	40,100		1,008	28,087	29,095	9,308	1,697	11,005		3	70	73	23	4	27
Lantapan	Urban	14,761	1,015	197	11,159	12,371	1,860	530	2,390	7	1	76	84	13	4	16
	Rural	23,619	667	5,325	15,056	21,048	1,673	898	2,571	3	23	64	89	7	4	11
	Total	38,380	1,682	5,522	26,215	33,419	3,533	1,428	4,961	4	14	68	87	9	4	13
Libona	Urban	2,317	935		335	1,270	719	327	1,047	40		14	55	31	14	45
	Rural	30,525	4,584	5,145	9,648	19,377	10,559	589	11,148	15	17	32	63	35	2	37
	Total	32,842	5,519	5,145	9,983	20,647	11,279	916	12,195	17	16	30	63	34	3	37

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

Name of Municipality	Area	Population (1997)	Population Coverage							Percentage of Population Coverage						
			Served by Safe Source				Underseved/Unserved			Served by Safe Source				Underseved/Unserved		
			Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total	Level III	Level II	Level I	Total	Unsafe Source	Unserved	Total
Malaybalay (Capital)	Urban	28,759	25,261			25,261	2,291	1,207	3,498	88			88	8	4	12
	Rural	91,419	4,072	8,058	39,523	51,653	37,659	2,107	39,766	4	9	43	57	41	2	43
	Total	120,178	29,333	8,058	39,523	76,914	39,950	3,314	43,264	24	7	33	64	33	3	36
Malitbog	Urban	2,704		112	2,160	2,272	84	348	432		4	80	84	3	13	16
	Rural	14,342		1,518	11,716	13,234	480	628	1,108		11	82	92	3	4	8
	Total	17,046		1,630	13,875	15,505	565	976	1,541		10	81	91	3	6	9
Manolo Fortich	Urban	5,512	4,281		701	4,982		530	530	78		13	90		10	10
	Rural	64,481	19,635	4,926	36,484	61,046	2,450	985	3,435	30	8	57	95	4	2	5
	Total	69,993	23,916	4,926	37,185	66,028	2,450	1,515	3,965	34	7	53	94	4	2	6
Maramag	Urban	52,948	5,879	11,583	3,357	20,819	31,350	779	32,129	11	22	6	39	59	1	61
	Rural	12,898	558	5,130	587	6,275	5,275	1,348	6,623	4	40	5	49	41	10	51
	Total	65,846	6,437	16,713	3,944	27,094	36,625	2,127	38,752	10	25	6	41	56	3	59
Pangantucan	Urban	23,078	1,200	2,181	15,734	19,115	3,078	885	3,963	5	9	68	83	13	4	17
	Rural	16,450		1,532	9,903	11,435	3,501	1,514	5,015		9	60	70	21	9	30
	Total	39,528	1,200	3,713	25,637	30,550	6,579	2,398	8,978	3	9	65	77	17	6	23
Quezon	Urban	14,458	7,639		5,930	13,569	3	887	889	53		41	94	0	6	6
	Rural	61,163	1,889	1,909	54,592	58,390	1,219	1,554	2,773	3	3	89	95	2	3	5
	Total	75,621	9,528	1,909	60,522	71,959	1,222	2,441	3,662	13	3	80	95	2	3	5
San Fernando	Urban	13,130		360	10,162	10,522	2,111	497	2,608		3	77	80	16	4	20
	Rural	23,524		432	19,564	19,996	2,630	897	3,528		2	83	85	11	4	15
	Total	36,654		792	29,726	30,518	4,741	1,394	6,136		2	81	83	13	4	17
Sumilao	Urban	10,880	3,881	3,224	3,559	10,664		216	216	36	30	33	98		2	2
	Rural	5,711		1,568	3,473	5,041	299	371	670		27	61	88	5	6	12
	Total	16,591	3,881	4,792	7,032	15,705	299	587	886	23	29	42	95	2	4	5
Talakag	Urban	5,663	4,800	252		5,052		611	611	85	4		89		11	11
	Rural	35,438		450	29,653	30,103	3,600	1,735	5,335		1	84	85	10	5	15
	Total	41,101	4,800	702	29,653	35,155	3,600	2,346	5,946	12	2	72	86	9	6	14
Valencia	Urban	36,445	20,552		13,883	34,435	731	1,279	2,010	56		38	94	2	4	6
	Rural	97,553	11,053	5,984	78,256	95,293	45	2,215	2,260	11	6	80	98	0	2	2
	Total	133,998	31,605	5,984	92,139	129,728	776	3,494	4,270	24	4	69	97	1	3	3
Provincial Total	Urban	292,948	85,732	23,488	108,883	218,103	62,307	12,538	74,845	29	8	37	74	21	4	26
	Rural	689,382	45,251	53,189	453,757	552,197	114,583	22,602	137,185	7	8	66	80	17	3	20
	Total	982,330	130,983	76,677	562,640	770,300	176,889	35,140	212,030	13	8	57	78	18	4	22

Figure 4.1.1 Water Supply Coverage of the Province



Likewise, Level II system assumes on the majority of service coverage in rural water supply in the municipality of Maramag (40% of rural population) and Kadingilan (34%). However, as of now, piped systems (Level II and III) have not been fully developed in the province.

Taking into account the municipal service coverage, of the 22 municipalities/city of the province, 13 are above the average provincial service coverage of 78%. The highest coverage is seen in Valencia at 97% followed by Quezon (95%), Manolo Fortich (94%), Cabanglasan (93%), Impasugong (92%) and Malitbog (91%).

