

8.5.2 Sanitation

(1) Household toilets

The service coverage (number of households to be served) by different types of sanitary facility is estimated by urban and rural area by municipality for the years 2000 and 2010.

The future service coverage and additional households to be served are estimated to meet the provincial targets using the number of household served in the base year and the number of households in target years.

Additional number of households to be served by different type of facility by urban and rural area by municipality is the shortfall of the number of households to be served in target years comparing with either that in base year or in Phase I (details are referred to Supporting Report). However, when the number of households to be served in target year/s is less than or equal to that in base year, no additional number of households to be served is counted.

In the determination of the number of households to be served by flush type toilet, when the number of households to be served in the target year is bigger than in base year, the target coverage is applied with conditions. When the target coverage is bigger than Level III water supply coverage, the latter coverage is adopted, while in the other case, the target coverage is applied. In cases where the target coverage is less than that in base year, the base year coverage is adopted.

For Phase I, any type of existing facilities both in urban and rural areas is to be utilized during Phase I period. For Phase II, water-sealed toilet facilities in Phase I both in urban and rural areas are to be utilized.

The projected number of served households at the end of the Phase I period is 101,400. The additional households to be served totaled to 13,246, of which 24% is urban households and 76% is rural households. While at the end of Phase II period, the number of served households is 144,292. The additional households to be served are 44,432. Table 8.5.2 summarizes the number of households to be served by target year for urban and rural areas by municipality. Figures 8.5.3 and 8.5.4 present maps showing service coverage by 2000 and 2010, respectively.

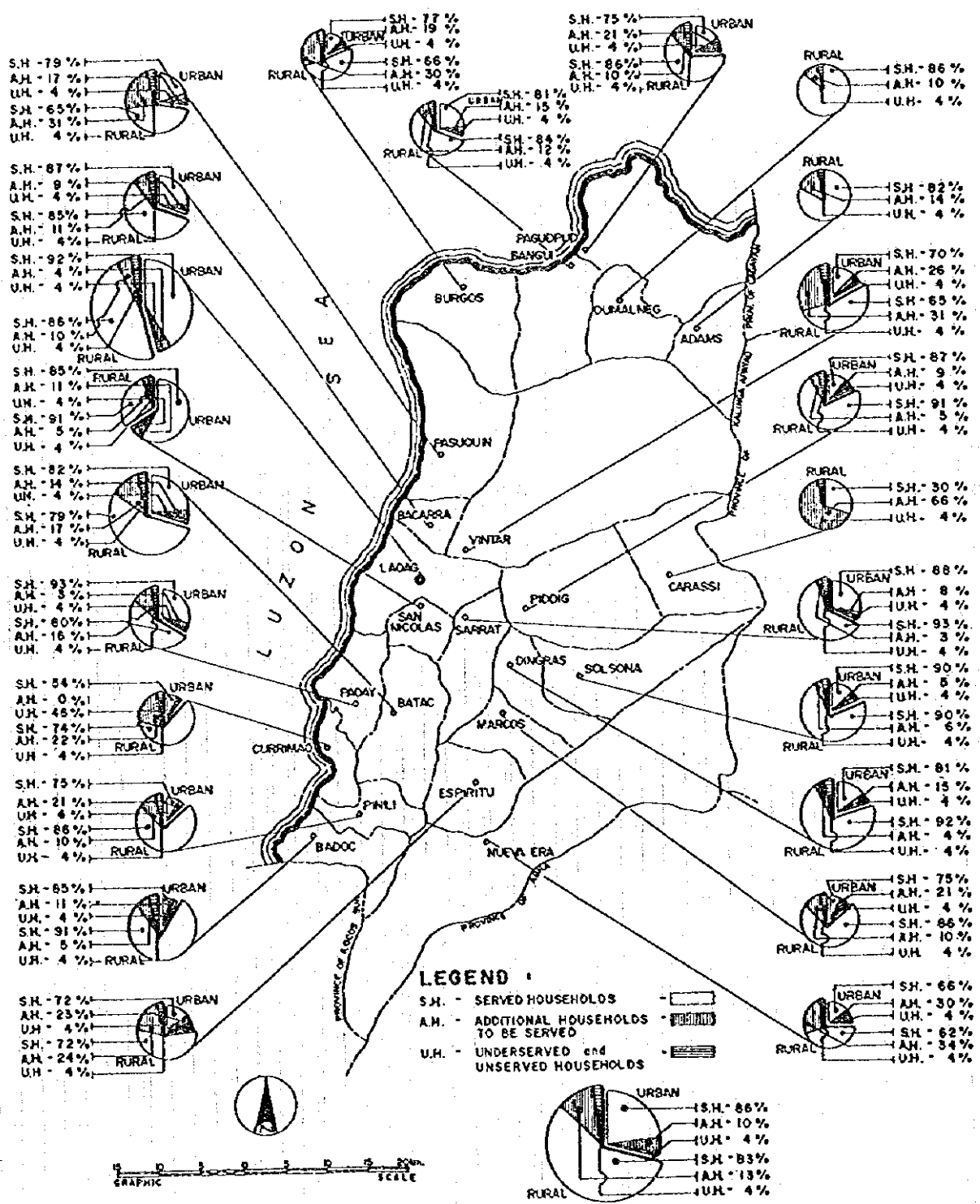


FIGURE 8.5.3
 MAP SHOWING HOUSEHOLD TOILETS SERVICE COVERAGE BY 2000

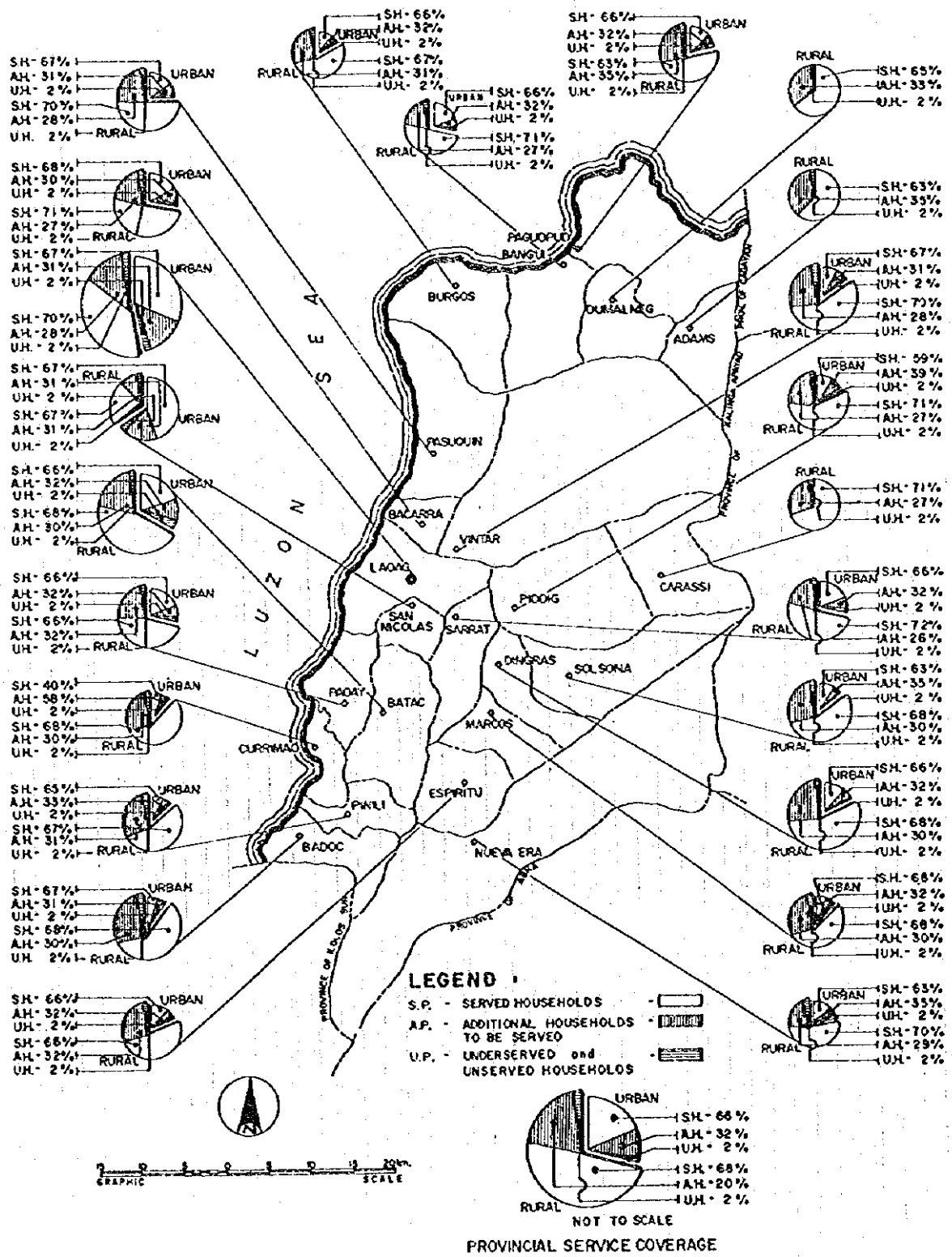


FIGURE 8.5.4
 MAP SHOWING HOUSEHOLD TOILETS SERVICE COVERAGE BY 2010

(2) School toilets

The service coverage (number of public school students to be served) is estimated by municipality for the years 2000 and 2010.

The future service coverage and additional number of students to be served are estimated using the number of students served in the base year, the number of students in target years and the provincial sector targets.

Additional number of students to be served by municipality is the shortfall of the number of students to be served in targets comparing with either that in base year or in Phase I (details are referred to Supporting Report). However, when the number of students to be served in target/s is less than or equal to the base year, no additional number of households to be served is considered.

The existing facilities are to be utilized during Phase I period, while the facilities in Phase I are to be utilized during Phase II period.

The projected number of served students at the end of Phase I period is 85,558. The additional students to be served totaled to 11,370. While at the end of Phase II period, the projected number of served students is 98,162. The additional students to be served are 12,604. Table 8.5.3 summarizes the number of public school students to be served by target year.

(3) Public toilets

The service coverage of public utilities with sanitary toilet facility is estimated by municipality for the years 2000 and 2010.

The future service coverage and additional coverage are estimated using the existing number of public utilities with sanitary toilets in the base year, the number of public utilities in target years, and provincial sector targets.

The additional number of public utilities with sanitary toilets needed by municipality is the shortfall of the number of public utilities in target year comparing with either the existing coverage or Phase I coverage (details are referred to Supporting Report).

The existing sanitary facilities are to be utilized during Phase I period. The facilities in Phase I are to be utilized during Phase II period.

**Table 8.5.3 Additional Number of Public School Students to be Served by Target Year
(School Toilets)**

Municipality	Phase I (2000)			Phase II (2010)		
	Total No. of Public School Students	Std. No. of Public School Students to be Served	Add'l No. of Public School Students to be Served	Total No. of Public School Students	Std. No. of Public School Students to be Served	Add'l No. of Public School Students to be Served
Adams	383	345	0	379	360	15
Bacarra	6,715	6,044	344	7,287	6,923	879
Badoe	4,318	3,886	0	4,739	4,502	616
Banguì	3,406	3,065	0	3,693	3,508	443
Batac	8,064	7,258	0	8,797	8,357	1,099
Burgos	2,312	2,081	0	2,505	2,380	299
Carassi	116	104	0	127	121	17
Currimao	2,460	2,214	0	2,664	2,531	317
Dingras	5,167	4,650	0	5,671	5,387	737
Dumalneg	255	230	0	275	261	31
Espiritu	4,880	4,392	42	4,974	4,725	333
Laoag City (Capital)	16,714	15,043	7,343	18,232	17,320	2,277
Marcos	2,548	2,293	193	2,790	2,651	358
Nueva Era	1,503	1,353	203	1,631	1,549	196
Pagudpud	4,016	3,614	0	4,377	4,158	544
Paoay	2,682	2,414	0	2,969	2,821	407
Pasquin	5,318	4,786	1,086	5,774	5,485	699
Piddig	3,248	2,923	0	3,548	3,371	448
Pinili	2,982	2,684	134	3,249	3,087	403
San Nicolas	6,149	5,534	0	6,690	6,356	822
Sarrat	3,356	3,020	0	3,683	3,499	479
Solsona	4,274	3,847	847	4,659	4,426	579
Vintar	4,198	3,778	1,178	4,615	4,384	606
Provincial Total	95,064	85,558	11,370	103,328	98,162	12,604

The number of served public utilities at the end of Phase I period is 61. The additional public utilities to be served are 23. While at the end of Phase II period, the number of served public utilities is 97 with an additional public utilities to be served at 36. Table 8.5.4 summarizes the additional number of public utilities to be served by municipality by target year.

8.5.3 Urban Sewerage

The service coverage in 2010 (Phase II) is estimated for the municipalities with population of more than 10,000 in urban area provided by Level III water supply. It is assumed that half of the population in the area/s is to be served by the sewerage systems. Table 8.5.5 shows the population to be served in Phase II.

Table 8.5.5 Population to be Served by Urban Sewerage in Phase II

Municipality	Urban Population in 2010	Level III Water Supply Coverage	Population to be Served
Bacarra	10,136	9,629	5,068
Batac	16,394	15,574	8,197
Laoag City (Capital)	49,529	47,053	24,765
San Nicolas	23,636	22,454	11,818
Provincial Total	99,695	94,710	49,848

8.5.4 Solid Waste

Future requirements in the sub-sector are studied giving priority to urban area for the Phase I. Staged improvement for the rural area shall be studied in the future.

Service coverage in Phase I is assumed to be 50% with reference to the current service coverage of 46%. Additional service coverage in Phase I is calculated as a shortfall of target coverage in Phase I comparing with existing service coverage. Table 8.5.6 presents additional service coverage for Phase I in the urban area.

Table 8.5.4 Additional Number of Public Utilities with Sanitary Toilets by Target Year

Municipality	Type	Phase I Coverage (2000)		Phase II Coverage (2010)	
		Additional No. of Public Utilities with Sanitary Toilets	Number of Public Utilities with Sanitary Toilets	Additional No. of Public Utilities with Sanitary Toilets	Number of Public Utilities with Sanitary Toilets
Adams	Public Market	1	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	1	3
Bacarra	Public Market	0	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	0	2	1	3
Badoe	Public Market	1	2	1	3
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	2	4
Bangui	Public Market	1	3	0	3
	Bus/Jeep Terminal	0	0	1	1
	Total	1	3	1	4
Batac	Public Market	1	2	1	3
	Bus/Jeep Terminal	1	1	1	2
	Total	2	3	2	5
Burgos	Public Market	1	2	1	3
	Bus/Jeep Terminal	1	2	1	3
	Total	2	4	2	6
Carassi	Public Market	1	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	1	3
Curimaog	Public Market	1	2	1	3
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	2	4
Dingras	Public Market	1	2	1	3
	Bus/Jeep Terminal	1	1	1	2
	Total	2	3	2	5
Dumalneg	Public Market	1	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	1	3
Espiritu	Public Market	0	1	1	2
	Bus/Jeep Terminal	0	0	1	1
	Total	0	1	2	3
Laoag City (Capital)	Public Market	1	3	1	4
	Bus/Jeep Terminal	1	10	1	11
	Total	2	13	2	15

Table 8.5.4 Additional Number of Public Utilities with Sanitary Toilets by Target Year (Cont'd.)

Municipality	Type	Phase I Coverage (2000)		Phase II Coverage (2010)	
		Additional No. of Public Utilities with Sanitary Toilets	Number of Public Utilities with Sanitary Toilets	Additional No. of Public Utilities with Sanitary Toilets	Number of Public Utilities with Sanitary Toilets
Marcos	Public Market	1	2	1	3
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	2	4
Nueva Era	Public Market	1	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	1	3
Pagudpud	Public Market	1	2	1	3
	Bus/Jeep Terminal	1	1	1	2
	Total	2	3	2	5
Paoy	Public Market	0	1	1	2
	Bus/Jeep Terminal	0	0	1	1
	Total	0	1	2	3
Pasuquin	Public Market	1	2	1	3
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	2	4
Piddig	Public Market	1	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	1	3
Pinili	Public Market	0	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	0	2	1	3
San Nicolas	Public Market	1	2	0	2
	Bus/Jeep Terminal	0	1	1	2
	Total	1	3	1	4
Sarrat	Public Market	1	2	0	2
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	1	3
Solsona	Public Market	0	1	1	2
	Bus/Jeep Terminal	0	0	1	1
	Total	0	1	2	3
Vintar	Public Market	1	2	1	3
	Bus/Jeep Terminal	0	0	1	1
	Total	1	2	2	4
Provincial Total	Public Market	18	45	13	58
	Bus/Jeep Terminal	5	16	23	39
	Total	23	61	36	97

Table 8.5.6 Add'l No. of Urban Households to be Served by Municipal Solid Waste System in Phase I

Municipality	No. of Urban Households Served in the Base Year	Phase I Coverage (2000)		
		No. of Urban Households	Urban Household Coverage	Add'l. No. of Urban Households to be Served
Adams	0	0	0	0
Bacarra	900	1,912	956	56
Badoc	889	378	* 889	0
Bangui	0	841	421	421
Batac	112	2,854	1,427	1,315
Burgos	0	304	152	152
Carassi	0	0	0	0
Currimao	0	231	116	116
Dingras	1,149	1,249	1,149	0
Dumalneg	0	0	0	0
Espiritu	0	690	345	345
Laoag City (Capital)	6,763	9,151	6,763	0
Marcos	0	311	156	156
Nueva Era	0	283	142	142
Pagudpud	0	848	424	424
Paoay	0	1,504	752	752
Pasquin	0	1,252	626	626
Piddig	35	687	344	309
Pinili	0	407	204	204
San Nicolas	662	4,367	2,184	1,522
Sarrat	0	1,570	785	785
Solsona	875	713	* 875	0
Vintar	1,800	1,030	* 1,800	0
Provincial Total	13,185	30,582	20,510	7,325

* Covers some rural barangays/households.

8.6 Facilities, Equipment and Rehabilitation to Meet the Target Services

8.6.1 Water Supply

(I) Required facilities

Water supply facilities required by service level were estimated by urban and rural area by municipality based on the additional service coverage by target year and summarized in Table 8.6.1 (details are referred to Supporting Report).

Urban water supply:

Physical requirements of Level III systems are estimated as the number of required house connections. Mode of project indicates whether future urban water supply will be implemented as expansion of existing system or construction of a new system. Number of deep wells was also estimated based on the water source evaluation results in Chapter 7.

Table S.6.1 Water Supply Facilities Required by Target Year

Municipality	Phase I (2000) Requirements										Phase II (2010) Requirements									
	Urban Water Supply (Level III)					Rural Water Supply (Level I)					Urban Water Supply (Level III)					Rural Water Supply (Level I)				
	Mode of Project	No. of Additional Deep Wells	Number of House Connections	Number of System	No. of Communal Faucets	Number of Deep Wells			Number of Shallow Wells	Total No. of Wells	No. of Additional Deep Wells	Number of House Connections	Number of Deep Wells			Number of Shallow Wells	Total No. of Wells			
						30 m	50 m	70 m					30 m	50 m	70 m					
		Sub-total																		
Adams	New	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	0	0	0	4
Bacarra	Expansion	1	152	0	0	0	82	0	82	1	732	0	73	0	73	0	73	0	0	73
Bedec	New	1	202	0	0	0	148	0	148	1	238	0	89	0	89	0	89	0	0	89
Bangui	New	1	90	0	0	0	12	0	12	1	610	36	0	0	36	0	36	0	0	36
Banc	Expansion	1	139	0	0	0	47	0	47	1	2,615	111	0	0	111	0	111	0	0	111
Burgos	New	1	35	0	0	0	27	0	27	1	236	25	0	0	25	0	25	0	0	25
Canasu	New	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Curruao	Expansion	0	0	0	0	0	41	0	41	1	66	0	32	0	32	0	32	0	0	32
Dineras	Expansion	0	0	1	20	0	37	0	37	1	220	0	93	0	93	0	93	0	0	93
Dumalines	New	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Espiritu	Expansion	0	0	0	0	0	12	0	12	1	147	0	45	0	45	0	45	0	0	45
Laosé City (Capital)	New	1	1,190	0	0	0	106	0	106	2	4,997	0	175	0	175	0	175	0	0	175
Marcos	New	1	74	0	0	0	21	0	21	1	322	0	45	0	45	0	45	0	0	45
Nueva Esp	New	1	57	0	0	0	21	0	21	1	318	0	16	0	16	0	16	0	0	16
Puertofrud	Expansion	1	20	1	20	0	11	0	11	1	294	45	0	0	45	0	45	0	0	45
Puoty	New	1	417	0	0	0	46	0	46	1	1,170	0	52	0	52	0	52	0	0	52
Pasquin	Expansion	0	0	0	0	0	49	0	49	1	282	0	63	0	63	0	63	0	0	63
Peddie	New	0	0	1	20	0	23	0	23	0	0	0	54	0	54	0	54	0	0	54
Pinith	Expansion	0	0	0	0	0	68	0	68	1	63	0	46	0	46	0	46	0	0	46
San Nicolaz	Expansion	0	0	0	0	0	37	0	37	1	1,275	0	34	0	34	0	34	0	0	34
Saral	Expansion	1	51	0	0	0	62	0	62	1	650	0	56	0	56	0	56	0	0	56
Solsona	New	1	20	0	0	0	68	0	68	1	910	0	62	0	62	0	62	0	0	62
Vistar	Expansion	1	118	0	0	0	18	0	18	1	579	0	86	0	86	0	86	0	0	86
Provincial Total	New.....12	13	2,565	3	60	97	839	0	940	20	15,723	217	1,021	0	1,247	0	1,247	0	0	1,247
	Expansion: 6																			

Rural water supply:

Physical requirements of Level II systems are estimated as the number of systems and number of communal faucets, while that of Level I wells are estimated as the number of wells with classification of deep and shallow wells. Deep wells are further subdivided in terms of three different standard depths based on the water source evaluation results.

