

- (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 practiced 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 flipcharts 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 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 20m in depth and deep wells at 40, 80 and 120m 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	Population	Deep Well			Shallow Wells	Household Toilet			Public Toilet		Disinfection of Levels-I Wells	Urban Sewerage	
	5,000 Population	10,000 Population	15,000 Population	5,000 Population			10,000 Population	15,000 Population	40 m		80 m	120 m	Flush	Four Flush	VTP Latrine			School Toilet
	20,081,250	30,418,750	45,443,750	18,456,250	28,793,750	45,818,750	156,900	259,900	377,400	29,200	36,700	13,300	8,300	296,000	316,800	70	N.A.	
Unit Construction Cost per Facility (Pesos)	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.	N.A.	N.A.	N.A.	N.A.	
Service Coverage	1,000	2,000	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.	N.A.	N.A.	N.A.	N.A.	
Rehabilitation Cost of Level I Deep Well (Pesos/Well)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	10,500	17,300	25,200	1,900	36,700	13,300	8,300	N.A.	N.A.	N.A.	N.A.
								34,200										

Table 10.2.2 Unit Cost of Equipment and Vehicle

Name of Equipment	Unit Cost (Peso 1,000)
Hand-feed spindle type rotary drilling rig	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

### 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).

#### (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) Contingency cost

Contingency cost covers both physical and price contingencies for water supply and sanitation facilities. Physical contingency is assumed to be 15% that of the direct construction cost and sector management cost. Price contingency is assumed to be 10% that of direct cost and physical contingency.

#### (5) Recurrent cost

Recurrent cost was estimated for water supply and school and public toilet 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).

**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			Grand Total	Urban Area			Rural Area			Grand Total	
	Water Supply	Sanitation	Sub-total	Water Supply	Sanitation	Sub-total		Water Supply	Sanitation	Sewerage	Sub-total	Water Supply	Sanitation		Sub-total
Abra de Ilog	0	659	659	7,787	412	8,199	8,858	3,019	38	0	3,057	5,673	1,585	7,258	10,315
Calintaan	3,384	384	3,768	934	876	1,810	5,578	23,525	1,204	0	24,729	6,576	2,342	8,918	33,647
Lecc	14,008	442	14,450	2,658	0	2,658	17,118	11,611	933	0	11,944	0	673	673	12,617
Lubang	6,512	448	6,960	18,102	619	18,721	25,681	8,998	523	0	9,521	15,582	2,503	18,085	27,606
Magsaysay	16,028	693	16,721	13,106	1,100	14,206	30,927	16,461	1,376	39,632	57,469	13,135	3,032	16,167	73,636
Maniburan (Capital)	4,026	1,766	5,792	19,779	1,171	20,950	26,742	13,179	1,776	53,385	68,340	20,129	3,281	23,410	91,750
Pañan	6,232	590	6,772	701	179	880	7,652	17,016	979	0	17,995	467	175	642	18,637
Rizal	7,652	460	8,112	0	2,047	2,047	10,159	3,138	365	0	3,503	29,980	4,372	34,352	37,855
Sablayan	12,058	1,212	13,270	7,201	1,541	8,742	22,012	52,995	2,848	107,295	163,138	19,416	4,039	23,455	186,593
San Jose	17,995	1,948	19,943	23,678	3,091	26,769	46,712	75,681	4,940	175,185	255,806	42,894	11,499	54,393	310,199
Sta. Cruz	1,084	327	1,411	9,139	1,448	10,587	11,998	6,727	791	0	7,518	15,378	2,905	18,283	25,801
<b>Provincial Total</b>	<b>88,979</b>	<b>8,878</b>	<b>97,858</b>	<b>103,095</b>	<b>12,483</b>	<b>115,578</b>	<b>213,436</b>	<b>231,750</b>	<b>15,773</b>	<b>375,497</b>	<b>623,020</b>	<b>169,230</b>	<b>36,401</b>	<b>205,634</b>	<b>828,654</b>

During the medium-term development period, a total of 213 million Pesos will be required for construction of required facilities. Of the requirements, 48% or 103 million Pesos will be necessary only for rural water supply, while only 4% or 9 million Pesos will be for urban sanitation.