In contrast to the above, 9 municipalities/city are below the provincial average. The lowest is Dangcagan at 38%, followed by Maramag (41%) and Don Carlos (61%). The low coverage of these municipalities is considered to arise from difficulty in water source development due to lower availability of ground water sources.

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-effectivencss.

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

The Code on Sanitation of the Philippines provides the minimum standards for services dealing with public health. Specifically, Chapter XVII on Sewage Collection and Disposal, Excreta Disposal and Drainage 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 1997.

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 with-

out toilet facilities. Service coverage of public utilities was estimated as a percentage of sanitary facilities to the total number of utilities.

4.2.3 Sanitation Facilities and Service Coverage

(1) Household Toilets

The service coverage of sanitary toilets in the province is 67% of the total number of households. The rest is underserved or unserved. Of this, a high 25% is without toilet facilities (refer to Table 4.2.1, Supporting Report and 4.2.3 Sanitation Facilities and Service Coverage, Data Report).

Municipalities that have higher service coverage than the provincial average of 67% are Libona (91%), Valencia (87%), Quezon (86%), Kalilangan, Maramag and San Fernando (83%), Dangcagan and Talakag (77%), Malitbog (75%) and Kitaotao (73%). On the other hand, the first 5 municipalities that registered the lowest service coverage are Baungon and Sumilao (41%), Damulog and Malaybalay (46%) and Cabanglasan (50%). It was observed that in municipalities that have high water supply service coverage (Valencia, Quezon), high sanitation coverage occurs and correspondingly, in low water supply service coverage (Don Carlos, Kadingilan), low sanitation coverage also occurs. This can be attributed to the fact that the development of water supply almost always follows the upgrading of the household sanitation facilities because of access to water.

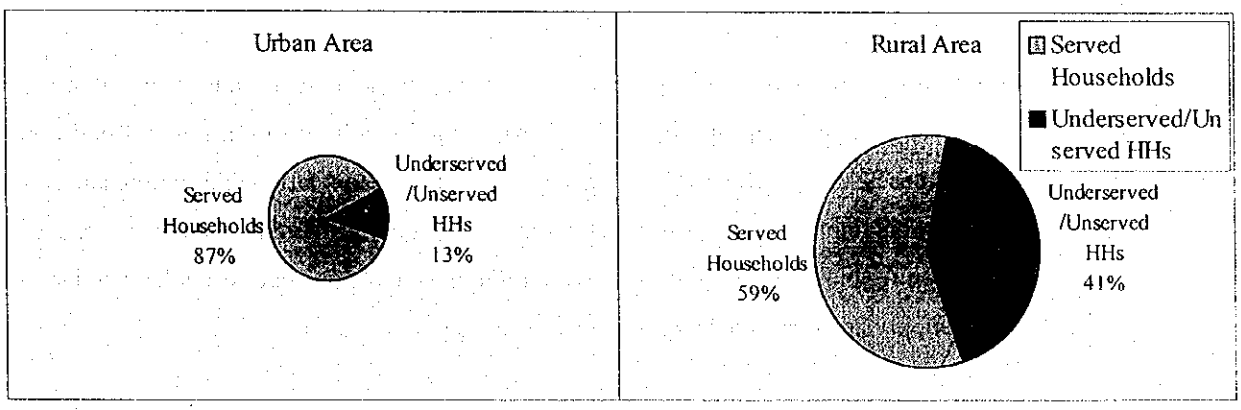
In urban areas, approximately 87% of the total households are served. A much lower served households of 59% exist in rural area. Table 4.2.1 shows the municipal breakdown in the number of urban and rural household toilets by category, and service coverage. Figure 4.2.1 reflects the provincial service coverage of household toilet facilities for urban and rural areas.

Even if high percentages of sanitary toilets are revealed in the urban areas, problems arise from the unsatisfactory disposal of the effluent from the septic tanks or the direct discharge of wastewater to the local drains. Generally, there is little concern about the unsatisfactory disposal of wastes once it is outside their dwelling units. Practically, almost all the households dispose their wastes in the manner that poses risks to public health. Sullage waste management is unheard of.

Table 4.2.1 Sanitation Facilities and Service Coverage of Household Toilets, Urban and Rural, 1997