(2) Rehabilitation

Rehabilitation requirements are estimated as 10% of the total number of deep wells to be constructed under PW4SP. Rehabilitation work is mainly redevelopment of wells by means of air surging, while minor repair of concrete apron and handpump was considered to be undertaken by respective beneficiary organizations.

(3) Equipment

Logistic support:

For rural water supply development, 1 unit each or set of the following equipment was considered necessary for the provincial government to conduct various activities of PW4SP implementation:

Transportation- service vehicle.

Office equipment- computer with printer, typewriter, mimeo machine, scanning machine and copier.

Field equipment- water testing kit, sound system, tape recorder and tools for maintenance.

For urban water supply, no hardware was considered.

Well drilling and rehabilitation equipment:

As a reference information, necessary types and number of well drilling and rehabilitation equipment were studied considering the existing equipment of sector agencies in the province.

During the Phase I period, a total of 940 Level I deep wells shall be newly constructed and 10% of these deep wells shall be rehabilitated annually. Although there are huge requirements, only 1 unit of truck-mounted percussion drilling rig, 1 unit of portable mechanized rotary drilling rig and 1 unit of air compressor for well rehabilitation are available at DPWH-DEO in the province.

Therefore, a total of 19 sets of drilling rigs (8 sets of medium size rotary type and 11 sets of medium size percussion type) together with 2 sets of well rehabilitation equipment, 3 units of support vehicles for well rehabilitation and 19 units of service trucks for deep well construction shall be mobilized/procured either by private sector or LGUs (details are referred to Supporting Report).

8.6.2 Sanitation

This sub-section refers to physical requirements by target year covering household, school and public toilet facilities. Table 8.6.2 presents the required sanitation facilities by target year. Rehabilitation for the sanitation facilities is considered as part of recurrent cost.

(1) Household toilets

Future requirements in the number of household toilets by different type for urban and rural areas are estimated based on the additional households to be served by type of facility both for urban and rural areas by target year (details are referred to Supporting Report).

(2) School toilets

The future requirements in the number of toilet facilities are estimated based on the standard number of students to be served by a 5-unit standard facility and the additional students to be served by target year (details are referred to Supporting Report).

Total required facilities are further broken down into urban and rural areas by applying the percentage share of urban and rural population.

(3) Public toilets

Future requirements in the number of toilet facilities are estimated based on the additional number of toilets for public markets and bus/jeepney terminals located in urban areas (details are referred to Supporting Report).

8.6.3 Urban Sewerage and Solid Waste

Physical requirements for the sewerage facilities are not discussed in this sub-section. Further study shall be conducted in the future.

Table 8.6.2 Sanitation Facilities Required by Target Year

Municipality	Phase I (2009) Requirements												Phase II (2010) Requirements												
	Urban Sanitation						Rural Sanitation						Urban Sanitation						Rural Sanitation						
	Number of Household Toilets			No. of Public Toilets			Number of Public School Toilets			Number of Household Toilets			No. of Public Toilets			Number of Public School Toilets			Number of Household Toilets			No. of Public Toilets			
	Flush	VIP Latrine	Total	Public Markets	Bus Terminal		Flush	Pour Flush	VIP Latrine	Total	Public Markets	Bus Terminal		Flush	Pour Flush	VIP Latrine	Total	Public Markets	Bus Terminal		Flush	Pour Flush	VIP Latrine	Total	
Adams	0	0	0	0	0	0	22	10	0	32	0	0	0	0	0	0	0	0	0	0	0	45	71	0	118
Bacarra	0	177	0	177	0	0	170	326	0	496	0	0	0	760	0	0	760	0	0	0	745	866	0	1,611	
Badoc	41	0	0	41	0	0	0	291	0	291	0	0	0	159	0	0	159	0	0	0	2,255	0	0	2,255	
Bangui	122	0	0	122	0	0	0	252	0	252	0	0	0	367	0	0	367	0	0	0	20	771	0	791	
Batic	405	0	0	405	0	0	0	1,149	0	1,149	0	0	0	1,324	0	0	1,324	0	0	0	0	2,812	0	2,812	
Burgos	58	0	0	58	0	0	115	328	0	443	0	0	0	137	0	0	137	0	0	0	92	571	0	663	
Carassi	0	0	0	0	0	0	0	111	0	111	0	0	0	0	0	0	0	0	0	0	0	61	0	61	
Cutrimiao	0	0	0	0	0	0	128	298	0	426	0	0	0	92	91	0	183	0	0	0	62	756	0	818	
Dingras	186	0	0	186	0	0	195	0	0	195	0	0	0	562	0	0	562	0	0	0	76	2,264	0	2,340	
Dumalneg	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	0	0	0	0	0	37	56	0	93	
Espiritu	5	157	0	162	0	0	0	651	0	651	0	0	0	301	0	0	301	0	0	0	0	1,281	0	1,281	
Laosig City (Capital)	96	287	0	383	14	1	129	906	0	1,035	15	3,871	0	0	3,871	4	1	198	3,939	0	198	3,939	0	4,137	
Marcos	65	0	0	65	0	0	0	249	0	249	0	0	0	141	0	0	141	0	0	0	0	1,144	0	1,144	
Nueva Era	53	31	0	84	0	0	0	333	0	333	0	0	0	146	0	0	146	0	0	0	0	388	0	388	
Pagudpuud	177	0	0	177	0	0	251	21	0	272	0	0	0	393	0	0	393	0	0	0	289	1,146	0	1,435	
Paoay	5	35	0	40	0	0	13	498	0	509	0	0	0	677	0	0	677	0	0	0	77	1,403	0	1,480	
Pasayun	30	178	0	208	1	1	0	1,180	0	1,180	3	513	0	0	513	0	0	0	0	0	0	1,487	0	1,487	
Ploddie	62	0	0	62	0	0	0	151	0	151	0	0	0	373	0	0	373	0	0	0	0	1,199	0	1,199	
Punili	84	0	0	84	0	0	0	268	0	268	1	194	0	0	194	0	0	0	0	0	0	1,251	0	1,251	
San Nicolas	465	0	0	465	0	0	0	98	0	98	0	0	0	1,847	0	0	1,847	2	0	0	0	902	0	902	
Sarrat	126	0	0	126	0	0	0	105	0	105	0	0	0	685	0	0	685	0	0	0	0	1,142	0	1,142	
Solshea	0	39	0	39	0	0	0	212	0	212	3	348	0	0	348	0	0	0	0	0	0	1,575	0	1,575	
Vintar	87	185	0	272	0	0	0	1,603	0	1,603	5	422	0	0	422	0	0	0	0	0	0	2,046	0	2,046	
Provincial Total	2,067	1,089	0	3,156	15	18	5	1,642	9,044	0	10,686	29	13,312	91	0	13,403	8	13	23	1,641	29,388	0	31,029		

As reference information, the number of refuse collection trucks is estimated for the urban area in Phase I. The number of additional units of truck required is 15 to meet assumed service coverage as reflected in Table 8.6.3.

Table 8.6.3 Number of Refuse Collection Trucks Required in Phase I

Municipality	Additional Urban Households to be Served	Estimated Daily Amount of Refuse to be Generated (Kg)	Number of Collection Trucks Required
Adams	0	0	0
Bacarra	56	23	1
Badoc	0	0	0
Bangui	421	176	1
Batac	1,315	550	1
Burgos	152	64	1
Carassi	0	0	0
Currimao	116	48	1
Dingras	0	0	0
Dumalneg	0	0	0
Espiritu	345	144	1
Laoag City (Capital)	0	0	0
Marcos	156	65	1
Nueva Era	142	59	1
Pagudpud	424	177	1
Paoay	752	314	1
Pasuguin	626	262	1
Piddig	309	129	1
Pinili	204	85	1
San Nicolas	1,522	636	1
Sarrat	785	328	1
Solsona	0	0	0
Vintar	0	0	0
Provincial Total	7,325	3,060	15

8.7 Identification of Priority Projects for Medium-Term Development Plan

In general, the present service coverage by municipality with reference to the target coverage indicates the direction of development effort for implementing PW4SP with municipal priorities.

Specific projects shall be selected subject to detailed studies and rather not discussed in provincial master plan. In addition, pertinent information to identify priority projects is not available both at provincial and municipal level during this PW4SP preparation, except some WDs for future expansion work.

The general criteria for identifying priority projects as guide for implementing the PW4SP are summarized below.

The first level of priority should be given to projects with positive feasibility studies and identified funding. Next level of priority would be given to projects with positive feasibility studies, although no funding source has been identified. The third level should be those for which feasibility study has been conducted. Within each level, if funds were insufficient, a ranking could be carried out in application of some factors such as willingness to pay, water-related diseases status and per capita cost. Under the above mentioned conditions, a list of projects shall be prepared by the implementors.

Due attention shall be paid on the importance of integrated development of relevant sub-sectors to maximize the effects and benefits through simultaneous implementation of water supply and sanitation projects. On a municipal level priority, synthetic evaluation of sector components for concerned municipalities (which is studied in the financial study, Chapter 11) may be used for implementation arrangements.



Chapter 9

SECTOR MANAGEMENT PLAN



9. SECTOR MANAGEMENT PLAN

9.1 General

In order to effectively manage the water and sanitation sector, the provincial and municipal governments will have to make some adjustments in their current structures and policies. This Chapter proposes the mechanisms, processes and structures needed in the medium-term to achieve the coverage targets with sustainability. Not all recommendations can be laid out with the same level of detail at this time as some are dependent on further policy guidelines being formulated at the national level. These include, for example: the on-going study on access of LGUs to external financing assistance and the formulation of the Implementing Rules and Regulations to guide, among others, the sector devolution process.

9.2 Sector Management

(1) Development of the vision

One glaring institutional need at the local level is a common vision and mission statement for the sector. A critical mass of people and resources who share in the vision must be identified and harnessed for project implementation. Local planners need to focus on the long-term requirements i.e., beyond forming users' associations, drilling wells, distributing bowls, etc. Based on a realistic assessment of constraints, opportunities and demand, the province has set its vision and mission for the sector.

Initial vision statement: The province will adopt a two-phased plan which seeks to dramatically improve the provision of water supply and sanitation: In the medium-term (1996-2000) plan, the province seeks to increase water supply coverage in urban areas to 85% and in rural areas to 80%. On the other hand, household toilets will be made available to 96% of the total population; 90% of students in public schools will have adequate sanitary toilet facilities; 100% of public utilities will have sanitary toilets; and 50% of urban population will be covered by solid waste collection facilities. For its long-term (2001-2010) plan, the province will pursue a more vigorous program to increase water supply coverage in both urban and rural areas to 95%. For the sanitation sub-sector, individual household toilets will increase up to 98%; school toilets will rise up to 95%; public utilities will continue to have a 100% sanitary toilet coverage; while sewerage will cover 50% of the urban population.

(2) Sector management

A Sector Management Model is presented in Figure 9.2.1 for sector management and project development. It is envisaged that this PW4SP will be used as a basis for the Annual Sector Plan and/or input into Loan or Grant Negotiations in the future. The Annual Sector Plan, together with the budgets will be reviewed by the Governor and passed upon by the legislation as part of the annual provincial budget approval process.

The Sector Level Implementation activities consist principally of three (3) broad areas: social marketing; technical assistance; and monitoring. Project selection follows on from a self-selection process. The identification of a responsible community-based association and technical studies, as needed, will be done. Only after the institutional, financial and technical studies have been done, construction or rehabilitation will take place. Operation and maintenance, including arrangements for finances of the system will be the responsibility of the community organization. The Monitoring Function, on the other hand, will be augmented with water quality surveillance by the Provincial Health Office (PHO) and operational audits done by the LGU.

(3) Service provision policies and objectives

The LGU seeks to provide an adequate level of water and sanitation facilities defined as follows:

- 1) Level I facilities serve, at most, 15 (fifteen) households; Level II public taps serve 5 (five) households; and Level III provides individual household connections.
- 2) Water supply provision will be at least 20 lpcd for Level I; 60 lpcd for Level II; and 100 lpcd for Level III.
- 3) A critical mass of 70% of the individual households in every barangay has sanitary toilet facilities.
- 4) All schools shall have adequate water supply and at least one sanitary toilet facility for every 50 students.

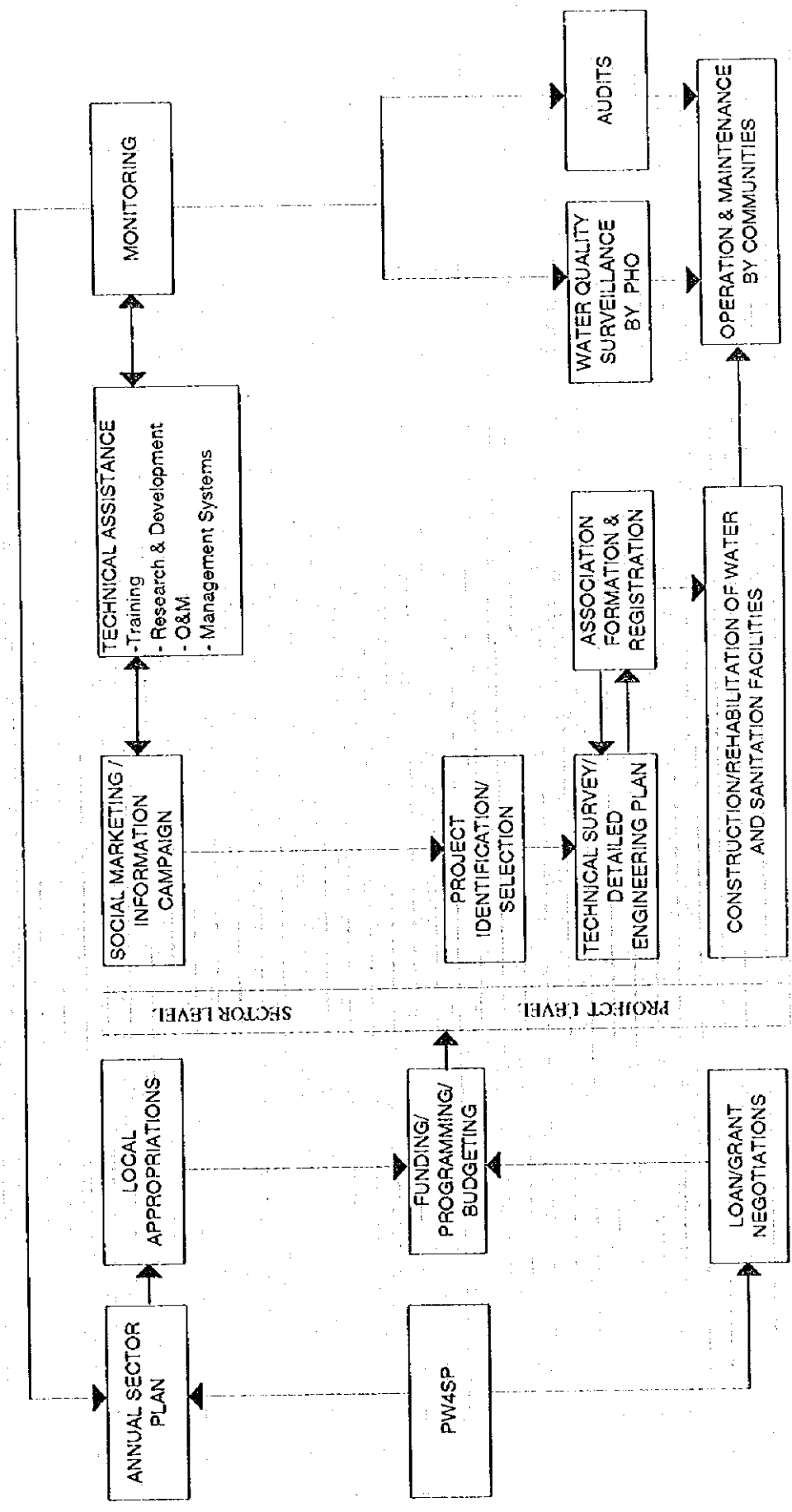
(4) Operating policies

The following policy and strategy statements are adopted by the Provincial Government. These may be reviewed and revised from time to time by the Provincial Government.

The key policy statements include the following:

- 1) Sustainability shall be promoted through increased community responsibility for management of facilities. Unless potential users demonstrate initiative and commitment (beyond making the request for assistance) to maintain the systems, no

Figure 9.2.1 Sector Management Model



support shall be provided by the LGUs. To the extent possible, the LGUs should utilize existing local resources (self reliance).

- 2) Selection and prioritization of projects shall be based on demonstrated commitment of the beneficiaries to participate in the project and their willingness to pay; the current water, sanitation and overall health conditions; potentials for growth; and cost implications.
- 3) Technology to be used for the projects shall be appropriate to the local conditions and resources. However, construction of economical facilities shall be pursued not necessarily insisting on low-cost. Phased upward integration and future upgrading of systems and facilities shall also be promoted utilizing to the extent possible previously constructed facilities. In urban centers, a range of technologies may be adopted for wastewater collection and treatment, as well as for drainage.
- 4) An integrated approach to the provision of potable water supply, sanitation and hygiene education shall be promoted. All projects to be developed by the LGU must involve these three elements.
- 5) The LGU shall seek to provide water and sanitation in an equitable manner between rural and urban areas; between wealthy and depressed areas.
- 6) Cost Recovery and Cost Sharing (Subsidy Policies): The LGU shall enforce a rational and consistent policy on the application of subsidies and loans for water supply and sanitation. The current national policy is that 100% of the capital costs for Level I systems are provided as grant; communities, however, have to establish an O&M reserve fund and are responsible for all maintenance and operating costs. Water source development is provided as grants for Level II systems; full cost recovery is required for all other capital costs. Full capital and O&M cost recovery is required for Level III systems.
- 7) Private Sector Participation: The government shall give the private sector a substantial and preferential role in the attainment of the PW4SP objectives. In harnessing their participation, less government intervention shall be exercised in areas where the private sector is or can be a key player. An environment designed to empower them to absorb new social responsibilities and proactively convey to the government their aspirations and interests shall be established. The formation of private sector groups, NGOs, community organizations, cooperatives and people's organizations shall be encouraged. The implementation of programs to develop their capabilities in the sector development programs shall be promoted.
- 8) The province's fiscal management, in terms of capital funds generation capability, budget and disbursement, shall be improved. The assistance of legislative branch in

- 8) The province's fiscal management, in terms of capital funds generation capability, budget and disbursement, shall be improved. The assistance of legislative branch in the enactment of the proposed revenue-generating measures shall be sought. Financing through the private sector will also be encouraged.
- 9) Sector development shall be consistent with broader concerns for the environmental protection and management. Pollution control, conservation and proper utilization of water and land resources are critical issues. An environmentally-responsive management approach to resource use shall be pursued.
- 10) Disaster Response and Emergency Coordination: The LGU shall formulate, as part of its contingency plans, a program to address emergency conditions. The program shall include maintenance of stocks of chlorine, organization and training of local communities on restoration of water supplies and provision of emergency sanitary facilities. The LGU should coordinate closely and regularly with the local officials of the Regional Disaster Coordinating Council (RDCC).

(5) Regulatory policies

In coordination with appropriate national and local agencies, the LGU shall endeavor to set up an effective regulatory framework considering the following:

- 1) Water allocation and water rights policies (conflict resolution) which are within the mandate of the National Water Resources Board. Studies are underway to strengthen the linkages between the Board and other agencies, including LGUs, particularly in the enforcement of NWRB policies.
- 2) Water Rate Review: While the rate setting and approval functions remain largely as a concern of the associations or the water districts (and LWUA), a vehicle for resolving grievances against unrealistic tariffs (or other practices) can be instituted by the LGUs. The court system, of course, remains as the final arbiter in conflicts.
- 3) Association Registration: The LGUs shall likewise adopt a registration and franchising system for associations responsible for water supply facilities outside the WD franchise areas. Annual reporting requirements will have to be established for monitoring and possibly, auditing purposes.
- 4) Water Quality: The National Drinking Water Standards have been established. The LGUs will have to establish a viable mechanism, including water testing and standards enforcement, to ensure that water delivered meet the potability standards. The DOH currently has the responsibility and the regulatory power to stop the operations of water systems not delivering potable water.

(6) Financing system

Current policy shifts present an opportunity for the LGU to establish the conduit for future local and foreign-assisted projects. Presently, funds are brought to the field level through government allotment and sub-allotment systems of central government agencies.