### 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)
Hand-feed spindle type rotary drilling rig	1,000	5	5,000
Truck-mounted rotary drilling rig	17,370	5	86,850
Truck-mounted percussion drilling rig	10,280	6	61,680
Well rehabilitation equipment	138	2	276
Service truck with crane	1,175	11	12,925
Support vehicle (Pick-up with winch)	500	7	3,500
Refuse collection truck	1,380	10	13,800
<b>Total Equipment Cost</b>			<b>184,031</b>

### 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.

**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	2,828	2,828	3,182	3,713	4,244	4,598	18,564
	Spare Parts/Equipment	2,292	2,292	2,648	3,181	3,715	4,071	15,907
Rural Water Supply	Level II	67	67	67	67	67	67	333
	Level I	1,146	1,237	1,402	1,568	1,734	1,900	7,841
Sanitation	Public School Toilets	602	671	797	923	1,050	1,176	4,617
	Public Toilets	30	55	101	148	194	240	738
<b>Provincial Total</b>		<b>6,964</b>	<b>7,149</b>	<b>8,197</b>	<b>9,600</b>	<b>11,003</b>	<b>12,051</b>	<b>48,000</b>

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

In the year 2000, the recurrent cost will increase to 12.1 million Pesos/year from 7 million Pesos/year in 1995, which is equivalent to 73% increase from the base year corresponding to the implementation of the medium-term development.





*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.

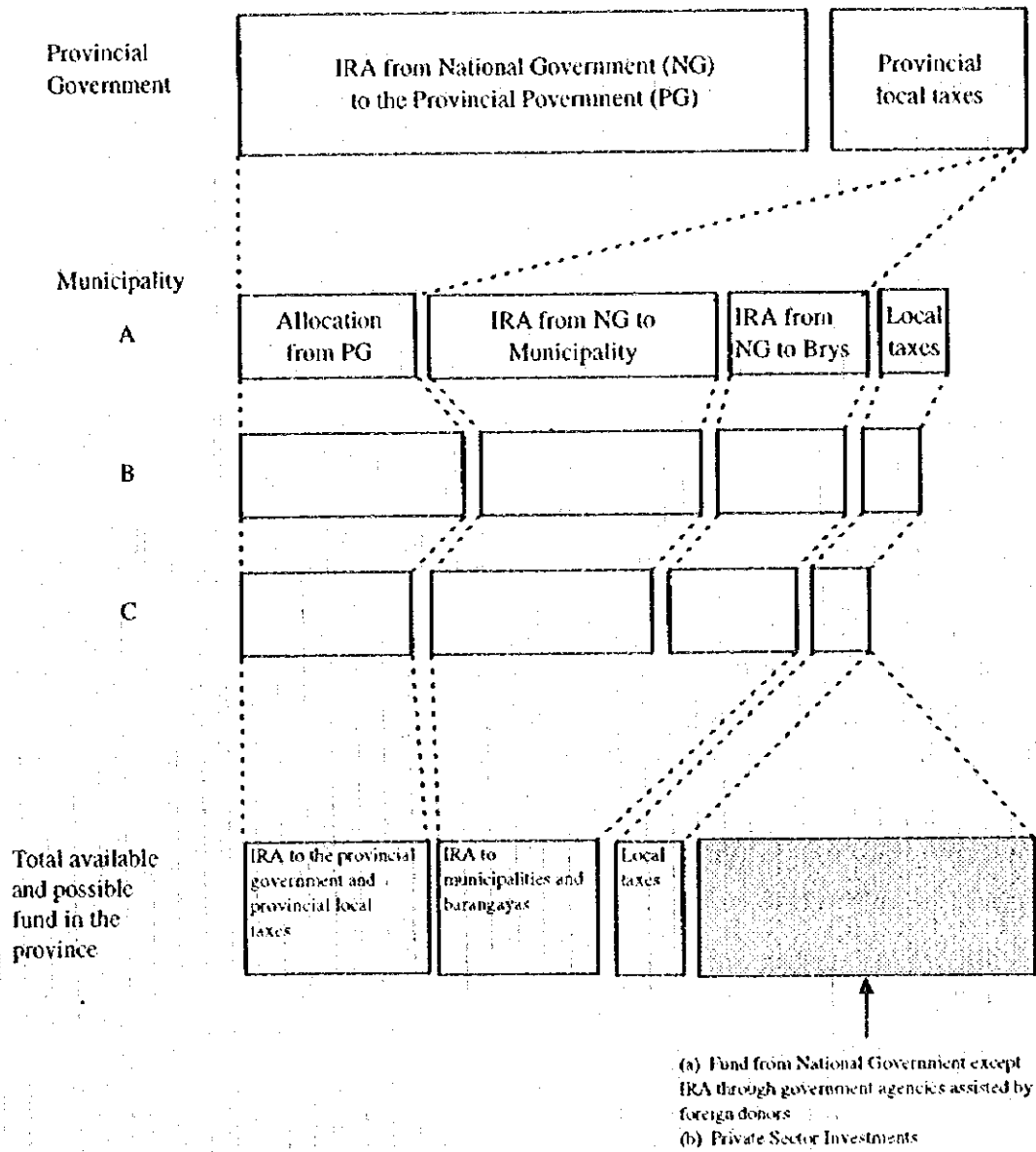
Available funds (IRA) during the medium-term development period are projected in use of computer-based programs that allow for the future application to include additional funds available. Figure 11.1.1 shows sector budget allocation in the different administrative levels to come up with total funds 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 the 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