Municipality/City	Households, 1997			Household Toilets Facilities and Service Coverage											
				Urban				Rural				Municipal Total			
	Urban	Rural	Total	HHs Served by Sanitary Toilets		Underserved/ Unserved HHs		HHs Served by Sanitary Toilets		Underserved/ Unserved HHs		HHs Served by Sanitary Toilets		Underserved/ Unserved HHs	
				Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs	Number	% of HHs
Baungon	919	3,560	4,479	806	88	113	12	1,032	29	2,528	71	1,838	41	2,641	59
Cabanglasan	712	4,861	5,573	315	44	397	56	2,498	51	2,363	49	2,813	50	2,760	50
Damulog	774	2,290	3,064	382	49	392	51	1,025	45	1,265	55	1,407	46	1,657	54
Dangcagan	839	2,360	3,199	742	88	97	12	1,731	73	629	27	2,473	77	726	23
Don Carlos	4,417	5,689	10,106	3,199	72	1,218	28	2,045	36	3,644	64	5,244	52	4,862	48
Impasugong	952	3,770	4,722	790	83	162	17	1,631	43	2,139	57	2,421	51	2,301	49
Kadingilan	951	4,242	5,193	951	100			2,392	56	1,850	44	3,343	64	1,850	36
Kalilangan	3,194	2,065	5,259	2,916	91	278	9	1,465	71	600	29	4,381	83	878	17
Kibawe	836	5,342	6,178	836	100			2,456	46	2,886	54	3,292	53	2,886	47
Kitaotao	2,039	5,843	7,882	2,039	100			3,699	63	2,144	37	5,738	73	2,144	27
Lantapan	2,617	4,287	6,904	2,617	100			1,000	23	3,287	77	3,617	52	3,287	48
Libona	434	5,520	5,954	434	100			4,992	90	528	10	5,426	91	528	9
Malaybalay (Capital)	5,277	16,682	21,959	5,186	98	91	2	5,006	30	11,676	70	10,192	46	11,767	54
Malitbog	528	2,691	3,219	465	88	63	12	1,963	73	728	27	2,428	75	791	25
Manolo Fortich	1,058	11,597	12,655	1,058	100			5,796	50	5,801	50	6,854	54	5,801	46
Maramag	9,934	2,429	12,363	8,726	88	1,208	12	1,580	65	849	35	10,306	83	2,057	17
Pangantucan	4,211	3,046	7,257	3,211	76	1,000	24	1,600	53	1,446	47	4,811	66	2,446	34
Quezon	2,728	11,432	14,160	2,321	85	407	15	9,823	86	1,609	14	12,144	86	2,016	14
San Fernando	2,540	4,389	6,929	2,540	100			3,194	73	1,195	27	5,734	83	1,195	17
Sumilao	1,953	1,036	2,989	902	46	1,051	54	318	31	718	69	1,220	41	1,769	59
Talakag	1,075	6,575	7,650	1,075	100			4,782	73	1,793	27	5,857	77	1,793	23
Valencia	6,889	18,476	25,365	6,360	92	529	8	15,629	85	2,847	15	21,989	87	3,376	13
Provincial Total	54,877	128,182	183,059	47,871	87	7,006	13	75,657	59	52,525	41	123,528	67	59,531	33

Figure 4.2.1 Provincial Service Coverage of Household Toilet Facilities, 1997



(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 2,638 toilet units found in 742 schools. Sanitary toilets adequately serve only 36% of the total number students. The rest, 64% is underserved or unserved. Meanwhile, sanitary toilets adequately serve about 34% 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 very low to meet the service level standard of 40 students per sanitary facility. At present, the average ratio is 109 students per sanitary toilet, a little less than 3 times the standard level. A number of school toilets constructed are not being used due to lack of water supply, destroyed plumbing fixtures and water tank seepage. In some areas, this problem is compounded when access to the sanitary facility is limited to only the teachers and guests.

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

There are 89 public toilets found in public markets, bus/jeepney terminals and parks/playgrounds in the province. Of these, about 86 are considered as sanitary public toilets resulting to 97% service coverage. Table 4.2.3 shows the number and service coverage of public utilities.

Public toilets at markets, bus/jeepney terminals and parks/playgrounds, although culturally acceptable, are improperly used and maintained resulting to unsanitary conditions. In most cases, no specific arrangements are made for the operation and maintenance and for the collection of fees to cover such costs. Although considered as sanitary because of the structure, most of the facilities have unsanitary conditions due to inadequate/lack of water supply and destroyed appurtenances because of vandalism.