Apart from being cumbersome and subject to delays, the more critical idiosyncrasy of this system is that the actual project implementation "power" still lies in the hands of national agencies.

Overall, it is the LGU responsibility to raise funds to support capital development sector projects and to ensure that adequate O&M reserves are raised by the beneficiary communities.

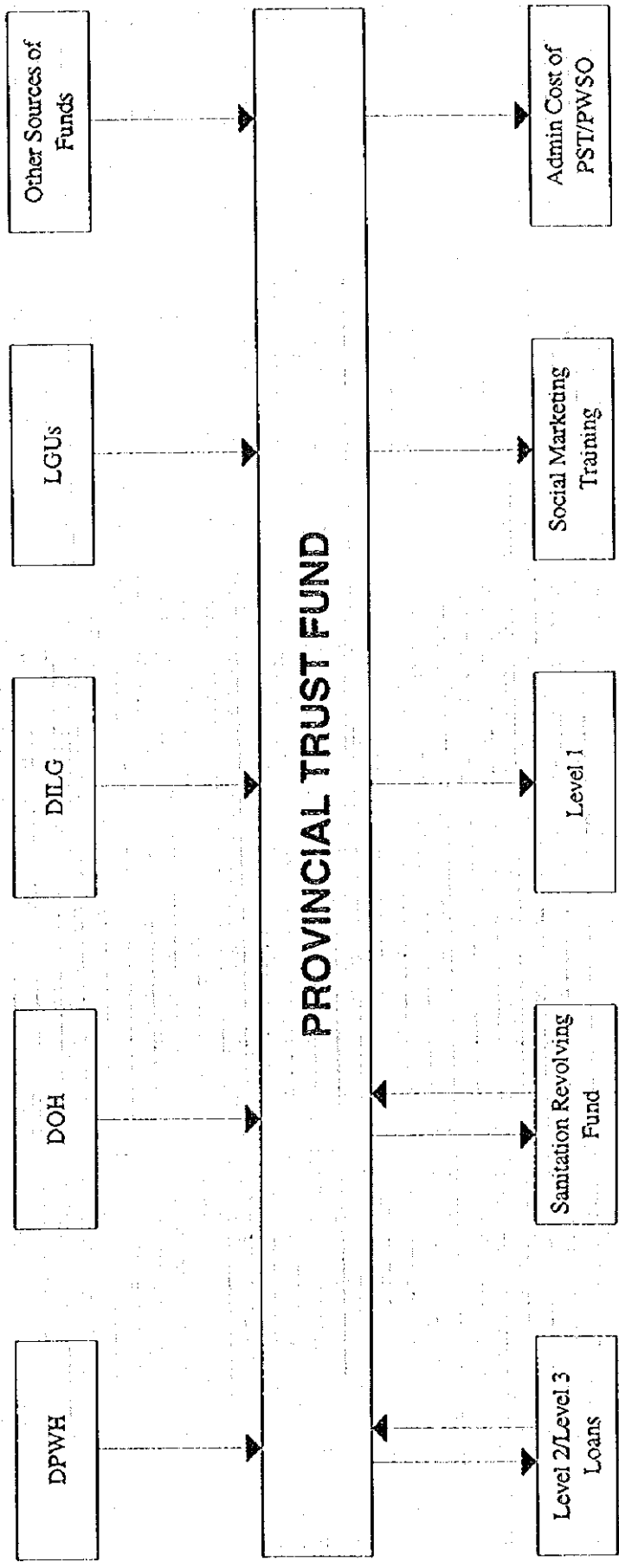
In the medium-term, the primary source of funds are envisaged to be provincial & local taxes & allocation from the IRA 20% Development Fund. Also, in the medium-term, it is envisaged that national & external funds will, although diminishing, continue to be channeled through local offices of central agencies.

Studies are underway to look into the feasibility of direct access of LGUs to external funds. The LGU will continue to monitor the developments and policy decision to be established as these will invariably affect local financing mechanisms.

In the long-term, the Provincial Sector Trust Fund approach (Fig. 9.2.2) may be an additional mechanism for financing project-related activities. This Trust Fund can be the transition arrangement as the line departments gradually reduce their direct control over sector funds. The Trust Fund could also raise the LGUs responsibility for effective and efficient utilization of these funds. The Trust Fund may be regularly replenished by the line departments upon liquidation. The controlling device at the national level will be in the replenishment of the trust fund. If the results are not satisfactory, national government should be able to institute changes as conditions to fund replenishment. Reviews can be done regularly. This arrangement is subject to agreement with respective line departments.

To support sanitation activities, housing improvement loans for installing in-house sanitary facilities should be studied and instituted by the LGU. Such a mechanism can be organized with the rural banks or the existing credit cooperatives. Seed funding for this revolving fund also needs to be raised.

Figure 9.2.2 Flow of Funds



Upon agreement by the parties, the enabling local legislation establishing the Trust Fund and the sanitation revolving fund will have to be enacted.

9.3 Institutional Arrangements

In the medium-term, a full-time Provincial Sector Team (PST) for coordination and institution-building shall be set up. The LGU should ensure that adequate logistics and incentives are provided. This Team may be supplemented by staff detailed full-time from national and local agencies, as needed. In the long term, the core group from the Team will form a new Provincial Water Supply and Sanitation Office (PWSO). The PWSO will continue to promote, assist and monitor all water supply and sanitation services in cooperation with the municipalities. The DILG-PMO shall continue to provide technical and managerial assistance in the formative years of the PST/PWSO.

With the on-going discussions, it is not entirely clear at this time, how the water supply development capacity at the DPWH-DEO may be harnessed. One scenario is for the DEO to provide technical services at cost and in competition with other private contractors. Another scenario might call for the actual transfer of resources (equipment and staff) to the LGU. Policy decision and guidelines will be taken shortly at the national level.

The initial professional-level staffing of the PST/PWSO are estimated as follows:

Provincial Water Supply & Sanitation Coordinator	1
Assistant Provincial Water Supply & Sanitation Coordinator	1
Community Development & Training Specialist	2
Water Supply & Sanitation Engineer	2
Monitoring Specialist	1
Total Personnel Required	7

The Governor will make the appointment based on the short list. DILG will assist in preparing the shortlist of candidates for PST/PWSO Coordinator. The draft Terms of Reference for the various posts is proposed as follows:

- (1) The Provincial Water Supply & Sanitation Coordinator (PWSC) will lead an interdisciplinary Provincial Sector Team. The PWSC will ensure timely preparation, implementation and reporting of sector and project progress based on the annual sector plan. For day to day operations, the PWSC will report to the Governor. The PWSC will

also liaise with all project implementors at the municipal level. The PWSC shall be the key contact person of the DILG PMO. Specific duties include:

- 1) Prepare guidelines, work plans and schedules for project implementation work at the municipal level; coordinate the work of consultants and NGOs in their various tasks.
 - 2) Prepare a detailed work plan and program of activities for project implementation at the provincial level (including technical, financial and organizational aspects) and ensure regular reports on the progress of activities.
 - 3) Guide the conduct of sector and project management and the supervision, and coordination of the PST/PWSO; ensure the quality and timeliness of the outputs of the other agencies and consultants.
 - 4) Assess all future inputs required for project planning, design, supervision of construction and monitoring in subsequent phases of project implementation.
 - 5) Take steps to ensure that adequate financing is available to support the sector capital development requirements.
 - 6) Assist in the negotiations for external grants and loans.
 - 7) Recommend policy and policy revisions to govern sector and project management activities.
- (2) An Assistant Provincial Water Supply and Sanitation Coordinator will likewise be appointed to assist the PWSC in discharge of his/her duties and responsibilities of the PWSO.
- (3) The Community Development and Training Specialist (CDTS) will be particularly responsible for implementing the community development and involvement aspects of the project. His/her task will include frequent contact with the municipal liaison staff and barangays to ensure that all project activities are demand-driven and sustainable. The CDTS will report to the PWSC. Specific duties include:
- 1) Identify initial areas and develop implementation arrangements for launching the project in the various municipalities.
 - 2) Conduct regular dialogue and disseminate information among local leaders on water, sanitation and health issues.
 - 3) Assist municipalities in overseeing the organization (or accreditation) of associations which will be responsible for water supply and sanitation facilities.
 - 4) Coordinate the health and hygiene education program province-wide.
 - 5) Review past training programs for water supply and sanitation, hygiene and sanitation education, and community organization and development, including any manuals or other training materials used.

- 6) Guide municipal liaison staff in developing/adapting a community training strategy and methodologies based on the principles of participation, adult education, experiential learning and task specific activities, including the review and development of training materials.
 - 7) Prepare the overall provincial training plan enhancing management skills, institutional strengthening, improving technical skills, and community promotion, awareness and development. This should include: training methodologies; types and numbers of training events for staff and communities; training of trainers; training packages, manuals and audio visuals; management aspects of training program; and staff requirements and cost estimates for all categories of training including equipment and materials.
 - 8) Assist municipal staff in identifying and selecting target communities and sites based on agreed upon criteria; develop methodologies and coordinate preliminary village surveys and gender analysis.
 - 9) Assist in coordinating activities of the municipal liaison.
- (4) The Water Supply and Sanitation Engineer (WSSE) will be responsible for all the technical aspects of the project including feasibility studies, design, construction, operation and maintenance. The WSSE will report to the PWSC. Specific duties include:
- 1) Review the existing technical and environmental situation relating to water supply and sanitation facilities and assess the needs for new facilities and rehabilitation.
 - 2) Prepare and update criteria and process for the selection of water supply and sanitation facilities appropriate to the conditions prevailing in the project areas focusing on systems that can be operated and maintained by the community.
 - 3) Review design standards for water supply and for on-site sanitation (human excreta disposal) facilities for individual households, communal and school latrines.
 - 4) Establish appropriate design standards and technical specifications for water and sanitation materials and equipment applicable to systems proposed in the project. Establish quality control mechanisms for the procurement of materials and equipment as appropriate.
 - 5) Prepare standard contract documents, specifications and cost estimates for civil works and procurement.
 - 6) Ensure proper construction supervision and monitoring in coordination with the municipal liaison. Ensure timely transport of LGU-provided materials to project sites.
 - 7) Provide for adequate maintenance of LGUs equipment and tools for water and sanitation facilities, including drilling rigs and vehicles.

- 8) Supervise major repair or rehabilitation work beyond the capacity of communities to undertake.
 - 9) Implement, in coordination with the PHO, the water quality surveillance system.
Assist the PHO in enforcing sanctions or remedial measures in controlling drinking water quality.
- (5) The Monitoring Specialist (MS) will be responsible for ensuring that the status of sector projects and outputs are properly reported and fed back to management. His/her task will include frequent contact with the municipalities to ensure that all project activities are demand-driven and sustainable. The MS will report to the PWSC and liaise closely with the PPDO who has the responsibility for monitoring all development activities and needs in the province. Specific duties include:
- 1) Draft all project reports and documents including the quarterly and annual Sector Report.
 - 2) Maintain the Registry of associations responsible for water and sanitation in their respective communities.
 - 3) Coordinate and develop indicators for monitoring and evaluating the achievement of project objectives.
 - 4) Monitor actual costs for typical water supply and sanitation systems.
- (6) At the municipal level, a Municipal Sector Liaison (MSL) will be appointed by the respective mayors. Staff appointed may be the municipal development coordinator, the municipal engineer, the municipal health officer or any other qualified staff selected by the mayor. The role of the MSL will be very critical at all stages of sector and project management. The MSL should ensure that the activities guided by PST/PWSO are implemented at the barangay level, particularly information dissemination about funding opportunities. The MSL receives all requests for water and sanitation facilities including the commitment of the barangays to provide counterpart funds or labor for the projects. The MSL also programs the municipal funds (from municipal IRA allocation or other sources) to provide counterpart support or to fully finance the projects.

Supported by the PST/PWSO, the MSL ensures that a viable organization is set up or appointed to handle the operation, maintenance and fee collection for the water system. The MSL also reviews the detailed project plan and design. During implementation, the MSL monitors the construction and drilling activities. The activities of the MSL will be closely coordinated and reported to the PST/PWSO. If warranted, the mayor should

establish a municipal water and sanitation office in the long-term future to handle all the above functions when the level of activities shall have become substantial.

- (7) At the barangay level, the Barangay Council (BC), through its Committee on Health, and the Rural Health Unit (RHU) plays a major role in concretizing the community aspiration for improved water and sanitation services.

The BC is the entry point for all development activities in the community. Particularly, it will play an important role in preparatory stage before setting up the association (or appointment of the responsible group). The BC prepares the request for assistance and assembles available local resources (funds, manpower, materials) to serve as initial community counterpart to demonstrate barangay commitment.

The RHUs and their network of barangay health workers (volunteers), on the other hand, have established an effective primary health care delivery system in the province. The system will continue to provide, among others, health and hygiene education services focusing on the interdependence of safe water supplies and sanitary toilet facilities to achieve overall health and environmental benefits. The RHUs will be the principal data collectors to monitor the conditions in access and coverage of water supply and sanitation services.

- (8) At the national level, DPWH, DOH and DILG will continue to provide technical assistance to LGUs per NEDA Resolution No. 4, either directly or through their local field offices and staff. In addition, mandated government agencies, such as LWUA, will continue to provide technical and managerial services and loans to duly-organized water districts and RWSAs. Through the DOF and DBM, the IRA allocations will continue to be provided from which a portion can be allocated for sector projects. Since this IRA allocation for water and sanitation projects will likely be very limited, the LGU will have to coordinate with appropriate national agencies to gain access to external funds. Regulations, promulgated and enforced by national regulatory bodies, like the NWRB, will have to be complied with by the LGU. Further national policy guidelines will be issued by NEDA and the Office of the President.

9.4 Project Management Arrangements

(1) Level I

- 1) **Project Selection:** Self-selection and local initiative should be the basis. All barangays should be well-informed about sector opportunities and policies. The barangays

should take the first step by assessing their needs, deciding that they want to improve their water and sanitation above all other needs and expressing their aspiration. The initial tasks of LGUs will be social marketing and information dissemination. The barangay should also decide desired service level/s, with a full understanding of the cost recovery aspects and other responsibilities.

- 2) **Organization of associations:** More flexibility is needed in order to tap local community resources. The issue of the necessity of forming BWSAs has been raised on several occasions. The proliferation of single-purpose associations for every government-sponsored project tends to divide barangay resources and complicate barangay structures. Many socio-civic groups have in fact "adopted" facilities and are looking after their maintenance voluntarily. Actual success rate seems to be higher in areas where water supply is extremely difficult regardless of whether there is monitoring or not.

The basic principle is that the community agrees that a particular group at the local level will be responsible. Existing local groups with other socio-civic objectives, an active track record and which are ready, willing and able to take on the BWSA functions may be tasked with the responsibility for the facilities. LGUs will assess the situation and, if justified, approve alternative non-BWSA arrangements. BWSA formation, of course, remains an option. An "institutional accreditation" system can be organized. If the association fails to live up to its responsibilities, it can lose its accreditation to another group.

The association can decide how to organize itself internally in coordination with the municipal sector liaison. The important condition is that all functions have to be attended to. Thus, an association may subdivide itself by "puroks" or it may choose to operate as one institution.

- 3) **Technology and Technical Design Standards:** The former Rural Waterworks Development Corporation (whose functions were absorbed by LWUA) and the DPWH have developed a simplified procedure for conducting the initial data gathering. The formats, which are appended (Table 9.4.1 Supporting Report), may be adopted and used by the LGUs. If necessary, these forms can be revised to suit the specific needs of the barangay or municipality.
- 4) **Bidding of works and procurement of services and materials** should follow provision of PD 1594 and other appropriate government policies and practices. Where possible, major capital procurement shall be sourced within the province.

- 5) **Construction and Drilling:** Drillers and civil work contractors will be needed for any major rural water supply and sanitation undertaking. Construction inspection shall be done with the municipal sector liaison.
- 6) **Right of Way Acquisition:** Deed of Donation (or written permits to grant use of land) for proposed facility sites should be executed in favor of the municipal government/barangay prior to project approval.
- 7) **Major rehabilitation work, beyond the capacity of the associations, shall be referred to the municipality for action.** Clear definition of "major rehabilitation work" is needed. All costs incident to the rehabilitation shall be to the account of the association O&M reserve fund. The municipality supported by PST/PWSO will assist, if needed, the association in securing soft loans, if the reserve funds are inadequate.
- 8) **Operation & Maintenance will generally be the responsibility of the association.** To support the caretakers, a franchising system for major O&M activities may be instituted by the municipality (through a private firm, a major water district in the area or any other competent group). Mechanics and plumbers can organize well-equipped "mobile service centers" which visits all the facilities monthly to check-up facilities and provide technical advice on behalf of the LGUs.

With standardization, local hardware stores will find it more profitable to stock up on needed spare parts. The LGUs should not maintain spare parts, although it is expected to maintain a ready stock of fast-moving spares.

- 9) **Water Rate Setting:** Fees and rates shall be established and approved by the community prior to construction. The fees shall be sufficient to cover all monthly operation, maintenance and administration costs, as well as to establish a reserve fund.
- 10) **Fees Collection and Funds Management:** The association shall collect monthly fees. All funds of the association shall be deposited in a bank to be selected by the association.

(2) Level II

- 1) **Project Selection:** Guidelines similar to that of Level I project selection shall be followed, i.e., self-selection and local initiative. Two or more barangays (or puroks) may agree to have a joint water and sanitation project.

- 2) **Organization:** The RWSA model may be followed by the participating communities. Again, flexibility will be followed and alternative models for managing the system may be considered.
- 3) **Technology and Technical Design Standards:** Technical standards have been in use by LWUA for RWSAs and by DPWH for Level II systems. (See Table 9.4.2 with annexes, Supporting Report). As these are considered as national standards, they will be adopted by the LGUs.
- 4) **Bidding of works and procurement of services and materials** should follow provision of PD 1594 and all other applicable national and local legislation on bidding and award of contracts using public funds. LWUA uses standard formats and procedures for this process, which may be adopted by the LGUs.
- 5) **Construction** would usually be done by a contractor. Inspection would be undertaken by the RWSA; by the cooperative or the private developer; or by the LGUs depending on the institutional arrangement adopted.
- 6) **Right of Way Acquisition.** The association shall negotiate for the purchase of land on which facilities will be constructed. Should negotiations fail, the government may exercise the power of eminent domain to secure needed land.
- 7) **Operation & maintenance and rehabilitation** will be the responsibility of the association. It shall ensure that adequate tools and spare parts are available. It shall employ needed staff and caretakers.
- 8) **Water Rate Setting:** All fees shall be subject to public hearing and approval by the appropriate regulatory authority.
- 9) **Fees Collection and Funds Management:** Same policies for Level I shall apply. However, fee computation shall include provision for debt service and possibly a higher reserve requirement.

(3) Level III

- 1) **Project Selection:** Most Level III systems are to be initiated by the municipal governments. In principle, all communities, including rural areas, may request Level III services, provided that they are willing and able to take on the financial and managerial obligations for higher service levels. The point is that service level selection are community decisions.
- 2) **Organization:** There are several viable Level III models which may be adopted: the Water District Concept; an LGUs-managed system; a cooperative-run system; or a privately-owned and managed system. The LWUA-water district concept was briefly described in the preceding chapters. For detailed information, the LGUs should

contact and coordinate with LWUA. The second option for the LGUs is to maintain operational control over the utility. Current experiences, however, revealed many difficulties because of numerous government controls and restrictions. The private sector may be a viable option using the BOT mechanism or even as a longer term investment for private entrepreneurs for larger systems.

- 3) **Technology and Technical Design Specifications:** Regardless of the institutional model adopted, the technical design standards to be enforced should be uniform. Technical standards used by the water districts and LWUA will be adopted and enforced by the LGUs.
- 4) **Bidding of works and procurement of services and materials** shall follow the provision of PD 1594 and all other applicable national and local legislation on bidding and award of contracts using public funds. LWUA uses standard formats and procedures for this process, which may be adopted by the LGUs.
- 5) **Construction** would usually be done by a contractor. Inspection would be undertaken by the water district; by the cooperative or the private developer; or by the LGUs depending on the institutional arrangement adopted.
- 6) **Right of Way Acquisition:** The waterworks will have to negotiate for the purchase of land on which facilities will be constructed. Should negotiations fail, the government may exercise the power of eminent domain to secure needed lands.
- 7) **Operation & maintenance and rehabilitation** will be the responsibility of the waterworks. It shall ensure that adequate tools and spare parts are available. It shall employ needed staff and caretakers.
- 8) **Water Rate Setting:** All rates are subject to public hearings and approval by the appropriate regulatory authority.
- 9) The waterworks shall establish a formal billing and collection system. In addition, business practice systems shall be adopted. The LWUA has established a comprehensive commercial practice system, which may be adopted by the organization.

9.5 Community Development Models

Policy: The LGU views community development and involvement principally as regular multisectoral activities, not project-related activities. This implies the need for the LGU to establish an institutional mechanism at the provincial and municipal levels to enhance trust and confidence of communities to the LGU and its ability and motivation for provision of vital services. Community management of the systems is a vital element for sustainability of the facilities. Communities are viewed not merely as beneficiaries but as decision makers for

critical aspects of local projects. Communities will be encouraged to collectively take stock of their resources and constraints and agree on a development program.