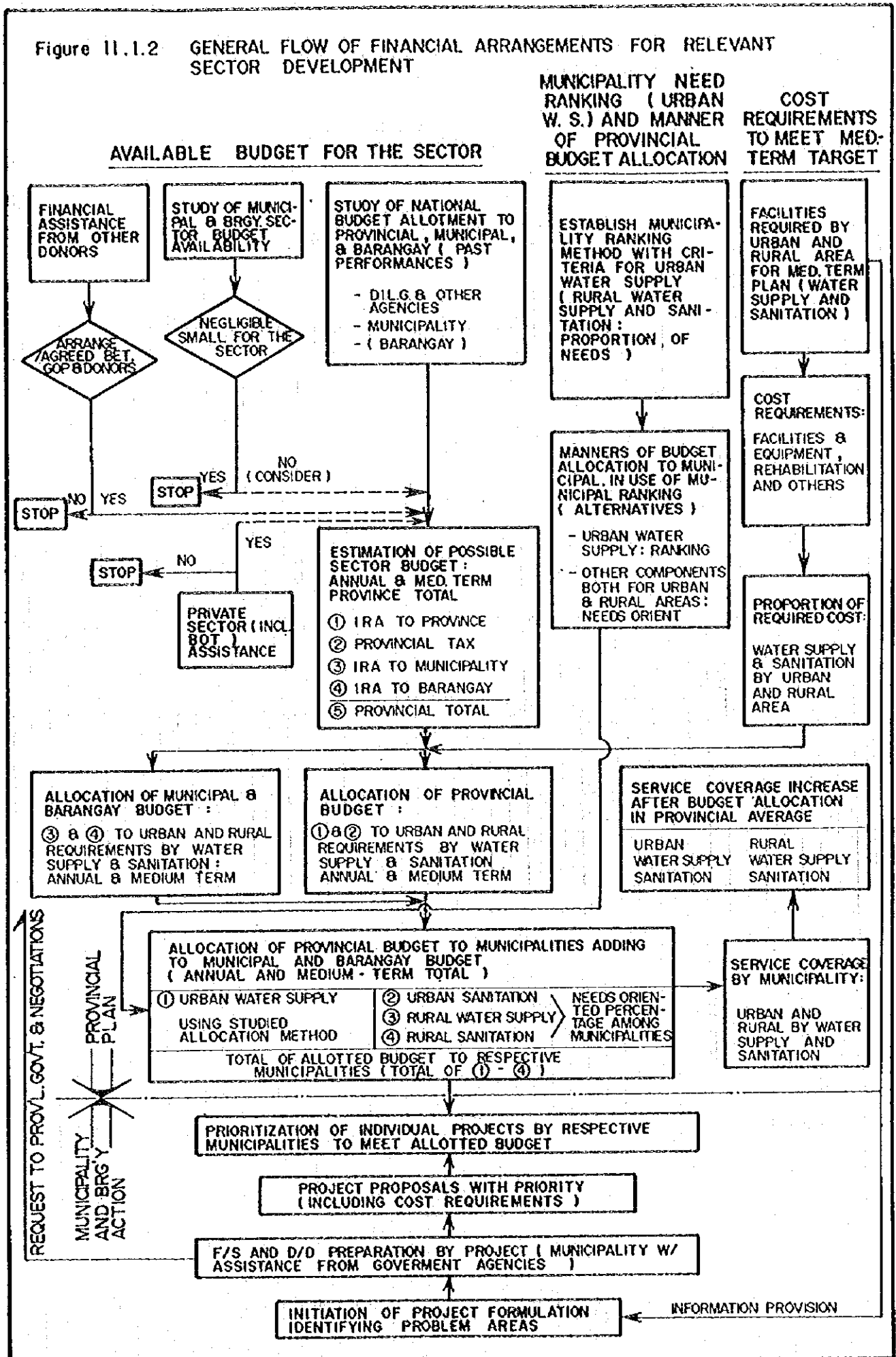