Table 4.2.2 School Toilet Service Coverage by Municipality

Name of Municipality		Number of School	Total No. of Student	Number of Toilets		Service Coverage			
				Sanitary	Unsanitary	Served	%	Unserved	%
Baungon	Public	19	4,362	22	4	880	20	3,482	80
	Private	2	327	4	2	160	49	167	51
	Total	21	4,689	26	6	1,040	22	3,649	78
Cabanglasan	Public	28	6,813	88	12	3,520	52	3,293	48
	Private	1	545	12		480	88	65	12
	Total	29	7,358	100	12	4,000	54	3,358	46
Damulog	Public	17	4,391	36		1,440	33	2,951	67
	Private	1	300	2		80	27	220	73
	Total	18	4,691	38		1,520	32	3,171	68
Dangcagan	Public	17	4,256	48	14	1,920	45	2,336	55
	Private	1	396	28		396	100		
	Total	18	4,652	76	14	2,316	50	2,336	50
Don Carlos	Public	34	13,095	95	22	3,800	29	9,295	71
	Private	4	1,310	28	10	1,120	85	190	15
	Total	38	14,405	123	32	4,920	34	9,485	66
Impasugong	Public	28	7,236	42	58	1,680	23	5,556	77
	Private								
	Total	28	7,236	42	58	1,680	23	5,556	77
Kadingilan	Public	19	5,392	72		2,880	53	2,512	47
	Private	3	793	12		480	61	313	39
	Total	22	6,185	84		3,360	54	2,825	46
Kalilangan	Public	21	7,543	21	8	840	11	6,703	89
	Private	3	692	6		240	35	452	65
	Total	24	8,235	27	8	1,080	13	7,155	87
Kibawe	Public	27	6,672	139	4	5,560	83	1,112	17
	Private	5	2,073	23	10	920	44	1,153	56
	Total	32	8,745	162	14	6,480	74	2,265	26
Kitaotao	Public	34	8,127	106	21	4,240	52	3,887	48
	Private	4	546	2	2	80	15	466	85
	Total	38	8,673	108	23	4,320	50	4,353	50
Lantapan	Public	19	7,792	105	24	4,200	54	3,592	46
	Private	2	303	16	4	303	100		
	Total	21	8,095	121	28	4,503	56	3,592	44
Libona	Public	22	7,765	30	20	1,200	15	6,565	85
	Private								
	Total	22	7,765	30	20	1,200	15	6,565	85
Malaybalay (Capital)	Public	65	27,325	253	25	10,120	37	17,205	63
	Private	10	2,850	40		1,600	56	1,250	44
	Total	75	30,175	293	25	11,720	39	18,455	61
Malitbog	Public	22	4,210	42		1,680	40	2,530	60
	Private	1	206	2		80	39	126	61
	Total	23	4,416	44		1,760	40	2,656	60
Manolo Fortich	Public	35	16,883	232		9,280	55	7,603	45
	Private	8	2,485	101		2,485	100		
	Total	43	19,368	333		11,765	61	7,603	39
Maramag	Public	30	16,515	23		920	6	15,595	94
	Private	4	1,478					1,478	100
	Total	34	17,993	23		920	5	17,073	95
Pangantucan	Public	29	8,395	24	30	960	11	7,435	89
	Private	2	1,336	4		160	12	1,176	88
	Total	31	9,731	28	30	1,120	12	8,611	88
Quezon	Public	39	16,587	229		9,160	55	7,427	45
	Private	8	2,084	31		1,240	60	844	40
	Total	47	18,671	260		10,400	56	8,271	44
San Fernando	Public	33	8,264	36		1,440	17	6,824	83
	Private	5	549	1		40	7	509	93
	Total	38	8,813	37		1,480	17	7,333	83
Sumilao	Public	13	3,615	2	3	80	2	3,535	98
	Private	1	600	2		80	13	520	87
	Total	14	4,215	4	3	160	4	4,055	96
Talakag	Public	37	9,565	90	40	3,600	38	5,965	62
	Private	5	1,040	20	6	800	77	240	23
	Total	42	10,605	110	46	4,400	41	6,205	59
Valencia	Public	51	29,229	146		5,840	20	23,389	80
	Private	33	8,204	104		4,160	51	4,044	49
	Total	84	37,433	250		10,000	27	27,433	73
Provincial Total	Public	639	224,032	1,881	285	75,240	34	148,792	66
	Private	103	28,117	438	34	14,904	53	13,213	47
	Total	742	252,149	2,319	319	90,144	36	162,005	64

Table 4.2.3 Public Toilets Facilities and Service Coverage in 1997

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	%
Baungon	2	2					4	4	100		
Cabanglasan	1	1					2	2	100		
Damulog	2	2					4	4	100		
Dangcagan	2	2					4	4	100		
Don Carlos	4	4					8	8	100		
Impasugong											
Kadingilan	1	1					2	2	100		
Kalilangan	1	1		1			3	2	67	1	33
Kibawe	4	4	1				9	9	100		
Kitaotao	2						2	2	100		
Lantapan	4	4		2			10	8	80	2	20
Libona											
Malaybalay	1	2	1				4	4	100		
Malitbog	1	1					2	2	100		
Manolo Fortich	5	1	1				7	7	100		
Maramag	6	2					8	8	100		
Pangantucan	1	2					3	3	100		
Quezon	2	2					4	4	100		
San Fernando											
Sumilao	1						1	1	100		
Talakag	1	1					2	2	100		
Valencia	5	5					10	10	100		
Provincial Total	46	37	3	3			89	86	97	3	3

4.2.4 Sewerage Facilities

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

Chapter 5

EXISTING SECTOR ARRANGEMENT AND INSTITUTIONAL CAPACITY

5 EXISTING SECTOR ARRANGEMENT AND INSTITUTIONAL CAPACITY

5.1 General

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

As for the institutional aspect, the Local Government Code (1991) has essentially re-defined the role, relationship and linkages of central, provincial, municipal and barangay institutions in the provision of social basic services, including water and sanitation. Before the issuance of the Code, the responsibilities for water supply and sanitation functions were lodged with various national agencies. The new direction mandates the Local Government Units (LGUs) to play a larger role in planning and implementing water supply and sanitation projects. However, this has raised serious institutional capacity and resource reallocation issues.

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

5.2 Sector Reforms

The GOP has set the future agenda for sector reform. These initiatives followed the completion of the Water Supply Sector Reform Study and the National Urban Sewerage and Sanitation Strategy Study. The GOP has endorsed the major recommendations of these studies through the following NEDA resolutions. These resolutions are also 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 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 (IRR) was prepared by the DILG and was approved by the NEDA in 1998. The IRR came out as NEDA Resolution No.5 (series of 1998). It delineates the responsibilities of government agencies involved in the sector and defines the role of local government units 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 (refer to 5.2, Data Report).

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

This resolution reaffirms the principle of provision of sewerage and sanitation services on the basis of willingness-to-pay. It 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 (refer to 5.2, Data Report).

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. There are government agencies involved but they are concerned with macro planning, natural resources allocation decisions and environmental protection and management.