The LGU will review the roles and responsibilities of central and local governments, NGOs, the private sector and communities themselves. It shall assess community participation activities and related institutional arrangements of past community projects and constantly look into creative ways to promote and enable local participation.

The LGU shall promote the participation of NGOs to catalyze the involvement of women, youth, people's voluntary organizations (PVOs) and other segments of the community in project decision-making and management. It will focus on the role of women in the context of the design of institutional arrangements at all service levels. The review shall include: brief overview of women's socio-economic situation and their role in water and sanitation services; analysis of relevant NGOs, women's groups and private agencies that support community; and assessment of support action for women's participation essential for project sustainability.

For specific sector projects, the LGU will adopt a three-phase community involvement model. The model will outline the decision and action points, for which community inputs will be sought. These inputs are categorized according to the Pre-Construction Phase, the Construction Phase and the Post-Construction Phase.

Responsibilities: At the municipal level, the Municipal Sector Liaison will play a leading role in ensuring involvement of the beneficiaries at all phases of the project. The Community Development and Training Specialist of the municipality trained by PST/PWSO will provide technical assistance and advice.

One of the key activities in the PW4SP preparation is the formulation of viable models to promote community development in the projects. Each one model for Level I, II and III service was formulated based on socio-economic profiles, service needs and experience in selected communities. It is important to have a clear sequence (a strategy) to enable the communities to participate in the project through all the process.

Three sites were selected based on a set criteria which includes: needs, health situation, source availability, accessibility, potentials for replication, etc. The sites selected for the province are outlined in the table below; full write-up of the case is included in 9.5 Supporting Report.

Table 9.5.1 Summary of Community Development Study Sites

Model Study Site	Proposed Service Level	Urban or Rural	Potential Service Area		Potential Water Source	Sanitation Issues
			Population	Households		
Bgy. Torre, Currimao	I	R	378	83	Deep Well	Yes
Municipality of Badoc (3 bgy.s.)	II	U	2,747	550	Deep Well	No
Bgy. Salsalamagui, Vintar	III	R	926	214	Spring &/or Deep Well	No

(1) For Level I facilities, community involvement and participation shall be promoted in the following manner.

1) Pre-Construction Phase

- (a) Dissemination of information
- (b) Establishment (or selection) of barangay or purok association and of the working relationships with other agencies
- (c) Election of officials
- (d) Assistance for the selection of potential water sources
- (e) Agreement on O&M arrangements
- (f) Computation and approval of water charges
- (g) Preparation of work/plan
- (h) Agreement to proceed the project
- (i) Assistance for the selection of contractor/s
- (j) Securing right-of-way (deed of donation or permit to use) for facility sites

2) Construction Phase

- (a) Provision of labor counterpart
- (b) Provision of materials
- (c) Dissemination of information
- (d) Inspection and feedback of the project activities
- (e) Provision of access to the contractor/s

3) Post-Construction Phase

- (a) Payment/collection of fees; fund-raising activities
- (b) Getting water samples regularly for quality testing
- (c) Preventive maintenance
- (d) Minor repair and parts replacement
- (e) Dissemination of health and hygiene information
- (f) Auditing of finances

- (g) Attendance in community meetings
- (h) Provision of adequate source protection, including maintenance of drainage to protect well site from contamination
- (i) Formulation of future improvement plans
- (j) Approval of major capital or rehabilitation budgets
- (k) Collection and provision of information as requested by the RHU or MSL
- (l) Preparation/maintenance of the barangay or site maps

(2) For Level II facilities

1) Pre-Construction Phase

- (a) Establishment of barangay or purok arrangements and working relationships with other agencies
- (b) Identification and selection of potential water sources
- (c) Identification of the location of communal faucets
- (d) Agreement to proceed the project
- (e) Dissemination of information
- (f) Election of officials
- (g) Agreement on O&M arrangements
- (h) Computation and approval of water charges
- (i) Preparation of work plan
- (j) Securing right-of-way (deed of donation or permit to use) for facility sites
- (k) Selection of local contractor/s

2) Construction Phase

- (a) Provision of labor counterpart
- (b) Provision of materials
- (c) Dissemination of information
- (d) Inspection and feedback of the project activities
- (e) Provision of access to contractor/s

3) Post-Construction Phase

- (a) Payment/collection of fees; fund-raising activities
- (b) Getting water samples regularly for quality testing
- (c) Formulation of improvement plans
- (d) Preventive maintenance including cleaning of storage tank/s
- (e) Dissemination of health and hygiene information
- (f) Preparation/maintenance of the barangay maps

- (g) Auditing of finances
- (h) Attendance in community meetings
- (i) Source protection measures
- (j) Approval of major capital or rehabilitation budgets
- (k) Minor repairs and parts replacement including leak repairs
- (l) Collection and provision of information as requested by the RHU or MSL
- (m) Safe disposal of wastewater

(3) For Level III facilities

1) Pre-Construction Phase

- a) Attend public hearings and briefings on formation of institutional arrangements (WD, cooperative, etc.) for the proposed improvement project
- b) Dissemination of information
- c) Assistance in securing right-of-way (deed of donation or sale or permit to use) for facility sites

2) Construction Phase

- (a) Dissemination of information; road traffic control, etc
- (b) Feedback on construction progress
- (c) Provision of access to contractor/s
- (d) Installation of in-house plumbing and sanitation facilities

3) Post-Construction Phase

- (a) On-time payment of water bills
- (b) Prompt reporting of leaks and illegal connections
- (c) Conservation of water
- (d) Dissemination of health and hygiene information
- (e) Attendance in further public consultation meetings
- (f) Assistance in campaigns for new service connections
- (g) Safe disposal of wastewater

9.6 Human Resources Development and Training

Policy: The training is a planned strategy to strengthen individual competencies to meet appropriate standards of excellence to achieve the goals of the program. It is a planned process of helping and enabling other people acquire attitudes, skills and knowledge by themselves. The objectives of training are individual competence, organizational effectiveness and efficiency, and national development. Training helps ensure the

availability of qualified and able manpower, the shortage of which is considered as one of the major obstacles to improvements in the water supply and sanitation sector.

In planning and implementing training activities, trainers must keep in mind that there are two processes simultaneously taking place - skill/knowledge acquisition and attitude formation. To illustrate the process, a brief exercise may be conducted during the session to show the two simultaneously occurring processes - those related to task and/or subject on one hand, and those related to attitude formation on the other.

(1) The effective application of teaching and learning principles is vital to achieve optimal learning. Trainers must bear in mind the following principles:

- 1) **Perceived Purpose:** Participants should recognize why a particular topic is being discussed or presented, i.e., the relevance. This is the first element which should be established and agreed upon in any training activity.
- 2) **Graduated Sequence:** The subject matter should be presented in a logical sequence which can be followed by the trainees.
- 3) **Knowledge of Results:** At every point during a training activity, participants must know how well they are performing, i.e., feedback.
- 4) **Appropriate Practice:** If the objective of a training effort is to develop specific skills, there must be opportunities to practice and demonstrate these within the training activity.
- 5) **Individual Differentiation:** Attention must be paid to the fact that every person learns at a different pace.

(2) The Training Process

- 1) **Needs Assessment:** The first step is to determine the problem to which a training solution will be able to make an impact. A careful analysis is necessary because the training should address and focus on precisely those deficiencies in knowledge, attitudes or skills that hinder reaching certain goals. However, one must bear in mind that not all problems or deficiencies can be solved by training alone. In most cases, complementing interventions will be needed.
- 2) **Setting Learning Objectives:** In the second step, the learning objectives need to be set. Training designers shall present these objectives in behavioral terms, i.e., what should a participant be able to do at the end of the training period (not what the session will accomplish). It is necessary to formulate them with care because they also serve as criteria for evaluation at the end of the training process.

- 3) **Methods and Techniques:** Different methods of training are appropriate for different types of learning; the methodology should be appropriate with the set learning objectives. Participatory methods, like group exercises, group discussions, role plays etc. are most effective in attitude formation. The choice of methodology is mainly based on the learning principles and objectives. Human factors, resources available (time, facilities) and the subject area will also affect the choice.
 - 4) **Evaluation of Training:** Training evaluation assesses whether a course was adequately designed and implemented to meet the set objectives. There are four levels of evaluation presented. Each level focuses on a specific area and involves a specific set of standards and evaluation tools.
- (3) **The Training Design:** Training design is more than simply putting up a schedule. It is a plan of action to be followed by a trainer in implementing his activities. It consists of:
- 1) **Rationale:** Why set up a training program in the first place, and why would people have an interest in it?
 - 2) **Learning objectives:** Workshops should aim to develop a strong understanding of concepts like: participatory development, demand, etc. An ability to analyze and apply participatory development in their local setting or to articulate water supply and sanitation demand and supply concepts are key capacity building objectives. Methods should be more participative and consultative, i.e., allowing planners to interpret the principles with an awareness of their local conditions.
 - 3) **Assumptions about the participants' background;** define who would best benefit from the program - the target audience.
 - 4) **Curriculum:** Determine what the potential trainees need to know before they participate in the program, decide on the training methods and materials, draw up session plans and sequence the sessions logically.
 - 5) **Evaluation:** Decide how the program itself and the participants are evaluated
 - 6) **Administrative aspects:** The budget for the program, the total costs, possible costs to the trainees. Also important are (things like housing (for the program itself, for facilitators and trainees), registration of trainees, logistics, etc.

Responsibilities: Needs Assessments will be conducted as the basis for the design of the courses. Participants will be selected based on their tasks and responsibilities. The PST/PWSO will establish and maintain a reference library and information/ documentation

center which will include training materials and equipment to service needs of the municipalities. The DILG, in coordination with the International Training Network (ITN) - Philippines and other agencies and NGOs, will provide inputs to these training activities.

The LGU role entails not only to run courses but also to ensure that training programs take place and are effective. As an alternative, training activities may be contracted out to well-functioning water districts. NMYC training centers have been established; NMYC can be tapped to provide testing and skill certification for caretakers. NMYC regularly conducts plumbing and pipefitting courses and the national trades certification system. Finally, there are technical and vocational schools who may be tapped to provide technical training and to award diplomas and certificates to those who undergo their programs. These schools however, do not have at this time, any special courses for water and sanitation caretakers. A program can be set up with these institutions.

External training assistance must be viewed as participation within this process. Its purpose is to guide and motivate (not replace) local trainers. Local trainers need to go through the process of, e.g., designing courses or developing materials, etc. Many learning opportunities are missed when non-local experts replace local trainers in doing need assessments, course designs, materials development, etc.

1) For staff operating Level I systems

- (a) Preparatory orientation training activities will be organized leading to the formation of associations. These community-level orientation activities will consist of briefings about the health situation, the relationship between health, water supply and sanitation. The LGU program for water and sanitation improvement will be presented, including policies and procedures for accessing technical and financial support.
- (b) Technical training of caretakers will consist of: water source protection (for deep wells, shallow wells, spring boxes and surface water intake structures); water quality protection; operation and maintenance of hardware (pumps, pipes), including simple replacements of parts; plumbing and pipefitting.
- (c) Management training will include: fee setting, bookkeeping and funds management, preparation of improvement plans and monitoring and reporting requirements. Detailed policies of the LGU will be discussed.
- (d) Current training activities and materials for the BWSAs by the DILG will be reviewed and adopted by the municipalities. UNICEF is assisting DILG in updating these materials.

2) For staff operating Level II systems

- (a) Preparatory orientation and training activities will be organized leading to the formation of associations. These community-level orientation activities will consist of briefings about the health situation, the relationship between health, water supply and sanitation. The LGU program for water and sanitation improvement will be presented, including policies and procedures for accessing technical and financial support.
- (b) Training of technicians and operators will generally consist of: water source protection (for deep wells, spring boxes and surface water intake structures); water quality protection; water storage; chlorination; operation and maintenance of hardware (pumps, pipes), including simple replacements of parts; plumbing and pipefitting. Pump operation and electrical controls will be a major focus of this program; metering will be presented.
- (c) Management training will generally include: organization aspects, operations policy formulation, water rate computation, preparation of bills, bookkeeping and funds management, preparation of improvement plans and monitoring and reporting requirements. Detailed policies of the LGU will be discussed.
- (d) Training activities for the RWSAs prepared by LWUA will be reviewed and adopted by the municipalities.

3) For staff operating Level III systems

- (a) Technical training of engineers, technicians and operators will generally consist of: water resources conservation and protection (for deep wells, spring boxes and surface water intake structures); water quality protection; hydraulics; transmission lines; water storage; treatment and chlorination; construction inspection; and operation and maintenance of facilities. Implementation of a metering program will also be discussed. Methodologies for feasibility analysis for system expansion will be presented.
- (b) Policy and management training will include the full commercial practices system including budgeting and cost controls, bookkeeping and accounting, procurement, maintenance of stock inventories, rate formulation and capital budgeting. The policy formulation process and the various areas of policy for utility operation will be presented in detail. Long-range planning, financial analysis and review, and monitoring with reporting requirements will be discussed.

(c) The DPWH, LWUA and MWSS have developed a comprehensive set of programs and materials for both technical and management training. Inputs from these three agencies and also from local water districts should be sought.

4) Training of PST/PWSO staff and municipal liaison staff: Based on the task descriptions presented, the following training programs will be required. At least one program is conducted annually for each of the workshops and courses. The programs will explain the basic concepts and procedures. Succeeding programs will review the adopted policies and procedures and lay the bases for improving operations at the provincial and municipal levels. Municipal liaison staff will participate in these programs. They should be organized by the PST/PWSO; except for the Provincial Coordinators' Workshop which is best handled nationally by DILG to provide a wider base for sharing of experience among the PWSC. In addition, DILG will provide basic guidelines for the design and implementation of the workshops and courses.

(a) The Provincial Coordinators' Workshop will be an annual activity intended to facilitate the exchange of experience among the coordinators. New national policies, opportunities and constraints will be discussed. Case studies will be presented. Sector management & technical experts will be invited to speak on current issues and trends. This will be organized by the DILG.

(b) The Community Development Course is intended for trainers, community development specialists and municipal liaison staff. The scope of the course will include: Social marketing & public information programs, community organizing skills, training skills (needs assessment, design, implementation & monitoring).

(c) The Technical Course seeks to acquaint technical staff at the provincial and municipal levels on the physical aspects of the sector. Its scope will generally include: water resources, overview of water supply systems (source, transmission, treatment, storage, distribution), drilling and source development, water quality protection, feasibility study and design procedures and standards, and operation and maintenance.

(d) The Project Monitoring Seminar will provide an overview of the monitoring functions and the sector reporting requirements. The process of sector monitoring and updating the PW4SP will be presented in detail. Project monitoring procedures will also be discussed.

(4) Health and Hygiene Education

- 1) **Policy:** The LGUs shall establish hygiene education programs through appropriate methods and channels referring to on-going national program. These shall include immediate short-run programs: information campaigns; as well as long-term value formation interventions, possibly through the formal school system. If the LGUs are to attain the full economic benefits of improved water and sanitation services, household behavior and hygiene need to be addressed. Three approaches will be used:
 - (a) **Community-based Approach:** Direct house-to-house campaigns can be implemented through the Rural Health Units, as part of their current functions. Meetings by house "clusters" to discuss relevant health issues can also be organized. This will also be done through direct person-to-person contact with PHO staff, the municipal health staff, midwives, sanitarians and the barangay health volunteers. Special presentations can also be done during the regular meetings of community-based socio-civic clubs. Various flip charts and IEC (Information, Education and Communication) materials are already available.
 - (b) **School-based Approach:** Students are the main targets of this approach, either directly or through their teachers. Special focus activities, such as Water and Sanitation Week or Nutrition Week can be introduced with programs or convocations to make the student aware of the issues and solutions. Posters, flip charts, and other audio-visual materials will be required.
 - (c) **Media-based Approach:** This approach utilizes radio and print media to introduce and reinforce health messages. Many NGOs and the Philippine Information Agency (in coordination with the DOH) have developed interesting and attractive materials.
- 2) **Responsibility:** The community development and training specialists at both provincial and municipal levels will be responsible for the health and hygiene education function. The CDTSS will formulate an action plan and implementation will be done by the municipal liaison staff and other local officials. At the barangay level, its implementation will involve the close coordination among the midwives, the barangay health workers and the Committee on Health of the barangay council. Materials for this efforts have been previously developed and can be found with the various PHOs and RHUs. UNICEF has provided strong support in the preparation of these materials.
- 3) A continuous health and hygiene education program will be launched by the LGU. Simple and clear messages and approaches will have to be defined. These messages may include the following: relationship among health, water supply and sanitation; sector opportunities and services available at the rural health units. The relevance of these, or other messages will have to be determined by the municipal sector liaison.

Chapter 10

***COST ESTIMATES FOR
FUTURE SECTOR DEVELOPMENT***



10. COST ESTIMATES FOR FUTURE SECTOR DEVELOPMENT

10.1 General

The total investment cost required in the two phases was studied for implementation of the future requirements identified in Chapter 8 and Chapter 9. The investment cost is defined to include direct cost for construction/rehabilitation of required facilities and sector management, as well as physical and price contingencies. Cost requirements for the equipment and vehicle are discussed as a reference to the LGUs. In addition, recurrent cost is estimated for the operation and maintenance of facilities.

Conditions and assumptions to come up with investment cost were established covering all sub-sector components referring to the National Sector Master Plan and current standards of relevant sector agencies (DPWH, DOH and LWUA). Of the total investment cost required, only construction cost for sector components by municipality was included in this Chapter. The total investment cost is presented in Chapter 11 as a total requirement of the province.

With regard to construction cost, unit construction cost per person/household/facility was first prepared under contract-out basis for respective sub-sector component facilities at 1995 price level (refer to Supporting Report).

Recurrent cost was also included in this Chapter taking into account regular operation, spare parts and equipment replacement for sector components concerned.

10.2 Assumptions for Cost Estimates

(1) Unit Construction Cost

Unit construction cost per person (household or facility) of each sector component was prepared based on the current standard unit cost of relevant sector agencies and typical standards developed for this PW4SP as contract-out basis at 1995 price level. Referred cost data are urban water supply of LWUA, rural water supply of DPWH and sanitation of DOH. For price adjustment of construction materials, the NSO price index of 1994 to 1995 was referred to.

Unit construction cost consists of, in general, direct cost (mobilization/demobilization, material and labor), indirect cost (profit and VAT of contractor) and government expense

(detailed engineering, institutional development and water quality analysis-when deemed necessary).

Freight cost of construction materials excluding indigenous materials, i.e., sand and gravel, was counted for sanitation and rural water supply in consideration of the distance from Manila. The cost is estimated at fixed percentage (9%) based on the standard practice being adopted by sector agencies.

Table 10.2.1 shows a summary of unit construction cost and their descriptions are given below (details are referred to Supporting Report).

Urban water supply:

- Unit cost for three different sizes of Level III system covering served population of 5,000, 10,000 and 15,000.

Rural water supply:

- Unit cost for four types of Level I wells (shallow well at 18m in depth and deep wells at 30, 50 and 70m in depth).
- Unit cost for Level II system to cover 600 served population.

Sanitation:

- Household toilet:
Unit cost for three types of sanitary toilets (flush, pour-flush and VIP) to cover one served household in urban or rural areas. Cost of flush toilet includes costs for demolition, water closet, water line and a superstructure made of durable construction materials.
- Public school toilet:
Unit cost for one facility with 5 toilet bowls to cover 250 served students.
- Public toilet:
Unit cost for one facility with 6 toilet bowls.
- Well disinfection:
 - unit disinfection cost per well based on DOH standard cost.
 - to be applied to all existing and new wells once a year.

Table 10.2.1 Unit Cost of Facilities by Type and Service Level

Description	Urban Water Supply (Level III)						Rural Water Supply (Level I)						Sanitation					
	New System		Expansion		Level II	Shallow Wells	Level I			Household Toilet			Public Toilet	Disinfection of Level I Wells	Urban Sewerage			
	5,000 Population	10,000 Population	15,000 Population	5,000 Population			10,000 Population	15,000 Population	Deep Well	Flush	Flush	Flush				VP Latrine		
	30,000 Population	45,000 Population	75,000 Population	100,000 Population	150,000 Population	200,000 Population	30 m	50 m	70 m	30 m	50 m	70 m	1	1	1	1	1	
Unit Construction Cost per Facility (Pesos)	30,081,250	45,443,750	75,443,750	18,455,250	28,795,750	43,818,750	615,919	175,640	233,134	24,825	37,100	13,300	8,400	297,020	317,259	70	N.A.	
Served Population	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	250	N.A.	N.A.	N.A.	
Served Households	1,000	3,000	3,000	1,000	2,000	3,000	120	15	15	15	1	1	1	N.A.	N.A.	N.A.	N.A.	
Unit Cost	4,000	3,000	3,000	3,700	2,900	2,900	1,000	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1,200	N.A.	N.A.	7,300	
Rehabilitation Cost of Level I Deep Well (Pesos)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	10,500	17,200	25,200	1,900	37,100	13,300	8,400	N.A.	N.A.	N.A.	N.A.
								31,097										

Urban sewerage:

- Unit cost per served population. Preliminary estimates derived from the Philippine National Urban Sewerage and Sanitation Strategy and Feasibility Studies report.