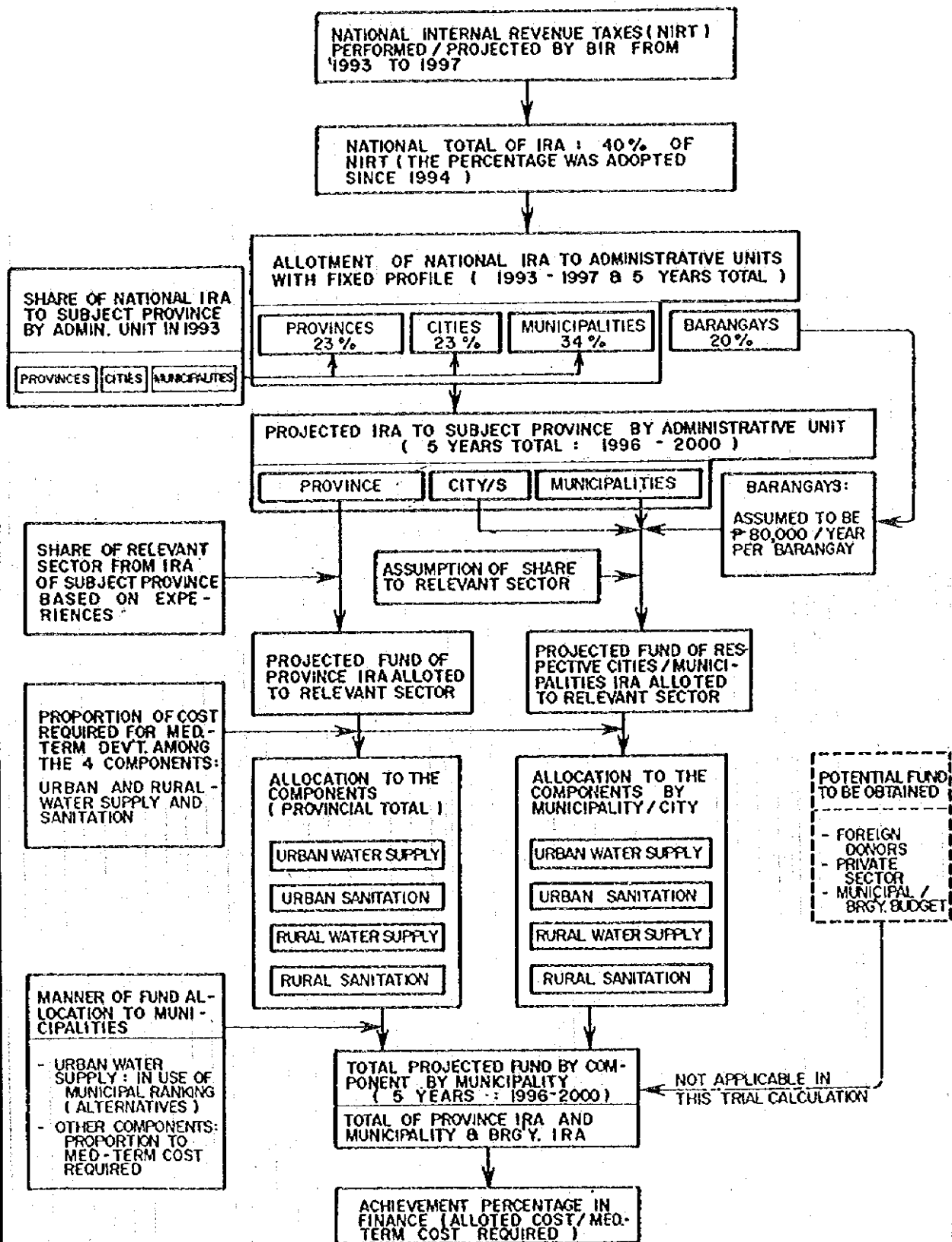