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

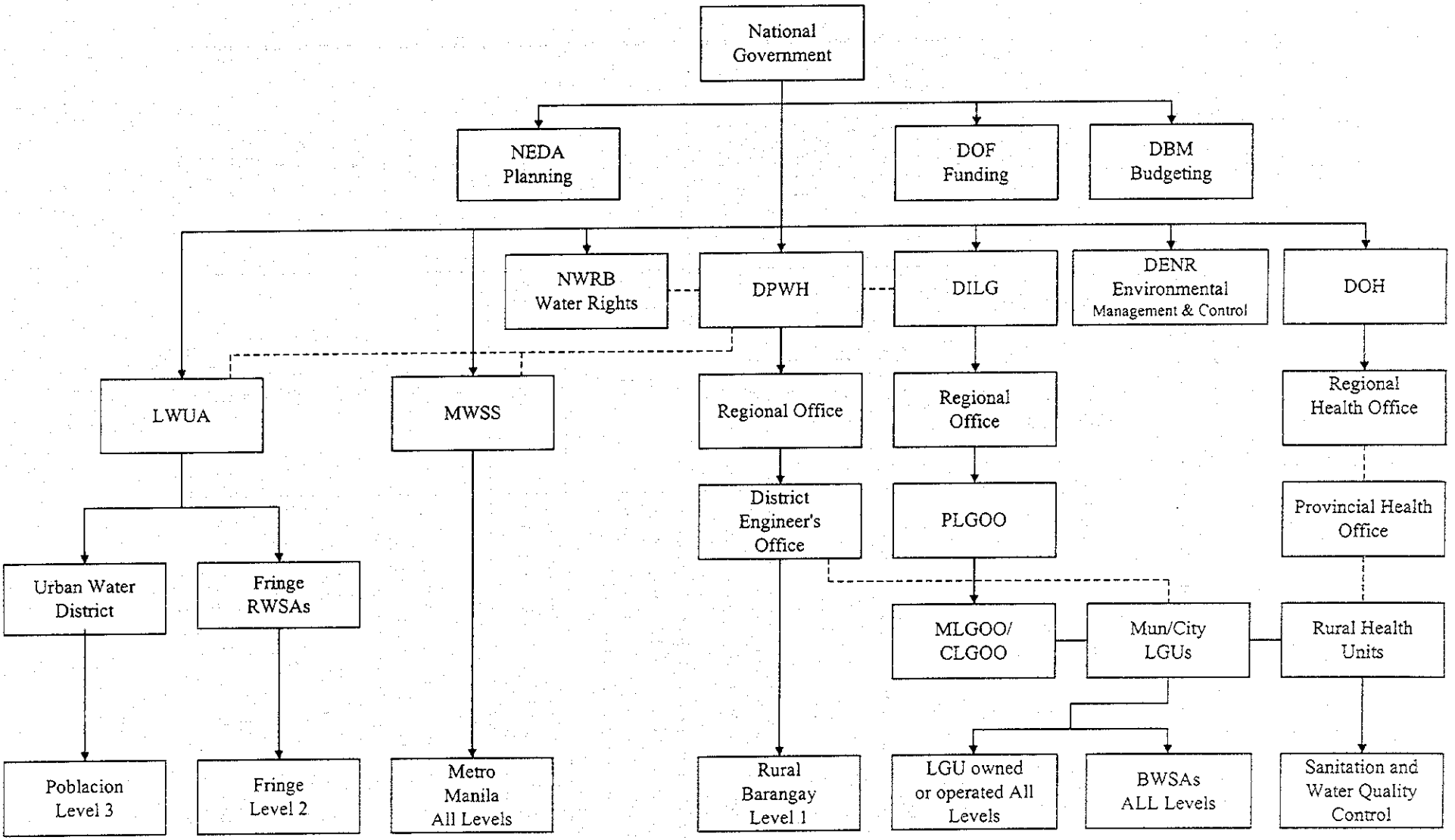


Figure 5.3.1 Functional Relationships

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

Activities	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 (PGSO/MGSO)
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	PHO
Implement the sanitation component of integrated water supply and sanitation projects	DOH	PHO
Monitor, inspect and disinfect water supply systems	DOH	PHO
Provide its health workers with training on water quality surveillance, hygiene education, and water purification treatment processes	DOH	PHO
Conduct health education campaigns	DOH	PHO
Produce information, education and communication (IEC) materials on water supply	DOH	PHO

(2) Sector Finance

1) Cost sharing arrangement

As a matter of policy, national government programs that have social and/or environmental objectives are implemented through a cost-sharing manner between the national government agency and LGUs. National government grants are provided for municipalities that have limited socio-economic resources.

2) Financing and management systems

LGUs may either finance the sector projects directly or involve the participation of the private sector through concession-, management- or service-contracts.

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

LGUs can access ODA loans for devolved activities. However, they must pass through the Municipal Development Fund (MDF) or 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.

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 financial management systems. The DILG also provides 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-Project Management Office (WSS-PMO), a unit within DILG, is primarily responsible for water and sanitation activities in the Department. The Provincial Planning and Development Office (PPDO) and the Municipal Planing and Development Office (MPDO) are the immediate links of the DILG at the LGU level. For the purpose of ensuring coordination in implementing projects where there are other agencies involved, DILG facilitates the formation of Task Forces with the PPDO and the MPDO still assuming overall responsibility. Through the PPDO and MPDO, barangays which need improved water supply and households which need sanitation improvements 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 persons, gender awareness training seminars have been conducted at the regional level.

(2) 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 to 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 admini-

stration. 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.

(3) 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 projects.

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

(4) 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 PHO, the DOH conducts health and hygiene education campaigns that focus on women and children health improvement in rural communities. Centrally-produced information, education and communication (IEC) materials support the program. The DOH has produced and distributed IEC materials on water supply and hygiene behavior nationwide. Through its field health workers, it gives orientation to BWSAs on protec-

tion and disinfection of water sources and construction and maintenance of toilets.