(2) Unit Cost of Equipment

Unit cost of equipment shown in Table 10.2.2 was prepared as reference information based on the standard unit cost and recent procurement experience of the relevant sector agencies (details are referred to Supporting Report).

Table 10.2.2 Unit Cost of Equipment and Vehicle

Name of Equipment	Unit Cost (Peso 1,000)
Truck-mounted rotary drilling rig	17,370
Truck-mounted percussion drilling rig	10,280
Well rehabilitation equipment	138
Service truck with crane	1,175
Support vehicle (Pick-up with winch)	500
Refuse collection truck	1,380

(3) Sector Management Cost

Sector management cost consists of:

- engineering studies (F/S, D/D and construction supervision) for water supply, public toilet and school toilet facilities.
- community development and training including health & hygiene education and logistic support.

Cost of engineering studies was estimated based on the fixed percentages to the total construction cost; 9% for F/S and D/D and 4% for construction supervision.

Community development and training with logistic support was also estimated on the same manner; 12% of respective construction costs for rural water supply and sanitation, and 3% of construction cost for urban water supply.

(4) Recurrent Cost

Recurrent cost was estimated for water supply and sanitation (school and public toilets) facilities to cover the regular operating cost and the cost for spare parts and equipment replacement based on the following cost assumptions, while household toilet is assumed to be maintained by the owner.

Regular operating cost normally includes salaries of operation staff, electricity, fuel and chemicals. Due to the nature of this cost, it is only applied to urban water supply (Level III system). As a typical unit cost being applied to existing PW4SPs referring to LWUA data, 365 Pesos/household/year was employed.

Cost for spare parts and equipment replacement was considered by different service level as described below.

Level III system:

- Mechanical and electrical equipment has normally a life cycle of 8 to 12 years and is considered in depreciation cost, i.e., 10% per annum. Assuming that the equipment cost comprise 10% of construction cost, annual depreciation will be 1% of the construction cost.
- Accordingly, cost of spare parts was assumed to be 10% of the equipment cost or equivalent to 1% of the construction cost.
- As a whole, 2% of the construction cost was applied for the cost of spare parts and equipment replacement.

Level II system:

- Operation and maintenance (O&M) cost of Level II system utilizing spring sources includes repair/replacement of pipelines and communal faucets and salaries of maintenance staff.
- A unit cost of 100 Pesos/household/year was assumed for cost estimates.

Level I system:

- O&M cost of Level I facility simply includes spare parts of handpump and caretaker.

- A unit cost of 50 Pesos/household/year was assumed for cost estimates.

School and public toilets:

- O&M cost includes the salaries of maintenance staff, cost of pumping sludge from septic tanks (periodically) and rehabilitation cost (for depreciation).
- For cost estimates, 5% of the construction cost was applied per facility per year.

Management cost:

- Management cost of water supply, sewerage and sanitation sector is part of the cost required for public services of LGUs mainly consisting of salaries of officers and workers and normally included in the annual budget of each LGU. The rest of management cost, such as equipment for information processing and dissemination was considered as part of logistic support under the sector management cost. Owing to the nature of this cost item, the management cost pertaining to salaries of officers/workers depends largely on the population size and institutional set-up of each LGU.
- Management cost was not estimated in this PW4SP considering the above mentioned reasons.

10.3 Cost of Required Facilities and Equipment

10.3.1 Cost of Required Facilities

The construction cost of required facilities as public investment of LGUs was summarized in Table 10.3.1 by sub-sector by municipality for target years. In this regard, the construction cost of household toilets is limited to the procurement and distribution of toilet bowl for pour-flush toilets as being implemented by DOH under the FW4SP (refer to over-all construction cost requirements, Supporting Report).

During the medium-term development period, a total of 235 million Pesos will be required for construction of required facilities. Of the requirements, 70% or 163 million Pesos will be necessary only for rural water supply, while only 5% or 12 million Pesos will be for urban sanitation.

Table 10.3.1 Construction Cost of Required Facilities by Municipality

Unit: 1,000 Pesos

Municipalities	Phase I (2000) Requirements										Phase II (2010) Requirements									
	Urban Area					Rural Area					Urban Area					Rural Area				
	Water Supply	Sanitation	Subtotal	Water Supply	Sanitation	Subtotal	Water Supply	Sanitation	Subtotal	Water Supply	Sanitation	Subtotal	Water Supply	Sanitation	Subtotal	Water Supply	Sanitation	Subtotal		
	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total	Grand Total		
Adams	0	317	317	13	5	18	335	0	317	0	317	13	40	53	370					
Bacarra	2,705	97	2,802	14,662	587	15,249	18,051	10,834	628	36,996	48,458	13,053	1,207	14,260	62,718					
Bados	3,956	317	4,273	26,464	159	26,623	30,896	3,526	635	0	4,161	15,914	1,966	17,880	22,041					
Bangui	1,800	317	2,117	1,469	138	1,607	3,724	9,021	317	0	9,338	4,407	948	5,355	14,693					
Batac	2,683	635	3,318	5,754	629	6,383	9,701	30,334	1,031	59,838	91,203	13,588	2,844	16,432	107,635					
Burgos	708	635	1,343	3,306	179	3,485	4,828	3,489	635	0	4,124	3,060	667	3,727	7,851					
Carassi	0	317	317	0	61	61	378	0	317	0	317	6	33	39	356					
Curtiniao	0	317	317	7,331	1,63	7,494	7,811	973	685	0	1,658	5,721	753	6,474	8,132					
Dingras	0	635	635	7,126	0	7,126	7,761	3,249	635	0	3,884	16,630	1,953	18,583	22,467					
Dumalheg	0	317	317	0	0	0	317	0	317	0	317	10	31	41	358					
Espiritu	0	86	86	2,146	356	2,502	2,588	2,168	635	0	2,803	8,047	1,019	9,066	11,869					
Lalage City (Capital)	17,487	4,805	22,292	19,954	5,207	24,161	46,453	57,968	1,880	180,785	240,633	31,291	3,615	34,908	275,539					
Marcos	1,512	317	1,829	3,755	142	3,897	5,726	4,766	635	0	5,401	8,047	1,007	9,054	14,455					
Nueva Era	1,212	334	1,546	3,755	182	3,937	5,483	4,710	317	0	5,027	2,861	212	3,073	8,100					
Paguipud	369	635	1,004	1,897	11	1,908	2,932	4,196	635	0	4,831	5,509	1,126	6,635	11,466					
Pacay	8,500	19	8,519	8,225	271	8,496	17,015	17,446	635	0	18,081	9,298	1,097	10,395	28,476					
Pasusquin	0	725	725	8,761	1,624	10,385	11,110	4,177	635	0	4,812	11,265	1,444	12,709	17,521					
Piddig	1,840	317	2,157	4,603	83	4,686	6,843	11,633	317	0	11,950	9,656	1,094	10,750	22,700					
Phili	0	0	0	12,159	147	12,306	12,306	936	317	0	1,253	8,225	1,101	9,326	10,579					
San Nicolas	0	317	317	6,616	54	6,670	6,987	14,784	973	86,271	102,028	6,080	814	6,894	108,922					
Sarrat	940	317	1,257	11,086	57	11,143	12,400	9,616	317	0	9,933	10,013	1,008	11,021	20,944					
Solsonta	404	21	425	12,159	964	13,123	13,548	13,472	635	0	14,107	11,086	1,442	12,528	26,635					
Vinar	2,087	418	2,505	3,219	2,053	5,272	7,777	8,569	635	0	9,204	15,377	1,724	17,101	26,305					
Provincial Total	46,223	12,215	58,438	163,460	13,072	176,532	234,970	215,867	14,083	363,890	599,840	299,187	27,145	236,302	830,142					

10.3.2 Cost of Required Equipment and Vehicle

The procurement cost of required equipment was estimated as shown in Table 10.3.2 (details are referred to Supporting Report)

Table 10.3.2 Cost of Equipment and Vehicle

Name of Equipment	Unit Cost (Peso 1,000)	Quantity (set)	Cost (Peso 1,000)
Truck-mounted rotary drilling rig	17,370	8	138,960
Truck-mounted percussion drilling rig	10,280	11	113,080
Well rehabilitation equipment	138	2	276
Service truck with crane	1,175	19	22,325
Support vehicle (Pick-up with winch)	500	2	1,000
Refuse collection truck	1,380	15	30,360
Total Equipment Cost			306,001

10.4 Recurrent Cost

Recurrent cost is estimated at 1995 price level as a provincial total of each sub-sector covering existing facilities and additional facilities to be constructed during the medium-term development as shown in Table 10.4.1.

In the year 2000, the recurrent cost will increase to 24.1 million Pesos/year from 20.1 million Pesos/year in 1995, which is equivalent to 13% increase from the base year corresponding to the implementation of the medium-term development.

Table 10.4.1 Recurrent Cost

Unit: 1,000 Pesos

Sector Component	Item	Base Year Existing Facilities	1996	1997	1998	1999	2000	Total (1996-2000)
Urban Water Supply	Operating Cost	7,139	7,319	7,332	7,621	7,910	8,103	38,105
	Spare Parts/Equipment	5,672	5,672	5,857	6,134	6,411	6,596	30,670
Rural Water Supply	Level II	868	883	898	898	898	898	4,475
	Level I	2,044	2,128	2,282	2,436	2,590	2,744	12,180
Sanitation	Public School Toilets	4,300	4,362	4,476	4,590	4,704	4,818	22,950
	Public Toilets	570	611	687	763	839	915	3,815
Provincial Total		20,593	20,795	21,532	22,442	23,352	24,074	112,195

Note: Recurrent cost of each year includes that of base year existing facilities.

Chapter 11

FINANCIAL ARRANGEMENTS



11. Financial Arrangements

11.1 General

Financial arrangements to attain medium-Term (Phase I) target are sought taking account of potential funds. However, quantitative study is limited to the use of projected Internal Revenue Allotment (IRA). In this connection, this Chapter addresses to identify financial shortfall with reference to available IRA for this sector and to seek comprehensive logistics in terms of acquisition of various funds, augmentation of current practices in the Government assistance to this sector, and effective investments and cost recovery.

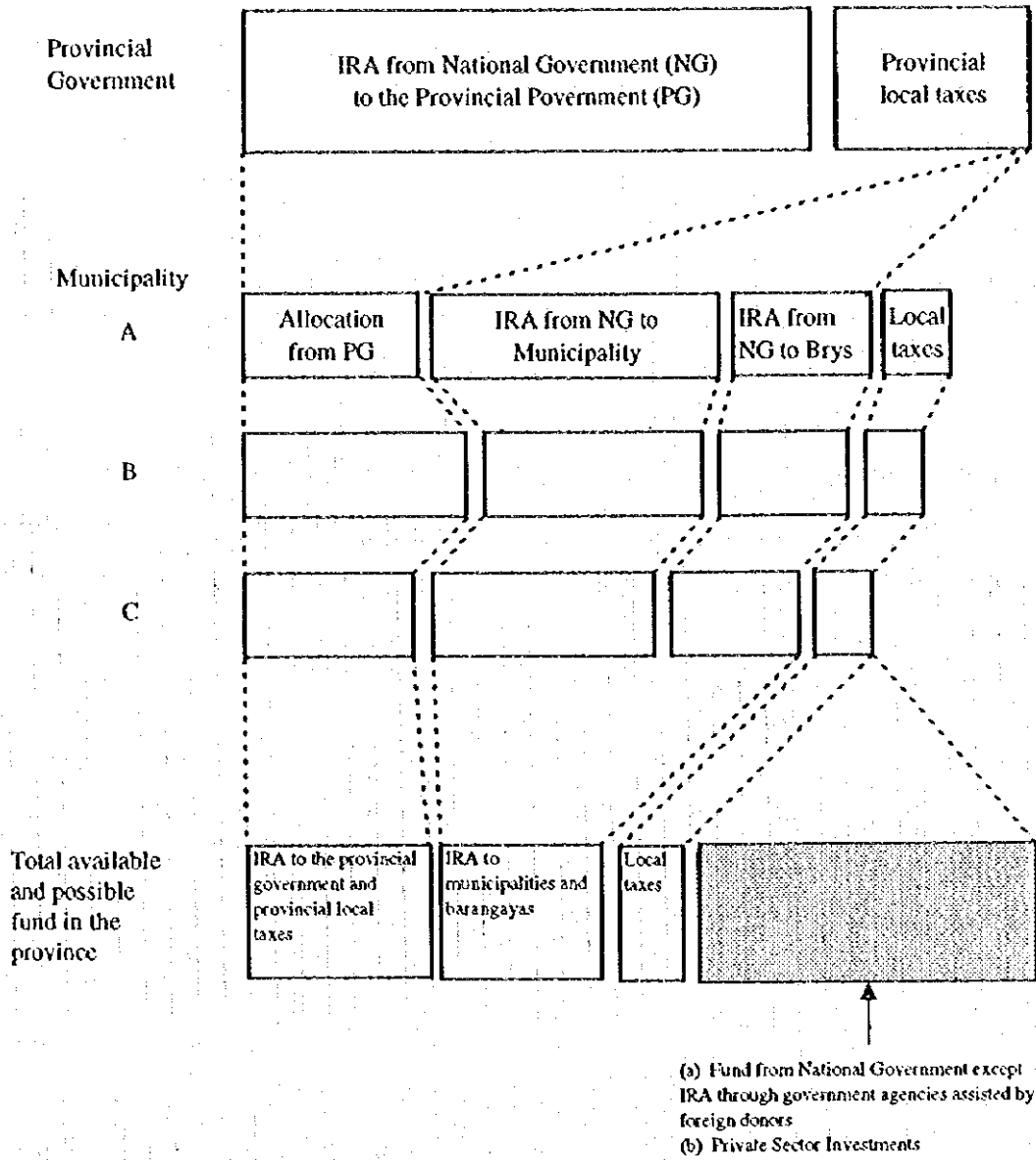
Available funds (IRA) during the medium-term development period are projected in use of computer-based programs that allow for the future application to include additional funds available. Figure 11.1.1 shows sector budget allocation in the different administrative levels to come up with total funds available in the province. Figure 11.1.2 illustrates manner of sector fund allocation to respective municipalities from the national and provincial governments with a detailed study flow availing IRA. Interfaces between provincial government and municipalities/barangays are also presented in the same figure.

Distribution of IRA to respective municipalities is contemplated in assumption of various factors based on the experiences as of 1994. However, the structure and application of IRA are under review by the national government. Accordingly, the study results on IRA are tentative and subject to change.

11.2 Projection of IRA

The projection of IRA to the relevant sector for Phase I period is made covering different administrative levels. Current manner of allocation by the national government is directed to three different governmental levels; province, municipality and barangay. Municipal fund available for this sector is calculated as a sum of municipal and provincial allotments. Figure 11.2.1 shows the calculation procedure with assumptions and Table 11.2.1 and 11.2.2 present calculation results.

Figure 11.1.1 Sector Budget Allocation



Notes: (1) Budget from different sources in the figure above are those shared to water supply and sanitation sector from allotted amount for overall sectors.

(2) Shaded portion above is the potential fund source to be negotiated/arranged to meet target requirements.

Figure 11.1.2 GENERAL FLOW OF FINANCIAL ARRANGEMENTS FOR RELEVANT SECTOR DEVELOPMENT

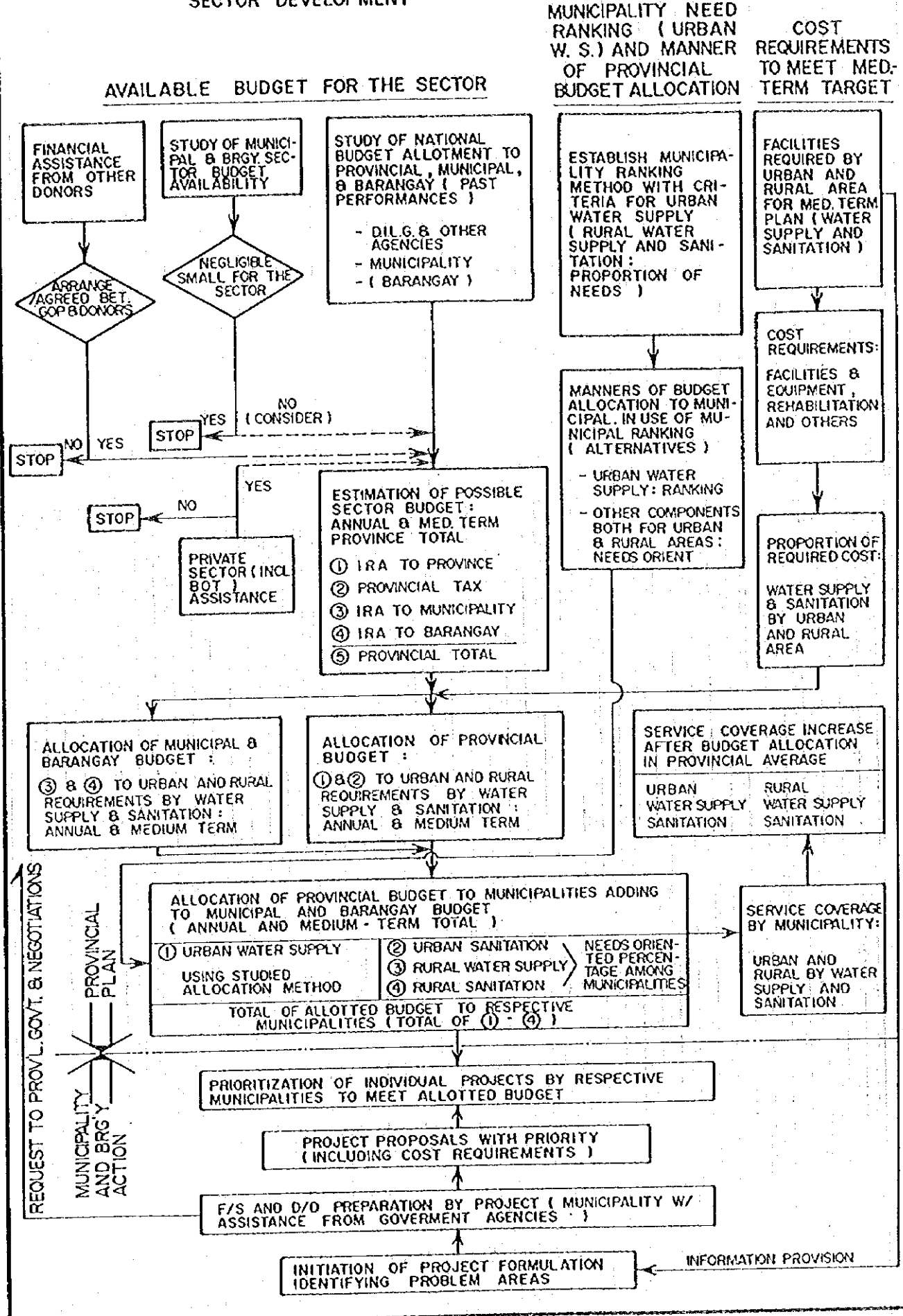
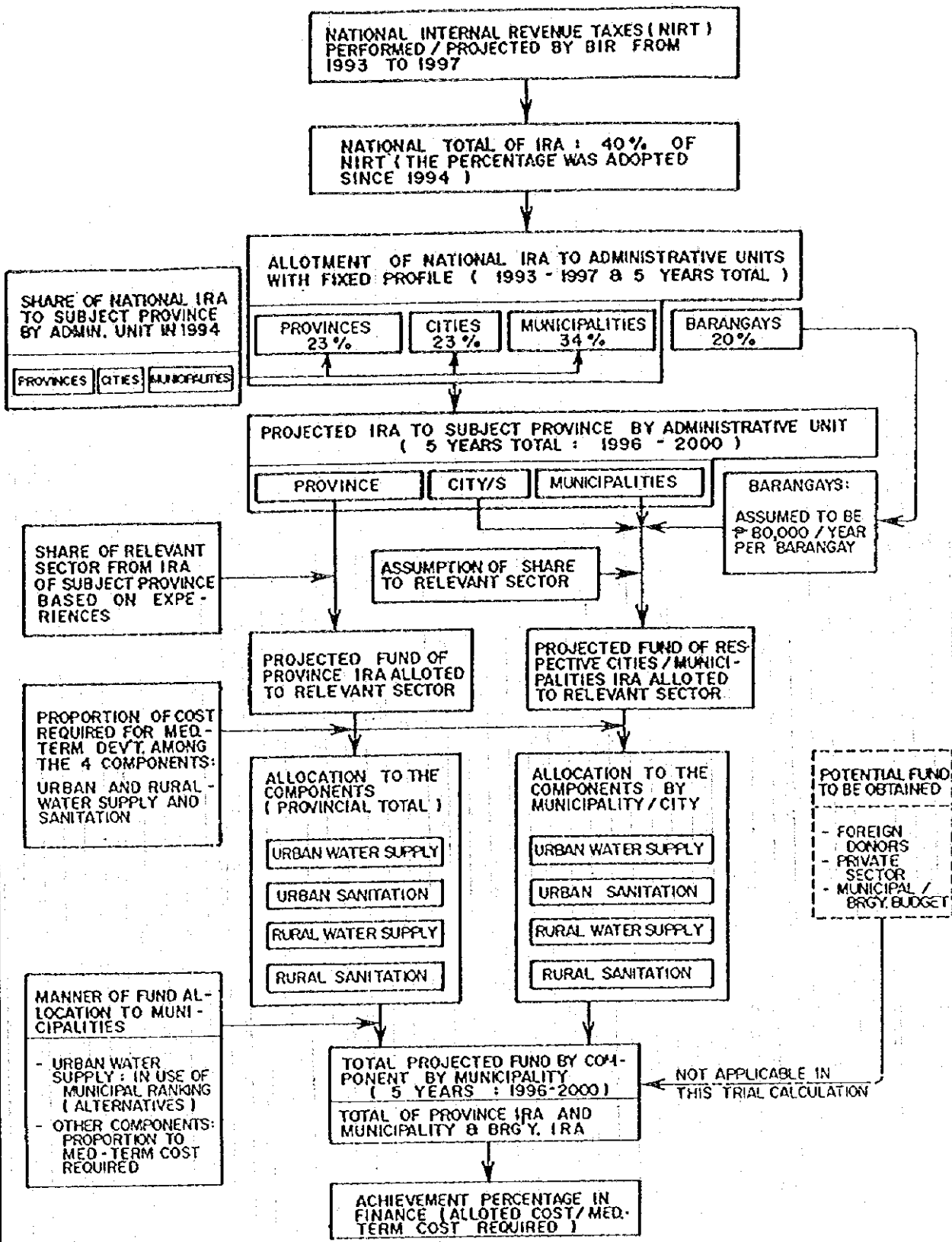


Figure 11.2.1 TRIAL ALLOCATION OF INTERNAL REVENUE ALLOTMENT (IRA) TO MUNICIPALITIES FOR RELEVANT SECTOR DEVELOPMENT



NOTE: BIR - BUREAU OF INTERNAL REVENUE (DOF)
 NIRT (1993 - 1997) IS THE BASIS OF NATIONAL TOTAL OF IRA (1996 - 2000)
 POTENTIAL FUND: NEEDS OF ADDITIONAL FUND ARE CONSIDERABLE. THIS REFERENCE INFORMATION IS SHOWN.