(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. Together with the DILG, NEDA coordinates the establishment of a system for national sector master planning and monitoring system.

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

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

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

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

campaign using the formal and non-formal educational system.

The National Water Resources Board (NWRB) coordinates the overall policy framework for water resources development and management. NWRB was created to guide the orderly and scientific development of all water resources in the Philippines. Its guiding principles are optimum utilization, conservation and protection of water resources to meet present and future needs. NWRB also deals with water rights issues; it regulates the use of water resources through the issuance of water rights and sets the tariffs of privately run water systems.

5.5 Sector Agencies at the Local Level

(1) Provincial Level

The offices 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). The province also has a Project Management Office for its ADB assisted "Bukidnon Integrated Area Development Project", which includes a potable water supply component.

1) Provincial Planning and Development Office (PPDO)

The PPDO is in charge of the formulation of comprehensive development plans and policies for the consideration of the Provincial Development Council (PDC). It conducts studies and research and training programs to support plan formulation and promotes people participation in its planning activities. It likewise integrates and coordinates sectoral plans and studies undertaken by different functional groups or agencies, and monitors and evaluates the implementation of development programs/projects and activities. This office is composed of 3 divisions and 1 section, details of which is shown below (refer to Organization Chart Figure 5.5.1, Supporting Report):

- Administrative Section – The section's function is to provide efficient administration and timely and adequate support services. It has 9 staff members.
- Plans and Program Division - The division is responsible for undertaking planning and programming of various sector development activities: agriculture, social, water source, investments, trade and industry, tourism, capital improvements and annual implementation. Twenty-one regular personnel man it.

- Research, Evaluation & Statistics Division – The division conducts field surveys and inspection of proposed projects; prepares statistical reports and other documents necessary for the evaluation, planning and programming of projects; and project implementation. It likewise supports the plans and programs division in the preparation of needed documents. It has a total staffing complement of 11 personnel.
- Special Project Division – The division is primarily responsible for the plan formulation of special projects. It undertakes project proposals and project studies preparation, conducts ocular surveys and investigation, and prepares recommendations. It also coordinates community involvement in project execution and liaises with concerned national, regional and local government units. It has 9 regular staff members.

2) Provincial Engineering Office (PEO)

The PEO is responsible for the administration, coordination, supervision and control of construction, maintenance, improvement and repair of roads, bridges, water works and other engineering and public works projects of the provincial government. It formulates policies and objectives, plans and programs, techniques and procedures/practices in infrastructure development, and provides engineering services such as investigation and surveys, designs, and project management. The office has Administration service and 4 divisions: Planning, Design & Programming, Construction & Maintenance, Waterworks Development Task Force and Motor Pool (refer to Organization Chart - Figure 5.5.2, Supporting Report). The responsibilities of the Construction & Maintenance and Waterworks Development Task Force divisions are discussed below:

- Construction & Maintenance Division -- The division is responsible for formulating and integrating infrastructure plans, programs and projects of the provincial government, which involve construction works. It is mainly involved in the construction of the infrastructure component of the 20% Development Fund and School Board Fund projects, designing of horizontal structures, and supervision of all other provincial infrastructure projects as programmed. In addition, this division's function is to provide overall technical supervision of activities related to the maintenance of roads and bridges and drainage systems along provincial roads. It also prepares, estimates, and does construction work along road maintenance sections when such structures are deemed necessary.
- Provincial Waterworks Task Force Development Division – This division operates with two sections namely planning and Institutional Section and Construction

Section. The former Section is tasked with the conduct of feasibility studies (including surveillance of water sources, pipelines, and cost estimation) mostly for Level II projects. The latter Section is tasked with the construction works, including drilling wells, spring development, constructing intake boxes/reservoirs, installation of pipelines and communal faucets.

The PPDO is responsible for planning the sector projects. However, the task force for water supply was established under the PEO. It was assigned to the PEO for project implementation (Level I and II) since the PEO can undertake designing, construction and provide O&M assistance. Although a new office for this sector cannot be created due to budgetary constraints, the task force was upgraded to "Waterworks Division" in line with the policy to enhance implementing capacity.

3) Provincial Health Office (PHO)

The provision of health services to the people in the province is rather unique. The organizational set up and services accountability have been divided into: public health under the supervision of the Provincial Health Officer; and hospital services under the Chief of Hospitals. The PHO provides technical assistance to rural health units (RHU) and to barangay health stations (BHS). It also assists in the promotion and maintenance of public sanitation. The office also conducts field health information campaigns and renders health intelligence services. There are 6 provincial government-run hospitals that are strategically located in the City of Malaybalay and in 5 other municipalities throughout the province. These hospitals have 6 major services: Administrative, Medical, Nursing, Ancillary, Dietary, and Technical.

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

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

The PBO administers the fiscal budget of the provincial government. It is responsible for budget preparation, execution, control and accountability. The office reviews and

consolidates the budget proposals of different offices of the LGU. It coordinates budget concerns with the treasurer, the accountant, and the planning and development coordinator. It also provides prompt and efficient reviews of municipal budgets.

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

The PGSO provides effective direction and coordination of the various administrative and support services necessary for the operation of the office, including the keeping of government records and the proper and timely dissemination of printed communication and correspondence. It is responsible for the acquisition/procurement of supplies and materials as identified in the overall fiscal plan. It collates and disseminates information on prices and other costs of supplies and other items commonly used by the provincial government (including the hospitals).

5) Provincial Development Council (PDC)

The main functions of the PDC are: to formulate a long/medium-term and annual socio-economic development plan and corresponding policies; to appraise and 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 a competent authority. The PDC is headed by the Governor and is composed of the following: Representatives of the Congressmen, Municipal Mayors, the Chairperson of Sangguniang Panlalawigan's Committee on Appropriations, President of the Provincial League of Barangays, and Representatives from NGOs. Under the PDC, four (4) sectoral committees, namely Macro Inter-Sectoral, Economic, Social, Infra, have been created to assist and act in their behalf when the council is not in session.

6) Provincial Project Monitoring Committee (PPMC)

The PPMC, which is under the PDC, is tasked to monitor the status of all on–going projects. Monitoring activities include: rationalization of problems and verifying in-

formation to be submitted for analysis and action of the PDC; providing feedback on the remedial actions of the PDC; and following up their implementation.

7) Project Management Office-BIADP

The PMO is composed of 32 personnel headed by a project director. The project director is vested with all such administrative and financial authority necessary to ensure the smooth implementation of the project as permitted under the rules and regulations of the government. Two deputies assist him: one is in charge of the Rural Infrastructure Support Division and the other heading the Community Development Support Division. The Rural Infrastructure Support Division is responsible for 4 major projects, namely; a) communal irrigation system; b) water supply; c) barangay health station/day care center and roads and bridges. The community Development Support Division is responsible for 1) extension and support services and, 2) community organization and development planning.

(2) Municipal and Barangay Level

The Local Government Unit of municipality functions primarily as a general purpose government, delivers basic, regular, and direct services and provides effective governance of the inhabitants within its territorial jurisdiction. It has a similar organizational structure and legislative authority as that of the Province. For WATSAN projects, the following offices are directly involved (refer to 5.7.4 Institutional Arrangement/ Capability of the Municipal Government).

1) Municipal Planning and Development Office (MPDO)

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

2) Municipal Engineer's Office (MEO)

The MEO is responsible for formulating and integrating infrastructure plans, programs and projects of the municipal government. It regularly performs engineering surveys to acquire data for designs and layout or constitution of waterworks systems, sanitation facilities and other infrastructure projects. It also inspects the work of contractors based on presented plans and specifications.

3) Barangay Councils (BCs)

The LGC designated barangays as independent units of local government. The barangay council acts as a legislative body of the barangay. Barangay receives their share in the IRA from the National Government. Apart from this, the barangay councils can enact tax and revenue ordinances to raise funds for discharge of the responsibilities conferred upon them by law and for the to promotion of the general welfare of the inhabitants. They may also solicit funds for the construction of barangay facilities and charge reasonable fees for the use thereof.

4) Municipal Development Council (MDC) and Municipal Project Monitoring Committee (MPMC)

The MDC/MPMC have similar roles as the PDC/PPMC but they are only concerned with the projects that the municipality is directly involved in. The MDC is composed of the municipal mayor, one SB member, all barangay chairmen, and representatives from accredited NGOs (which is 25% of the total membership). The designated SB member is the chairperson of the SB committee on appropriations.

5) Rural Health Units/Barangay Health Stations (RHUs/BHSs)

The RHUs/BHSs are under the direct supervision of their respective municipalities and the MHO. They provide health services to the barangay residents such as family-planning activities, emergency/relief services especially in far-flung barangays, and other similar activities that promote the general well-being and health needs of the residents. Midwives and other health workers schedule periodic visits to these health units/stations.

(3) Field Offices of Central Sector Agencies

1) DPWH District Engineer's Office (DEO I and II)

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

2) DILG Provincial /Municipal Local Government Operations Offices (PLGOO/ MLGOO)

The PLGOO/MLGOO is tasked to provide general administration and institution-building support to LGUs to strengthen their capacity to deliver basic services. Every province has a PLGOO assigned to it. The Provincial Task-Force on Water Supply, Sewerage and Sanitation was headed by the DILG Provincial Action Officer assigned to the sector, but such specific function of the action officer may soon be transferred to the newly constituted Provincial Sector Planning Team (PSPT).

3) NEDA Regional Office and Regional Development Council

Various public and private sector organizations coordinate with DILG to establish the system for regional sector master planning and the monitoring system. The NEDA acts as Secretariat of the Regional Development Council and ensures that sector plans are consistent with regional and national priorities. The NEDA Regional 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.

(4) Water Districts (WDs)

A Water District is a government corporation formed pursuant to Presidential Decree No.198 and organized for the purpose of serving the water supply requirements of the residents within its franchise area. Technical and financial assistance (loans) are provided by LWUA to WDs. LWUA also exercises regulatory functions vis-a-vis the districts. To be self-sufficient, a WD is operated in a business-like manner to generate enough revenue from its water sales. The income is used to meet operational expenses, debt service, and reasonable reserves for contingencies.

(5) Barangay Waterworks and Sanitation Associations/Rural Waterworks and Sanitation Associations (BWSAs/RWSAs)

A BWSA is an organization of water supply and sanitation beneficiaries in a barangay, which owns, operates and maintains the water system. 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 facilities. The BWSA's organizational size depends on the number of facilities, and the need, culture and situation in a particular barangay; its structure is quite simple as consisting of the board of directors, a bookkeeper, and caretaker/s. There are three phases involved in forming a BWSA: pre-

formation/social preparation, formation, and post formation. During the formation phase, pre-membership training and election of the BOD and Officers are held. In this phase, individual member's interests and community commitments are manifested through membership in the association and the signing of a Manifesto Resolution. RWSAs are organized to operate, manage and maintain Level II and small Level III systems in areas, which are not covered by Water Districts.