Table 11.2.1 Projected Internal Revenue Allotment for Medium-Term Sector Development

Unit: 1,000 Pesos

	1996	1997	1998	1999	2000	Total
1 40 % of Actual/Projected National Internal Revenue Taxes of the 3rd Fiscal Year preceding the current year	58,640,000	69,710,000	81,490,000	98,012,000	110,188,000	418,040,000
2 Internal Revenue Allotment to all LGUs						
(a) provinces (23%)	13,487,200	16,033,300	18,742,700	22,542,760	25,343,240	96,149,200
(b) cities (23%)	13,487,200	16,033,300	18,742,700	22,542,760	25,343,240	96,149,200
(c) municipalities (34%)	19,937,600	23,701,400	27,706,600	33,324,080	37,463,920	142,133,600
(d) barangays (20%)	11,728,000	13,942,000	16,298,000	19,602,400	22,037,600	83,608,000
(e) total LGUs	58,640,000	69,710,000	81,490,000	98,012,000	110,188,000	418,040,000
3 Projected IRA to Subject Province by Administrative Unit						
(a) province	145,659	173,157	202,418	243,458	273,702	1,038,394
(b) city/municipalities including barangays	357,201	438,189	504,707	598,001	666,755	2,564,853
Adams	6,148	7,293	8,512	10,222	11,482	43,656
Bacarra	13,760	15,708	17,782	20,689	22,832	90,772
Badoc	12,431	14,310	16,309	19,112	21,179	83,340
Bangui	9,205	10,716	12,324	14,580	16,242	63,067
Batac	18,737	21,624	24,697	29,007	32,183	126,249
Burgos	8,033	9,384	10,821	12,836	14,322	55,396
Carassi	6,154	7,271	8,459	10,125	11,354	43,364
Currimaao	7,977	9,135	10,368	12,097	13,372	52,949
Dingras	14,195	16,391	18,729	22,007	24,423	95,744
Dumalneg	4,970	5,894	6,876	8,254	9,269	35,263
Espiritu	9,896	11,462	13,129	15,466	17,188	67,141
Laoag City (Capital)	124,638	146,959	170,711	204,025	228,576	874,908
Marcos	10,678	12,513	14,465	17,203	19,221	74,079
Nueva Era	15,563	18,335	21,285	25,422	28,471	109,077
Pagudpod	10,024	13,196	15,210	18,034	20,115	76,579
Paoy	9,299	13,534	15,402	18,022	19,953	76,210
Pasuquin	11,175	15,925	18,170	21,319	23,639	90,228
Piddig	9,065	12,616	14,437	16,991	18,873	71,980
Pinili	7,591	11,024	12,549	14,688	16,264	62,117
San Nicolas	9,898	13,687	15,675	18,464	20,519	78,243
Sarrat	9,031	12,656	14,470	17,015	18,890	72,062
Solsona	9,711	13,305	15,255	17,992	20,008	76,271
Vintar	19,021	25,252	29,073	34,432	38,382	146,160
(c) Provincial total	502,860	611,346	707,125	841,459	940,457	3,603,247

Table 11.2.1 Projected Internal Revenue Allotment for Medium-Term Sector Development (Cont'd.)

Unit: 1,000 Pesos

	1996	1997	1998	1999	2000	Total
4 Projected fund of IRA to Relevant Sector by Administrative Unit						
(a) province	5,826	6,926	8,097	9,738	10,948	41,536
(b) city/municipalities including barangays	14,288	17,528	20,186	23,921	26,670	102,593
Adams	246	292	340	409	459	1,746
Bacarra	550	628	711	828	913	3,631
Badoc	497	572	652	764	847	3,333
Bangui	368	429	493	583	650	2,523
Batac	749	865	988	1,160	1,287	5,050
Burgos	321	375	433	513	573	2,216
Carassi	246	291	338	405	454	1,734
Currimaos	319	365	415	484	535	2,118
Dingras	568	656	749	880	977	3,829
Dumalneg	199	236	275	330	371	1,410
Espiritu	396	458	525	619	688	2,686
Laoag City (Capital)	4,986	5,878	6,828	8,161	9,143	34,996
Marcos	427	501	579	688	769	2,963
Nueva Eza	623	733	851	1,017	1,139	4,363
Pagudpud	401	528	608	721	805	3,062
Paoay	372	541	616	721	798	3,048
Pasquin	447	637	727	853	946	3,610
Piddig	363	505	577	680	755	2,879
Finili	304	441	502	588	651	2,485
San Nicolas	396	547	627	739	821	3,130
Sarret	361	506	579	681	756	2,883
Solsona	368	532	610	720	800	3,051
Vintar	761	1,010	1,163	1,377	1,535	5,846
(c) Province Total	20,114	24,454	28,283	33,659	37,618	144,129

Sources:

- (1) Bureau of Internal Revenue and Bureau of Local Government Finance, DOF, for the projection of National Internal Revenue Allotment
- (2) JICA Study Team for other projections.

Table 11.2.2 Projected Allotment of IRA to the Relevant Sector by Component, 1996 -2000

Unit: 1000 Pesos

	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Total
1. Province	8,307	28,660	2,077	2,492	41,536
2. City/Municipalities	23,414	59,714	11,516	7,949	102,593
Adams	0	68	1,652	26	1,746
Bacarra	544	2,949	20	118	3,631
Badoc	427	2,855	34	17	3,333
Bangui	1,219	995	215	93	2,523
Batac	1,397	2,995	331	327	5,050
Burgos	325	1,517	291	82	2,216
Carassi	0	0	1,454	280	1,734
Currimao	0	1,988	86	44	2,118
Dingras	0	3,516	313	0	3,829
Dumalneg	0	0	1,410	0	1,410
Espiritu	0	2,227	89	369	2,686
Laoag City (Capital)	13,174	14,279	3,620	3,923	34,996
Marcos	783	1,943	164	73	2,963
Nueva Era	964	2,988	266	145	4,363
Pagudpud	406	1,981	663	11	3,062
Paoay	1,523	1,474	3	49	3,048
Pasquin	0	2,846	236	528	3,610
Piddig	774	1,937	133	35	2,879
Pinili	0	2,456	0	30	2,485
San Nicolas	0	2,964	142	24	3,130
Sarrat	219	2,578	74	13	2,883
Solsona	91	2,738	5	217	3,051
Vintar	1,569	2,420	314	1,543	5,846
3. Total	31,721	88,374	13,592	10,441	144,129

Calculation process is further described as follows:

(1) Projection of annual IRA to all LGUs in the Philippines from 1996 to 2000

The IRAs come from 40% of past and /or projected national internal revenue taxes from 1993 to 1997 (3rd fiscal year preceding the current year). This ratio is based on the Local Government Code in 1991.

(2) Distribution of national total IRA to each administrative unit

Based on the Local Government Code, IRA is distributed by administrative level as follows:

Provinces	23%
Cities	23%
Municipalities	34%
Barangays	20%

(3) Distribution of national total IRA to the subject province by provincial, city, municipal and barangay level

With reference to allocation of national IRA by administrative level, provinces, cities and municipalities are based on weighted 3 factors; population, land area and number of administrative units. In this analysis, however, the distribution percentage experienced in 1994 is simply employed (refer to Table 6.2.2, Main Report and Supporting Report). Allotments to barangays are added to the IRAs for city and municipalities (80,000 peso times number of barangays).

(4) Projection of available IRA to the relevant sector by administrative unit of the province

According to the Provincial Annual Report in 1994, about 0.6% of provincial IRA was availed for the water supply and sanitation sector. Referring to the experiences in other province, provincial allocation to the relevant sector is assumed to be 4%. This means that 20% of "20% Development Fund" from national IRA are counted on sector projects. The same percentage is applied for the allocation of city/municipal IRA to the sector.

(5) Available IRA of city/municipalities by sub-sector

Available municipal fund for the four components (urban and rural water supply, and urban and rural sanitation) is estimated as a sum of respective components in combination of those allocated from the province and distributed in each municipality. Available fund for Laoag City is estimated as a sum of respective components allocated from the city. Distribution of sector total fund to sub-components among provincial, city and municipal levels is arranged in proportion to the direct construction cost required for Phase I Development.

With regard to the distribution of provincial IRA for urban water supply to respective municipalities, weighing method with ranking is employed, which will be discussed in detail in Section 11.4. For other components, provincial IRA is distributed to municipalities in proportion to their required costs in Phase I. Provincial IRA for any components is not distributed to Laoag City.

11.3 Additional Funding Requirements

Annual cost required for the whole province during the medium-term development is summarized in Table 11.3.1 referring to the study results in Chapter 10. The total cost required covers physical contingency; 15% of the direct cost and price contingency; 10% per year covering the direct cost and physical contingency. Details of implementation arrangements for annual investment are shown in Table 11.3.1, Supporting Report.

Table 11.3.1 Financing Requirements by Sector Component for the Province

Unit: 1,000Pesos

Sector Components	1996	1997	1998	1999	2000	Total 1996-2000	Total 2001-2010
Direct Cost							
1. Direct Construction Cost							
Urban Water Supply							
Level III System	0	9,245	13,867	13,867	9,245	46,223	215,867
Rural Water Supply							
Level II System	775	775	0	0	0	1,550	0
Level I Facilities	19,429	35,620	35,620	35,620	35,620	161,910	209,157
Urban Sanitation							
Household toilet	71	131	131	131	131	595	50
Public school toilet	519	951	951	951	951	4,324	2,608
Public toilet	876	1,605	1,605	1,605	1,605	7,296	11,425
Disinfection of Level I Deep & Shallow Wells	8	14	14	15	15	66	0
Rural Sanitation							
Household toilet	594	1,089	1,089	1,089	1,089	4,949	16,076
Public school toilet	975	1,787	1,787	1,787	1,787	8,123	11,069
Disinfection of Level I Deep & Shallow Wells	30	55	55	55	55	251	338
Urban Sewerage	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	363,890
Sub-total	23,276	51,272	55,119	55,120	50,498	235,286	830,479
2. Sector Management Cost							
Engineering Studies							
Feasibility Study and Detail Design	8,368	4,994	2,914	2,914	1,457	20,648	73,261
Construction supervision	927	2,043	2,197	2,197	2,012	9,375	33,204
Community Development and Training							
Institutional development & logistic support	4,950	4,812	4,719	4,719	2,561	21,761	76,478
Sub-total	14,245	11,849	9,830	9,830	6,030	51,784	182,944
Total Direct Cost	37,521	63,121	64,949	64,950	56,528	287,070	1,013,423
Contingencies							
1. Physical Contingency (15% of Direct Cost)	5,628	9,468	9,742	9,742	8,479	43,060	152,013
2. Price Contingency (10%/annum of Direct Cost and Physical Contingency)	9,061	24,027	34,664	45,600	50,157	163,510	N.A.
Total Investment Cost	52,210	96,616	109,355	120,293	115,165	493,640	1,165,436

Table 11.3.2 presents additional funding requirements of the province (or shortfall in funding), which are figured out comparing with available fund for the relevant sector (IRA) in the province over the Phase I requirements. Other funds such as those provided by foreign assistance and local tax portion are kept blank to supplement upon confirmation of additional

fund available. A big short fall of funding is identified since the IRA accounts for only 29.2% of the total cost requirements in Phase I.

Table 11.3.2 Additional Fund Requirements for the Medium-Term Plan

Unit: 1,000 Pesos

	1996	1997	1998	1999	2000	Total 1996-2000
Financing Requirements	52,210	96,616	109,355	120,293	115,165	493,640
Expected available fund						
National	0	0	0	0	0	0
Local (IRA)	20,114	24,454	28,283	33,659	37,618	144,129
Others	0	0	0	0	0	0
Total	22,376	27,143	31,427	37,440	41,869	160,255
Shortfall in funding (Additional Fund Requirements)	29,834	69,473	77,928	82,852	73,296	333,385

City/municipal achievement percentages in finance are shown in Table 11.3.3 in provision of available fund originated by IRA against Phase I financial requirements. The percentages of Adams, Carassi and Dumalneg are more than 100% based on the assumptions discussed before. Thus, for these municipalities, the distribution share of IRA to relevant sector, which is set at 4%, may be modified. The percentages of Pagudpud (65%), Espiritu (60%) and Nueva Era (57%) are more than or almost double comparing to the provincial average of 29.2%. That of Laoag City is 36%. Others are in the range between 15 and 47% to the requirements.

11.4 Medium-Term Implementation Arrangements

Financial requirements to meet Phase I target coverage are substantial. However, projected fund available (IRA) in application of past trend revealed that considerable amount of additional fund must be arranged.

Under this situation, reference scenarios are discussed in assumption of different levels of funding availability with reference to service coverage. Alternative countermeasures are also discussed in view of (1) acquisition of external funds, (2) augmentation of sector finance under current arrangements (IRA and others), (3) introduction of private sector to mitigate public investment needs, and (4) effective and economical investments.

Table 11.3.3 Internal Revenue Allotment for Water Supply and Sanitation Sector by City/Municipality (Medium-term Development/1996-2000)

Unit: 1,000 Pesos

City/ Municipalities	IRA Allocation to City/Municipalities												Total Cost Required for City/ Municipality (b)	Achievement Percentage (%) in Finance (a)/(b)				
	Urban Water Supply				Rural Water Supply				Urban Sanitation						Rural Sanitation			
	Urban Water Supply		Rural Water Supply		Urban Sanitation		Rural Sanitation		Urban Sanitation		Rural Sanitation				Urban Sanitation		Rural Sanitation	
	Allocated from Provincial Government	Allocated from City/ Municipality	Total	Allocated from Provincial Government	Allocated from City/ Municipality	Total	Allocated from Provincial Government	Allocated from City/ Municipality	Total	Allocated from Provincial Government	Allocated from City/ Municipality	Total			Allocated from Provincial Government	Allocated from City/ Municipality	Total	
Adams	0	0	0	3	68	70	89	1,652	1,741	2	26	28	1,839	704	261.3			
Bacarra	369	544	913	2,908	2,949	5,857	27	20	47	186	118	304	7,121	37,923	18.8			
Badoc	1,246	427	1,673	5,249	2,855	8,103	89	34	123	50	17	68	9,967	64,908	15.4			
Bangu	369	1,219	1,588	291	995	1,286	89	215	304	44	93	137	3,316	7,824	42.4			
Batac	369	1,397	1,766	1,141	2,995	4,136	178	331	509	199	327	527	6,937	20,380	34.0			
Burgos	369	325	694	656	1,517	2,173	178	291	469	57	82	139	3,475	10,143	34.3			
Canassi	0	0	0	0	0	0	89	1,454	1,543	19	280	299	1,842	794	252.0			
Curima	0	0	0	1,654	1,988	3,442	89	86	175	52	44	96	3,713	16,410	22.6			
Dingras	0	0	0	1,413	3,516	4,929	178	313	491	0	0	0	5,421	16,308	33.2			
Dumalneg	0	0	0	0	0	0	89	1,410	1,499	0	0	0	1,499	666	225.1			
Espiritu	0	0	0	426	2,227	2,653	24	89	113	113	369	482	3,248	5,437	59.7			
Laog City (Capital)	0	13,174	13,174	0	14,279	14,279	0	3,620	3,620	0	3,923	3,923	34,996	97,592	35.9			
Marcos	1,246	783	2,029	745	1,943	2,688	89	164	253	45	73	118	5,088	12,030	42.3			
Nueva Era	1,246	964	2,210	745	2,988	3,733	94	266	359	58	145	202	6,505	11,519	56.5			
Pagudpud	369	406	776	376	1,981	2,358	178	663	841	3	11	15	3,989	6,160	64.8			
Paoay	1,246	1,523	2,769	1,631	1,474	3,105	5	3	9	86	49	134	6,017	35,746	16.8			
Pasayun	0	0	0	1,738	2,846	4,584	203	236	439	515	528	1,042	6,065	23,341	26.0			
Piddig	369	774	1,143	913	1,937	2,850	89	133	222	26	35	61	4,276	14,376	29.7			
Pinili	0	0	0	2,411	2,456	4,867	0	0	0	47	30	76	4,943	25,853	19.1			
San Nicolas	0	0	0	1,312	2,964	4,276	89	142	231	17	24	41	4,548	14,679	31.0			
Sarrat	369	219	588	2,199	2,578	4,776	89	74	163	18	13	31	5,558	26,051	21.3			
Solsóna	369	91	460	2,411	2,738	5,150	6	5	11	305	217	523	6,143	28,463	21.6			
Vintar	369	1,569	1,938	638	2,420	3,058	117	314	431	651	1,543	2,194	7,621	16,338	46.6			
Total	8,307	23,414	31,721	28,660	59,714	88,374	2,077	11,516	13,592	2,492	7,949	10,441	144,129	493,640	29.2			

Notes:

- (1) Potential funds through foreign donors and others are not included.
- (2) Provincial IRA of urban water supply to municipalities is distributed according to the ranking arrangement. Others are distributed in proportion to their required costs.

11.4.1 Reference Scenarios in Different Funding Levels

Achievement levels of service coverage in the target year are examined in assumption of five funding levels. It is regarded that the service coverage is increased in proportion to the investment during Phase I period. The relationships between funding levels and corresponding percentages of service coverage are illustrated in Figure 11.4.1 and Figure 11.4.2 for water supply and sanitation sectors, respectively. It is common to all sub-sectors except rural water supply that the service coverage in 2000 would not sustain even the present levels in the provision of only projected IRA.

Three reference scenarios are discussed on different levels of funding. These scenarios will be referred to in combination of alternative countermeasures discussed in Section 11.4.2. Using computer-based programs, these scenarios may be modified by policy makers according to the updated information and policy on available fund and sector targets.

(1) The First Reference Scenario

No funding constraints is considered in this scenario to realize Phase I development as planned. This scenario is too optimistic based on the past experiences.