(6) Private Sector

The private sector has been involved in water supply development in the form of investments, technical studies, and construction of water supply and sanitation facilities. NGOs have also demonstrated the capability to undertake project development and implementation with community participation.

5.6 External Support Agencies Active in the Sector

(1) Multilateral Agencies

The World Bank supported the Local Government Unit Urban Water Supply & Sanitation Project or LGUUWSS Project. The objectives of the project are i) to assist the LGUs, which are responsible for delivering water and sanitation services to their urban residents, in improving and sustaining the provision of these services, ii) to build institutional capacity for water and sanitation services at the national, provincial and municipal levels, and iii) to test the implementation of the national government's policy framework with respect to LGU financing of local infrastructure. A total of 250 municipalities are targeted to be covered by the project. Project implementation period is for 7 years (1999 – 2006). In the first batch, Level II and Level III water systems will be constructed and operated in the urban areas of 12 municipalities (in 6 provinces: Isabela, Laguna, Camarines Sur, Bukidnon, Misamis Occidental and Camiguin). For the province of Bukidnon, Kalilangan, Lantapan and Baungon have been selected as target municipalities to install a Level III water system.

The Barangay Water Program (BWP) was a special project having been implemented by the then Ministry of Local Government (now DILG) with financial assistance from the USAID. The program envisions to improve the health standards of small rural farming and fishing communities by providing safe, adequate and potable water through the establishment of public faucets or individual house connections. The systems for these communities should be owned, operated, maintained and managed by the users themselves through rural waterworks and sanitation associations. The program also intended

to enhance the capabilities of local government units in project planning, programming, designing, implementation, evaluation and monitoring. Phase I of the BWP was implemented in the period 1978 – 1981, while Phase II started in 1982 and was extended until December 1987. Phase II operations officially ended in December 1987, but a one-year winding-up period was agreed upon between the GOP and USAID. USAID extended loans to cover the construction costs and the installation of facilities on a reimbursement basis while the GOP through DILG shouldered the operational, training and personnel costs. Through BWP, waterworks projects were implemented in 50 provinces (including Bukidnon, Davao del Norte, Misamis Oriental and South Cotabato), 22 cities and 7 municipalities.

The World Bank supported the First Water Supply, Sewerage and Sanitation Sector Project or FW4SP. This project provided capital funds (US$58.0M) for rural water supply system in Luzon provinces and sanitation system nationwide based on completed provincial master plans. The project concept called for a community-based approach through BWSAs. The project was implemented from 1991 to 1995 with an extension up to 1997. Subsequently, the Capacity Enhancement Program (CEP) with DILG as implementing agency was conducted until the end of 1997.

UNDP assisted 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 responded to the government's Poverty Alleviation Program. UNDP provided 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 complemented 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 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. As part of these various assistance, UNICEF supported NEDA in 1997 for the assessment of WATSAN Sector of Southern Mindanao (including Sarangani province). This was compelled by the sudden and unexpected occurrence of water-borne epidemics that hit Region XI.

(2) Bilateral Agencies

The Japan International Cooperation Agency (JICA) has been extending a grant aid program for the Rural Environmental Sanitation Project which is jointly implemented by DPWH and DOH. The project covered construction of Level I and II rural water systems and school toilet facilities in 10 provinces. 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 the 9 provinces in Luzon area were completed through previous technical cooperation.

The Overseas Economic Cooperation Fund (OECF) 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 equipment. OECF 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 to provide a loan for the Water Supply and Sanitation Project (WSSP) for the 6 provinces (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 RDC 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.

In November 1997, AusAID commissioned independent feasibility/design studies (FDS) for two proposed projects in Region X of Mindanao; the Northern Mindanao Agriculture Extension Project (NMAEP); and the Northern Mindanao Water and Sanitation Project (NMWSP). These proposed projects were agreed at the 1995 Philippine-Australia Development Cooperation High Level Consultations, and were intended to build upon the positive experiences of the Pilot Agricultural Extension Project (PAEP) completed in May 1996 and the Central Visayas Water and Sanitation Project (CVWSP), completed in March 1997.

Following completion of the FDS missions and review of the respective project design documents (PDDs), it has been agreed that, in order to minimize the risk of duplication and maximize the available resources, the proposed projects be appraised/re-designed and combined, using a program approach. This will involve AusAID undertaking a 2 year preparatory program in selected province(s) of Region X, focusing on institutional strengthening-in development planning and prioritization process- of those local government units (LGUs) requiring assistance, and linking this to a range of interventions in agricultural extension and water and sanitation. Institutional strengthening may occur at different levels (e.g. Regional, provincial, municipal/city), and assistance may be provided in the future to include other provinces and/or sectors.

The Canadian International Development Agency (CIDA) carried out until March 1998 Pre-Feasibility Study of Malalag Bay Alliance Water Supply Project. This project covers 10 coastal municipalities in Davao del Sur. The project includes water source development, construction of storage, transmission and distribution facilities, and service connections. Basic construction costs will be allocated between MBA and its municipalities. Implementation period is scheduled from 1998 to 2002. The Malalag Bay Area Development Office will submit a proposal for assistance to CIDA through the Regional Management Committee of NEDA Region XI office.

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