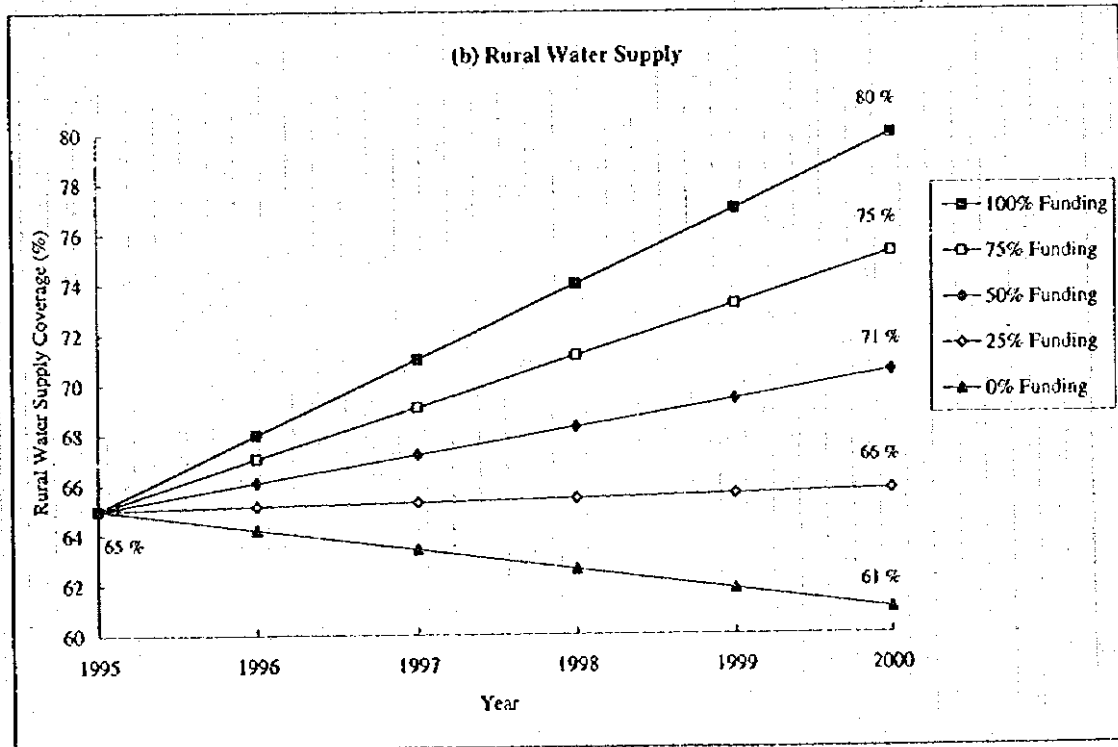
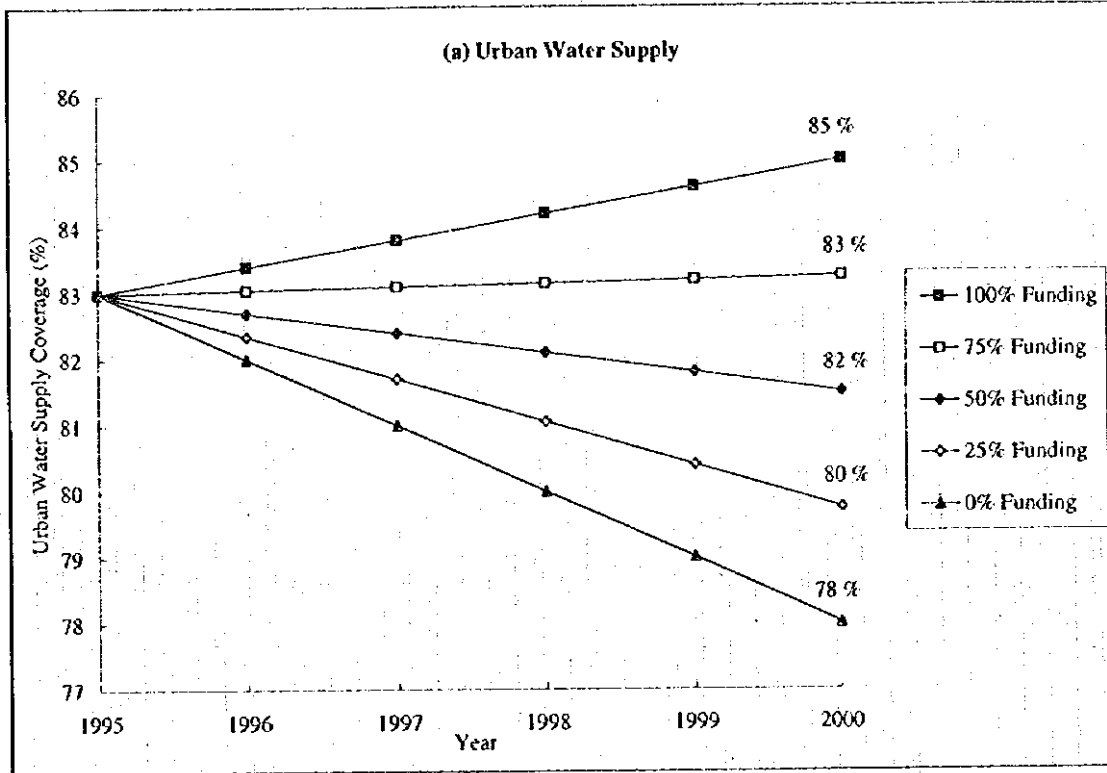
(2) The Second Reference Scenario

An intermediate scenario with 75 % funding is considered. Urban and rural water supply coverage in the year 2000 are attained at 83% and 75%, respectively. For urban and rural sanitation (household toilets), coverage will reach to 95% and 93%, respectively on the assumption that required private investments are followed.

(3) The Third Reference Scenario

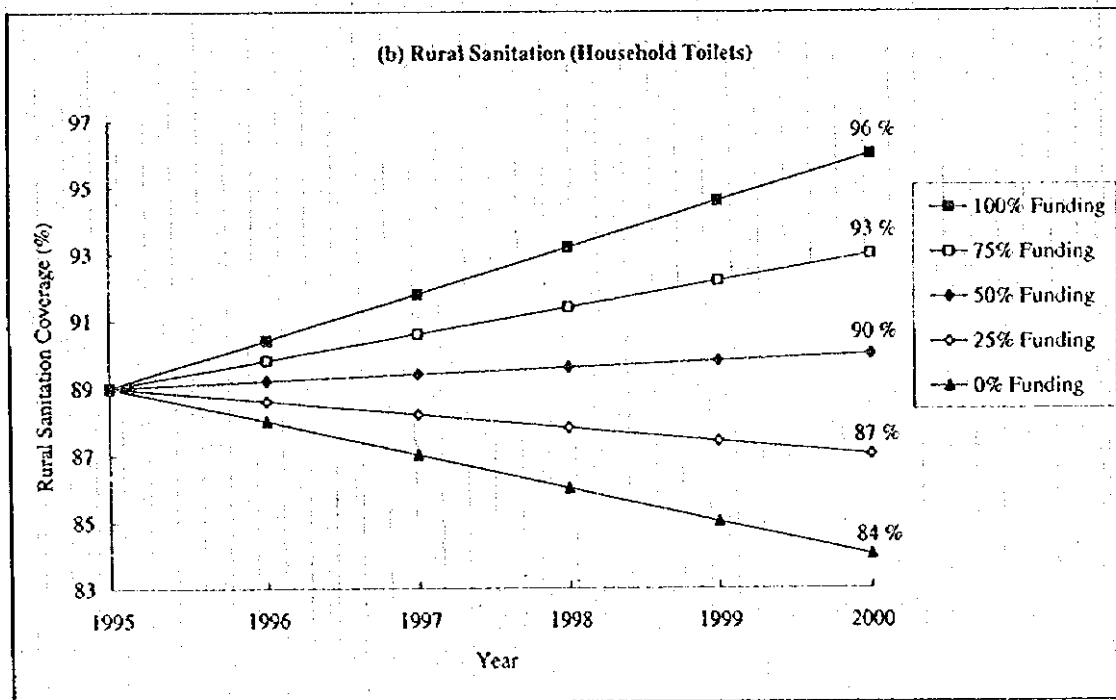
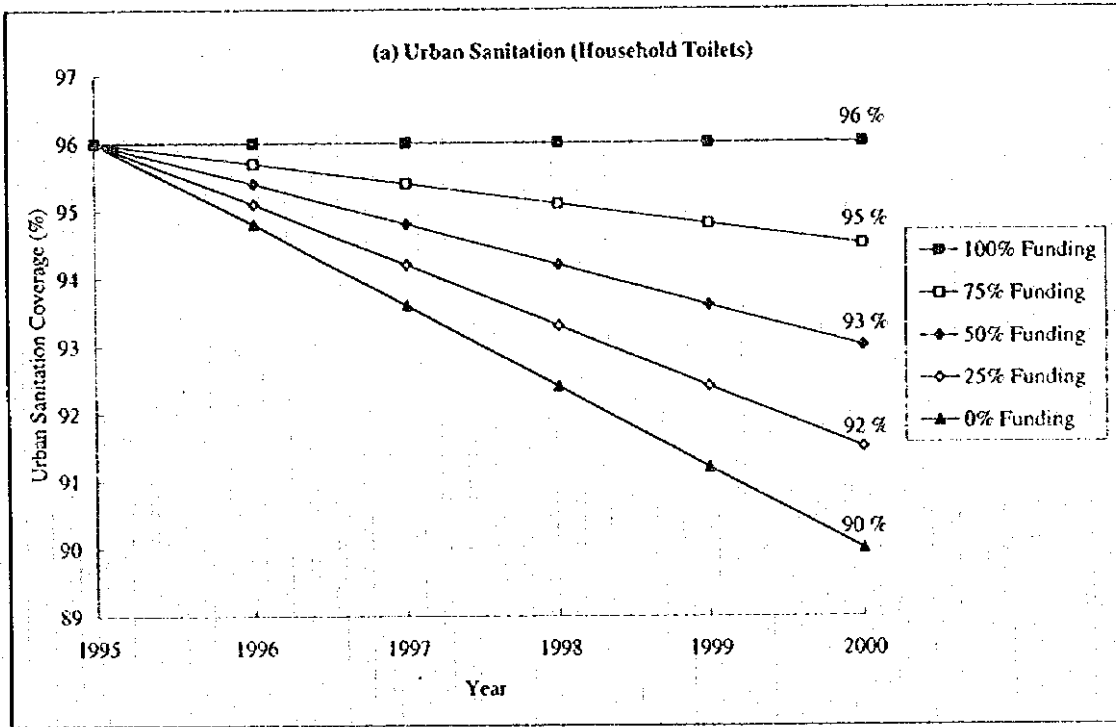
A 50% funding against the total requirements of Phase I is assumed as a possible achievement level with the IRA. Urban and rural water supply coverage in the year 2000 will be attained at 82% and 71%, respectively, while urban and rural sanitation coverage will be at 93% and 90%.

Figure 11.4.1 Relationship between Funding Levels and Percent of Coverage for Water Supply Sector



Note: Percentages of the coverage between 1995 and 2000 are simply prorated as the reference.

Figure 11.4.2 Relationship between Funding Levels and Percent of Coverage for Sanitation Sector



Note: Percentages of the coverage between 1995 and 2000 are simply prorated as the reference

11.4.2 Alternative Countermeasures

(1) Acquisition of external funds

Foreign assistance has played a significant role for the development of the relevant sectors in the past. Negotiations with the central government agencies (DILG, LWUA, etc.) are requisites to access the foreign funds. Development of new local financial mechanism is also needed for LGUs under current policy shifts to increase the opportunities of LGUs undertaking foreign-assisted projects.

As a matter of fact, Local Government Empowerment Fund (LGEF) will be established in 1996 to provide a mechanism for channeling external grants and loans to 19 priority provinces under the Social Reform Agenda and/or those classified as 5th or 6th class LGUs (details are referred to Chapter 11.4.2, Supporting Report). Since Ilocos Norte is not included in the priority provinces, the province may not be supported by this fund.

LWUA Medium-Term Plan includes Dingras municipality as among the 200 project sites (ADB funded projects ; 88 million Pesos in 1997 and 243 million Pesos in 1998).

(2) Augmentation of sector finance under current arrangements

Increase of the IRA to the Relevant Sector

The increase of IRA from the national government to LGUs is at first needed along with current procedure. LGUs shall also arrange the funds with a priority to the relevant sector.

Local Taxes

More allocation of local taxes to the relevant sector shall be arranged although the share of local taxes in the provincial total budget is small.

Utilization of Allotted Fund from Tobacco Excise Tax under RA7171

Allocation from tobacco excise taxes under RA7171 to the relevant sector should be taken into consideration although the sector's development is not the major objective of this allotment (details of this allocation under RA7171 is referred to Chapter 11.4.2, Supporting Report).

Utilization of Other Local Funds

Utilization of other funds, Countryside Development Fund (CDF) in particular, shall be sought for development of the relevant sector.

(3) Introduction of private sector

Privatization of Water District or Level III System

Privatization of water districts/Level III systems helps expedite sector development and sustainability of the system as suggested by NEDA Board Resolution No. 4 (s. 1994).

LGU Guaranty Organization

LGU Guaranty Organization as a public-private corporation managed by private sector in the national level shall be studied to encourage private financing for the development of environmental infrastructure, which is introduced in other developing countries. The organization will guarantee local private loans to LGUs in provision of a longer term financing.

(4) Effective and economical investment

Investment Need Ranking of Municipalities

Investment need ranking of the municipalities is discussed as a guide for implementation of PW4SP and a measure for effective and economical public investment. Referring to this ranking, the provincial government will arrange its financial resources more effectively.

The ranking for urban water supply is specifically studied considering three factors, while a sole factor of additional requirements is assumed to coincide with the priority of other sub-sectors. Synthetic evaluation of concerned sub-sectors is finally presented in the context of comprehensive improvement of this sector. The result for urban water supply is employed for allocation of provincial IRA to the municipalities in the concerned sub-sector. The synthetic ranking may be awaited for the huge investment in use of the funds to be provided by other donors in the future.

For the urban water supply component, the ranking criteria comprise three essential evaluation factors, namely: (a) percentage of underserved and unserved population in the base year; (b) percentage of underserved and unserved population in Phase I; and (c)

percentage of population unserved by Level III Systems in the base year. First, these factors are scored by the range of underserved and unserved percentage and totaled by municipality in application of weighing method. Adopted weight to the factors (a), (b) and (c) are 50%, 35% and 15%, respectively. Table 11.4.1 shows ranking procedures, overall weighted score and investment need ranking of the municipalities. Badoc is identified as the first priority municipality, followed by Paoyay.

Table 11.4.1 Municipal Investment Need Ranking for Urban Water Supply

City/Municipality	Evaluation Factor			Scoring by the Factor			Overall Weighted Score	Investment Need Ranking
	% of Underserved/ Unserved Population in Base Year	% of Underserved/ Unserved Population in Phase I	% of Population Unserved by Level III Systems in the Base Year	Underserved/ Unserved Population in Base Year	Underserved/ Unserved Population in Phase I	Population Unserved by Level III Systems in Base Year		
Adams	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Bacarra	18	23	79	0.40	0.60	0.80	0.53	9
Badoc	67	63	100	1.00	1.00	1.00	1.00	1
Bangoi	21	26	89	0.60	0.60	1.00	0.66	5
Batac	15	20	90	0.40	0.40	1.00	0.49	10
Burgos	22	26	94	0.60	0.60	1.00	0.66	5
Carassi	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Currimao	6	11	91	0.20	0.40	1.00	0.39	14
Dingras	2	8	82	0.20	0.20	1.00	0.32	15
Dumalneg	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Espiritu	3	8	82	0.20	0.20	1.00	0.32	15
Laoag City (Capital)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Marcos	35	39	100	0.80	0.80	1.00	0.83	3
Nueva Era	31	35	100	0.80	0.80	1.00	0.83	3
Paguapud	12	17	81	0.40	0.40	1.00	0.49	10
Paoyay	39	43	95	0.80	1.00	1.00	0.90	2
Pasquin	3	9	78	0.20	0.20	0.80	0.29	18
Piddig	24	28	100	0.60	0.60	1.00	0.66	5
Pinili	1	7	87	0.20	0.20	1.00	0.32	15
San Nicolas	2	8	42	0.20	0.20	0.60	0.26	19
Sarrat	13	18	76	0.40	0.40	0.80	0.46	13
Solsona	13	18	100	0.40	0.40	1.00	0.49	10
Vintar	22	26	92	0.60	0.60	1.00	0.66	5
Provincial Total	17	22	44					

Note: 1. Scoring to Underserved and Unserved Percentage.

2. Weight Allocation to Score.

Score	Range of Underserved/ Unserved Percentage			50	35	15	Allocated Weight
	41 < %	31 < % < 40	21 < % < 30				
1.0	41 < %	31 < % < 40	21 < % < 30	81	< %		
0.8	31 < % < 40	21 < % < 30	11 < % < 20	61	< % < 80		
0.6	21 < % < 30	11 < % < 20	% < 10	41	< % < 60		
0.4	11 < % < 20	% < 10		21	< % < 40		
0.2	% < 10				% < 20		

With reference to provincial fund allocation, it is assumed that 60% of the fund for urban water supply from provincial government is distributed equally to the top five ranking municipalities, while the remaining 40% is equally distributed to the rest of the municipalities. The result of distribution is shown in Table 11.4.2.

Table 11.4.2 Distribution of Provincial IRA to City/Municipalities for Urban Water Supply

Unit: 1000 Pesos

Ranking	City/Municipalities	Fund Distribution		IRA to City/ Municipalities from National Government	Available Fund Distributed to City/Mun- icipalities (1)+(2)	Phase I Require- ments	Accomplish- ment Percentage
		Fund Distribution from Provincial Government (1)	Distribution Percentage (%)				
N.A.	Adams	0	0.00	0	0	0	0.0
9	Bacarra	369	4.44	544	913	5,683	16.1
1	Badoc	1,246	15.00	427	1,673	8,311	20.1
5	Banguit	369	4.44	1,219	1,588	3,782	42.0
10	Balac	369	4.44	1,397	1,766	5,637	31.3
5	Burgos	369	4.44	325	694	1,487	46.7
N.A.	Carassi	0	0.00	0	0	0	0.0
14	Currimao	0	0.00	0	0	0	0.0
15	Dingras	0	0.00	0	0	0	0.0
N.A.	Dumalneg	0	0.00	0	0	0	0.0
15	Espiritu	0	0.00	0	0	0	0.0
N.A.	Laoag City (Capital)	0	0.00	13,174	13,174	36,738	35.9
3	Marcos	1,246	15.00	783	2,029	3,177	63.9
3	Nueva Era	1,246	15.00	964	2,210	2,546	86.8
10	Pagudpud	369	4.44	406	776	817	94.9
2	Paoy	1,246	15.00	1,523	2,769	17,857	15.5
18	Pasuquin	0	0.00	0	0	0	0.0
5	Piddig	369	4.44	774	1,143	3,866	29.6
15	Pinili	0	0.00	0	0	0	0.0
19	San Nicolas	0	0.00	0	0	0	0.0
13	Sarrat	369	4.44	219	588	1,975	29.8
10	Solsona	369	4.44	91	460	849	54.2
5	Vintar	369	4.44	1,569	1,938	4,385	44.2
	Total	8,307	100	23,414	31,721	97,110	32.7

To come up with the synthetic ranking of the city/municipalities, scoring method is also employed for other sub-sectors. The score is derived from the range of underserved and unserved percentage in the base year. Synthetic investment need ranking of city/municipalities covering four sub-sectors is shown in Table 11.4.3 (refer to ranking procedures in Table 11.4.1, Supporting Report).

Provincial Trust Fund

Provincial Trust Fund approach is implied as a mechanism to totally manage any funds/projects through different financial sources or implementing agencies. The fund raises the LGUs responsibility for effective and economical utilization of the financial resources (details are referred to in Chapter 9).

Table 11.4.3 City/Municipal Investment Need Ranking

City/Municipality	Weighted Score by Sub-sector					Synthetic Municipal Investment Need Ranking
	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Total Weighted Score	
Adams	N.A.	0.40	N.A.	0.30	0.70	6
Bacarra	0.13	0.20	0.10	0.10	0.53	9
Badoc	0.25	0.25	0.10	0.25	0.85	2
Bangui	0.17	0.10	0.05	0.15	0.47	12
Batac	0.12	0.10	0.05	0.15	0.42	15
Burgos	0.17	0.20	0.15	0.20	0.72	5
Carassi	N.A.	0.10	N.A.	0.50	0.60	8
Currimao	0.10	0.20	0.25	0.20	0.75	4
Dingras	0.08	0.10	0.05	0.05	0.28	21
Dumalneg	N.A.	0.10	N.A.	0.10	0.20	23
Espiritu	0.08	0.10	0.05	0.05	0.28	21
Laoag City (Capital)	N.A.	0.30	0.05	0.10	0.45	14
Marcos	0.21	0.10	0.05	0.10	0.46	13
Nueva Era	0.21	0.20	0.25	0.25	0.91	1
Pagudpud	0.12	0.10	0.10	0.10	0.42	15
Paoay	0.23	0.15	0.05	0.05	0.48	10
Pasuquin	0.07	0.15	0.20	0.25	0.67	7
Piddig	0.17	0.10	0.05	0.05	0.37	19
Pinili	0.08	0.25	0.05	0.10	0.48	10
San Nicolas	0.07	0.20	0.05	0.05	0.37	19
Sarrat	0.12	0.20	0.05	0.05	0.42	17
Solsona	0.12	0.20	0.05	0.05	0.42	17
Vintar	0.17	0.10	0.25	0.25	0.77	3

11.5 Cost Recovery

Cost recovery and cost sharing are essential to attain the planned targets. The PW4SP advocates the imposition of tariffs for the recovery of capital and operating cost based on the principle that adequate water, sewerage and sanitation facilities should be paid for.

(1) Level I water supply systems

For Level I systems, 100% of the capital costs is granted according to the current national policy, although beneficiaries are responsible for all recurrent costs. Monthly recurrent cost is estimated at about 5 Pesos per household in the base year price level (refer to recurrent cost in Chapter 10). The figure will be increased up to about 8 Pesos in 2000, assuming annual inflation of 10%. This monthly fee seems to be affordable to the users considering current income level (refer to affordability in Chapter 6), but willingness to pay shall be promoted.

(2) Level II water supply systems

Water source development is granted for Level II systems as a practice nationwide, while full cost recovery is required for all other capital costs. The average capital cost, except for water source development is estimated at 4,550 Pesos per household (refer to Chapter 10). Applying the capital recovery factor to the capital costs with conditions of 10% interest rate and 25 years repayment period, monthly payment amounts to about 40 Pesos per household. In addition, monthly recurrent cost is estimated at about 8 Pesos per household in the base year price level. It will reach to about 15 Pesos in 2000 with an annual inflation rate of 10%. Thus, the total of repayment and recurrent cost is about 55 Pesos, which is less than 2% of the family income as shown below.

(a) Estimated water rate (flat rate; Pesos)	:	55
(b) Percentage of (a) to monthly median household income in 2000 ¹⁾	:	0.8%
(c) Percentage of (a) to monthly low household income in 2000 ²⁾	:	1.5%

Notes:

- 1) Provincial average monthly median income in 2000 (7,208 Pesos per household) is derived from 1991 Family Income and Expenditure Survey considering annual inflation rate of 10%
- 2) Provincial average monthly low income in 2000 (3,719 Pesos per household) is estimated using LWUA data in Region I.

(3) Level III water supply systems

A full recovery of capital and operation & maintenance cost is required for Level III systems. To test the affordability, a comparative study was made between estimated water rate (based on standard monthly consumption; 15m³ per household) and projected income in 2000.

The monthly recurrent cost for the standard household is estimated at about 55 Pesos in 1994 price level (refer to recurrent cost in Chapter 10). In consideration of annual inflation rate of 10%, it will be about 100 Pesos in 2000, while the water rate including financial debt service for the standard household is estimated at about 162 Pesos using an average figure of water districts in Region I (annual inflation rate of 10% is assumed).

Using the monthly water rate of 162 Pesos per household and monthly household income discussed in Level II Systems, percentages of the water rate to household income are calculated as shown below. The percentage of the water rate against income is less than 5%, which is commonly affordable.

(a) Estimated water rate for 15 m ³ (Pesos) ¹⁾	:	162
(b) Estimated minimum water rate (1-10 m ³) (Pesos) ²⁾	:	109
(c) Percentage of (a) to monthly median household income in 2000 ³⁾	:	2.2%
(d) Percentage of (a) to monthly low household income in 2000 ³⁾	:	4.4%
(e) Percentage of (b) to monthly low household income in 2000 ³⁾	:	2.9%

Notes:

- 1) Estimated water rate (15m³) in 2000 referring to the average figure of existing water districts in 1994 in Region I and annual inflation rate of 10%.
- 2) Minimum water rate is usually studied by LWUA. Water rate is estimated for the household with consumption rate of 10m³ under the same assumption of 1).
- 3) Refer to the study in Level II Water Supply Systems.

(4) Sanitation

The provision of sanitary toilet facilities for public markets and schools is under LGUs. However, recurrent cost for the public markets shall be collected from the users including stallholders of the market.

Household toilets shall be, in principle, managed by individual households. However, the facility is costly with reference to the current income level especially in the rural area. Governmental support is also limited to the provision of toilet bowl for pour-flush toilets. In this connection, cost recovery in application of loan is studied.

Applying the capital recovery factor to the construction cost with assumptions of 10% interest rate and 5 years repayment period, monthly repayment amounts to about 790 Pesos for a flush type and 280 Pesos for a pour-flush type, respectively (details of unit cost is referred to Chapter 10, Supporting Report). The percentages of repayment to household income in 2000 are calculated in the same manner as the study for Level III water systems and are shown below.

(a) Repayment for Flush Type (Pesos)	:	790
(b) Repayment for Pour Flush Type (Pesos)	:	280
(c) Percentage of (a) to monthly median household income in 2000 ¹⁾	:	11.0%
(d) Percentage of (b) to monthly low household income in 2000 ¹⁾	:	7.5%

Note:

- 1) Refer to the study in Level II Water Supply Systems.

To expedite sanitation improvement, introduction of specific loans that has a revolving character with low interest rate and longer repayment period may be an effective solution. For urban sanitation, the linkage with existing housing loan shall be established to cover construction of sanitary toilets.



Chapter 12

MONITORING



12. MONITORING

12.1 General

Many of the systems constructed earlier have operated in a limited way because of the insufficient monitoring and post-construction technical support, aside from the problems in promotion of self-reliance and local community management. This Chapter seeks to recommend a focused, practical, viable, creative approach to strengthening sector and project monitoring. The development of a coordinated monitoring system is one of the key components of an effective management system.

Sector monitoring refers to the overall water and sanitation situation in the province. One may readily use a demand-supply model for sector monitoring. Demand would be indicated by such indicators as coverage, health conditions, etc. Supply would be indicated by the water resources situation, by the available funding, or by water/sanitation associations organized to undertake sector activities. Project monitoring, on the other hand, looks at the progress of specific activities or projects. Indicators would thus include; disbursements, percent completion, cost overruns (underruns), etc.

12.2 Sector Monitoring

- (1) The monitoring system must support a well-defined and accepted sector development process-model. There are four general aspects of sector monitoring which will be addressed:
 - 1) Information collection: Defining the information needs of the LGUs from various levels; reviewing current, readily-available sector information, including its reliability and timeliness; identifying the information gaps and deficiencies of the information system; data consolidation and processing.
 - 2) Tracing the flow of raw data from the field (or other related monitoring systems) to the central level. Identifying possible causes of distortions, inconsistencies or blocks.
 - 3) Information analysis: Assessing the quality of information; reviewing the analyses done.
 - 4) Data feedback: Reviewing the impact of information on planning and decision making at the policy level, the resource allocation level and the operating level; tracing the flow of data back to the field.

(2) Sector performance deficiencies demand that serious thought be given to innovations to reduce costs in achieving the provincial sector plan. With the monitoring system, the sector should be able to take a fresh and objective view of the way to meet current strategies. For example, does community management of systems really work? Do low-cost technologies make sense? Under what conditions and how? How can the target be achieved for low-income communities? A sector monitoring system should be flexible to support planning and research studies on such specific policy and operational issues.

(3) In putting together a relevant sector monitoring system, the following should be seriously looked into:

- 1) It should reinforce the linkage between water, sanitation and health. This implies that coverage should be measured for availability of both water and sanitation for a household. It should not be monitored separately, i.e., a household can thus be categorized as having both water and sanitation, water only, sanitation only or none of either. At later stages, health practices can be included in the monitoring.
- 2) It should be reliable and involve the beneficiaries. This mechanism could provide the data quality control which is missing in existing systems. Distortion of information may occur when implementors are the monitors. The barangay will be the basic data capture level.
- 3) Monitoring will succeed only with interagency support, particularly in the initial stages. It should be accepted by all sector agencies. A unified set of figures and indicators will greatly help in planning.
- 4) It should be practical and implementable. It should start with the current monitoring capacity situation and move up with a clear vision of what the monitoring system should be. This implies phasing and gradual expansion and strengthening of the system and training of staff.
- 5) The system should be followed through with effective feedback. It should develop creative ways of providing feedback to the field. The current way in which data is processed is towards consolidation. The field sources' only feedback is, for example, national coverage figures. In the course of consolidation, opportunities for specific feedback useful to project implementors on performance are lost.

(4) Sector development indicators Some important indicators will be more difficult to collect than others because the sector is not ready to gather them. The LGUs will group indicators into phases based on availability of data and/or ease with which such information can be collected with improved systems. A review of the objectives set for the sector

almost exclusively shows a focus on coverage. It is important to get sector objectives stated beyond coverage terms in order to encourage use of additional indicators. Based on past experience, requiring too much information leads to start-up difficulties. A three-phase build-up meeting sector requirements is outlined in the following sections:

1) Phase 1 Indicators

- Access to both adequate water and sanitation
- Water and sanitation associations duly organized to undertake sector activities
- Water and sanitation facilities in schools
- Capital development costs
- Sources of capital development funds
- Incidence of diarrhea
- Water availability and water quality maps
- Unit cost (per capita or per facility)

2) Phase 2 Indicators

- Household hygiene habits and practices
- Water stored in house covered? food covered? grounds free of faeces, garbage, wastewater cesspools? animals in the house? mother's and children's hands clean?
- Existence of barangay spot maps and facilities ledger cards
- Existence of O&M arrangements
- Current costs to households and willingness to pay for improved service

3) Phase 3 Indicators

- O&M Costs
- Financial efficiency and stability indicators
- Institutional development indicators
- Low-income groups benefiting from improvements

(5) NEDA has issued a Board Resolution in 1995 providing a practical definition of terms for planning and monitoring. The definitions were arrived at after exhaustive discussions and consensus with the implementing agencies.

(6) Recommended institutional responsibilities for sector monitoring: Monitoring is best left to parties not directly involved in delivery of the services. The best monitors are the

community members themselves since accurate monitoring reports is in their best interest. At the data capture level, the PHO structure, with its midwives and BHW volunteers, is in the best position to take the lead in data gathering.

- 1) **Provincial Level:** The PPDOs, through its Research and Evaluation Division, will play the lead role in organizing the field data collection effort in coordination with the field offices of national agencies, NGOs and the water districts. The Monitoring Specialist, with the PST/PWSO, will assist the PPDO.
- 2) **Municipal Level:** The Municipal Development Coordinator has the mandate of monitoring all development activities in the municipality. The municipal sector liaison will therefore coordinate the preparation of the reports with the MPDO, supported by PHO and NGOs, as needed.
- 3) **Barangay Level:** There are several institutional options for leading the monitoring at the barangay level, such as the barangay health stations, the barangay council, etc. The municipal liaison will take the lead in establishing the barangay monitoring responsibilities.

(7) Computerization of the system can come at later stages. This should be gradually phased in as the sector agencies strengthen their monitoring mode. This will also discourage a ground swell of requests for computer hardware. Computer facilities are available at the provincial level.

(8) A new sector database program has been recently designed and currently under review. A Sector Database Center has been established within the DILG-PMO. The system has been successfully piloted in three provinces and replication in other priority provinces will begin shortly.

12.3 Project Monitoring

Project Monitoring Committees (PMCs) exist at the provincial and municipal levels tasked with the monitoring of local government projects funded from national and local government funds.

(1) **Scope and coverage:** At the provincial level, monitoring includes projects classified under any of the following:

- 1) foreign and nationally-funded projects which are implemented or located in two or several municipalities in the province or implemented or located in the province;

2) other projects implemented and managed at the provincial level with funding generated from provincial sources.

(2) Organization of Project Monitoring Committee (PMC): The PMC established in each province is composed of representatives from 3 NGOs, 2 from the administration, 1 from the ruling party and 1 from the opposition. From these representatives, the Provincial Governor selects the chairman and the four others as members. The Provincial Planning and Development Office can be delegated to serve as the Secretariat and the PMC manages with the assistance of the non-government organizations in the monitoring and validation of project implementation.

(3) Responsibilities: The specific rules and responsibilities of the various units in the implementation of the monitoring system are as follows:

The Project Monitoring Committee :

- 1) Provides the list and schedule of all projects to be monitored to the NGOs involved in monitoring;
- 2) Collects and processes reports of implementors; NGOs monitor the status of project implementation for the information of the development council and next higher level project monitoring committee;
- 3) Pinpoint problems and verify information to be submitted for analysis and action of the development council;
- 4) Provide feedback on the remedial actions of the development council and follow-up their implementation;
- 5) Prepare and disseminate periodic project monitoring report on the status of project implementation; and
- 6) Elevate to higher level bodies problems/issues which are not resolved at their level.

The PMC Secretariat:

- 1) Prepare the monitoring program to be undertaken by the PMC during any given fiscal year, which will include, among others, the lists of projects and schedule of implementation based on submission of implementing agencies;
- 2) Provide chief executives with information on the projects to be monitored by the local PMC's;

- 3) Facilitate inter-agency, inter-governmental and field headquarters coordination whenever necessary.

The Project Implementors:

- 1) Submit periodic reports to the monitoring committee on the status of project implementation base on suggested reporting forms;
- 2) Provide authorized monitors assistance in getting access to more detailed information on project implementation (e.g. detailed work program);
- 3) Submit to next higher level office of line agency reports on status of implementation;
- 4) Implement/institute remedial measures on problems/issues identified as suggested by the development council.

(4) Process Flow

- 1) The PMC secretariat provides the NGOs with the monitoring plan, containing information on projects to be implemented at the provincial level;
- 2) PMC prepares its monitoring program for the calendar year;
- 3) Project implementors undertake projects, prepare and submit status reports on project implementation to the PMC;
- 4) NGOs project exception reports are submitted to the PMC, with copy furnished the project implementors;
- 5) PMC assesses reports of implementors and NGOs and conducts project visits of projects identified in the monitoring work program;
- 6) PMC processes reports of various implementors and provides the provincial development council with a consolidated report on status of project implementation in the province;
- 7) PMC evaluates problems, recommends solutions during its regular or special meetings, and refers same to the Provincial Development Council for appropriate action;
- 8) PDC assesses reports and takes proper action (problem solving, referral to appropriate agencies/council);
- 9) Implementors take remedial action on problems/issues encountered in project implementation. (If after a reasonable period of time, no remedial measures/appropriate action have been taken on the problems referred to the concerned agency/local development council, the PMC forward the issue to that RDC.)
- 10) PMC provides feedback to concerned implementors, LGUs, NGOs, and other concerned agencies and follow-up implementation of remedial measures.

11) PMC forwards consolidated status report on project implementation in the province to the Regional Project Monitoring Committee (RPMC).

(5) Frequency/Timing of Report Submission

The PMC determine the schedules for the submission of reports. Reports are submitted to the PMC who will forward the consolidated reports to the Provincial Development Council (PDC). Submission of the consolidated report from the provincial PMC to the regional PMC is usually undertaken on a quarterly basis. The PMC furnishes the Provincial Governor with a copy of the reports for his reference and action.

12.4 Evaluation of Plan Implementation and Updating the PW4SP

- (1) This PW4SP should be updated at least every five years. This will be the responsibility of the PWSO in close coordination with the PPDO. Based on the sector monitoring reports, the PWSC will review the progress of the sector compared with objectives and the efficiency with which these objectives were achieved. This will be followed by a reformulation of objectives, strategies, new policies and policy revisions and an updated sector investment program.
- (2) To initiate the implementation of this sector monitoring system, the Phase I indicators (See 12.2) shall be used. Formats have been drafted for this purpose (See Table 12.4.1, Supporting Report). Specifically, the information to be collected are as follows:
 - 1) Access to both adequate water and sanitation as a measure of demand: This indicator can be taken from the Field Health Service Information System (FHSIS) Annual Environmental Sanitation Survey which are prepared by the PHO midwives. These annual surveys are summarized by municipality by the sanitary inspectors. NSO population projections will be utilized.
 - 2) Water and sanitation associations (RWSAs/BWSAs) organized: This indicator can be collected from the Cooperative Development Authority (Municipal or Provincial Chapters) in as much as all water cooperatives and/or associations are required to register with the CDA.
 - 3) Water and sanitation facilities in schools: This indicator can be collected from the various school district offices; consolidated at the division (provincial level). Although a system is in place for regular inventory of facilities by DECS, actual

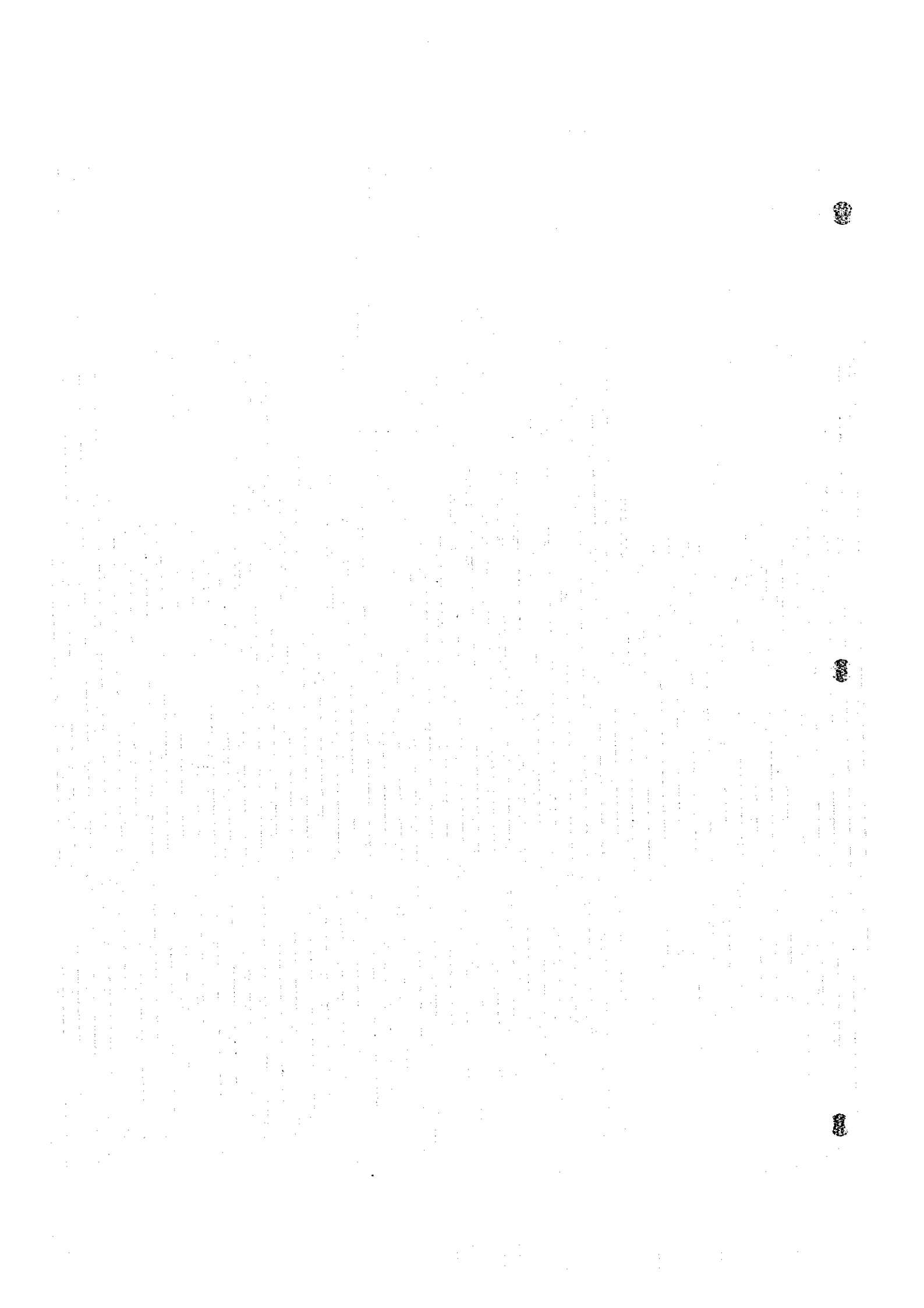
inventories are seldom implemented and the LGUs may have to institute a supporting data gathering activity.

- 4) Capital development costs: If the Trust Fund mechanism may be in place, this indicator should be easy to get. If this is not in place yet, the LGUs may have to gather information from the local DEO of DPWH, the PHO, the various municipalities and the water districts.
 - 5) Sources of capital development funds: Data sources are the same as those of item 3).
 - 6) Incidence of diarrhea: This information can be taken from Form M-2 of the FIISIS. (Collection and processing of the data form is similar to that of item 1).
 - 7) Water availability and water quality maps: These maps should be continually updated based on field reports on water quality and quantity as they are received from operations reports studies. Areas where, for example, salinity is increasing should be indicated. Areas suitable for shallow wells, for deep wells and for possible spring sources can be indicated.
 - 8) At the conclusion of every project, the monitoring specialist prepares a report on actual unit costs incurred. This would include, for example, the cost of drilling for shallow or deep wells per meter depth; the cost of pipeline per linear meter, etc.
- (3) Municipal level consolidation: For every reporting period, the municipal sector liaison gathers all the barangay level data including those reports of the municipal health officer (and sanitary inspectors), the DECS division offices. A municipal sector report will be thus prepared. Further refinements of this report may be needed in view of future development initiated at the national level.

The municipal sector report is reviewed by the Mayor and then submitted to the Governor for further consolidation. Salient sections of this report would be furnished to DILG which is tasked with coordinating a national sector performance report for NEDA and for the President.

- (4) Feedback: Based on these reports, the PST/PWSO will draft a consolidated report on the performance of the sector during the period including the opportunities and constraints met and a set of recommendations for policy revision. Municipalities which have made outstanding progress and associations which have introduced creative innovations in its operations would be cited.

Annual reviews shall be organized to analyze not only the attainment on the physical project targets, but more significantly, whether the vision is being attained. These reviews could also provide the opportunity to sharpen or revise the vision and the mission statement and distill lessons learned from the implementation experiences.



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