Figure 11.2.1 TRIAL ALLOCATION OF INTERNAL REVENUE ALLOTMENT (IRA) TO MUNICIPALITIES FOR RELEVANT SECTOR DEVELOPMENT



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	148,752	176,833	206,716	248,627	279,514	1,060,441
(b) municipalities including barangays	211,196	248,619	288,442	344,296	385,458	1,478,012
Abra de Ilog	16,201	19,123	22,233	26,595	29,809	113,961
Calintaan	14,320	16,917	19,681	23,558	26,415	100,891
Looc	7,017	8,205	9,470	11,244	12,552	48,487
Lubang	10,436	12,164	14,004	16,584	18,485	71,673
Magsaysay	13,932	16,381	18,987	22,642	25,335	97,276
Mamburao (Capital)	14,968	17,567	20,333	24,212	27,071	104,152
Paluan	15,716	18,502	21,466	25,624	28,688	109,997
Rizal	13,273	15,613	18,102	21,594	24,168	92,751
Sablayan	53,286	63,013	73,364	87,881	98,580	376,123
San Jose	32,444	37,995	43,902	52,187	58,292	224,820
Sta. Cruz	19,604	23,139	26,900	32,176	36,064	137,882
(c) Provincial total	359,948	425,453	495,158	592,923	664,972	2,538,453
4 Projected fund of IRA to Relevant Sector by Administrative Unit						
(a) province	5,950	7,073	8,269	9,945	11,181	42,418
(b) municipalities including barangays	8,448	9,945	11,538	13,772	15,418	59,120
Abra de Ilog	648	765	889	1,064	1,192	4,558
Calintaan	573	677	787	942	1,057	4,036
Looc	281	328	379	450	502	1,939
Lubang	417	487	560	663	739	2,867
Magsaysay	557	655	759	906	1,013	3,891
Mamburao (Capital)	599	703	813	968	1,083	4,166
Paluan	629	740	859	1,025	1,148	4,400
Rizal	531	625	724	864	967	3,710
Sablayan	2,131	2,521	2,935	3,515	3,943	15,045
San Jose	1,298	1,520	1,756	2,087	2,332	8,993
Sta. Cruz	784	926	1,076	1,287	1,443	5,515
(c) Province Total	14,398	17,018	19,806	23,717	26,599	101,538

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	17,815	20,360	1,697	2,545	42,418
2. Municipalities	25,988	25,821	2,912	4,400	59,120
Abra de Ilog	0	4,007	339	212	4,558
Calintaan	2,448	676	278	634	4,036
Looc	1,587	302	50	0	1,939
Lubang	727	2,021	50	69	2,867
Magsaysay	2,017	1,649	87	138	3,891
Mamburao (Capital)	627	3,081	275	182	4,166
Paluan	3,583	403	310	103	4,400
Rizal	2,795	0	168	747	3,710
Sablayan	8,242	4,922	828	1,053	15,045
San Jose	3,464	4,558	375	595	8,993
Sta. Cruz	498	4,201	150	666	5,515
3. Total	43,804	46,181	4,608	6,945	101,538

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, municipal and barangay level

With reference to allocation of national IRA by administrative level, provinces 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 1993 is simply employed (refer to Table 6.2.2, Main Report and Data Report). Allotments to barangays are added to the IRAs for 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 1993, about 2.7% 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 is counted on sector projects. The same percentage is applied for the allocation of municipal IRA to the sector.

(5) Available IRA of 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. Distribution of sector total fund to sub-components both in provincial and in 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.

### 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. 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: 1,000 Pesos

Sector Components	1996	1997	1998	1999	2000	Total 1996-2000	Total 2001-2010
<b>Direct Cost</b>							
1. Direct Construction Cost							
Urban Water Supply							
Level III System	0	17,796	26,694	26,694	17,796	88,979	231,750
Rural Water Supply							
Level II System	0	0	0	0	0	0	0
Level I Facilities	12,371	22,681	22,681	22,681	22,681	103,095	169,230
Urban Sanitation							
Household toilet	192	352	352	352	352	1,599	2,607
Public school toilet	341	625	625	625	625	2,842	9,363
Public toilet	533	976	976	976	976	4,438	3,803
Disinfection of Level I Deep & Shallow Wells	54	99	99	99	99	452	0
Rural Sanitation							
Household toilet	470	862	862	862	862	3,920	16,791
Public school toilet	1,028	1,884	1,884	1,884	1,884	8,563	19,613
Disinfection of Level I Deep & Shallow Wells	165	303	303	303	303	1,376	9
Urban Sewerage	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	375,497
Sub-total	15,154	45,578	54,476	54,476	45,578	215,263	828,663
2. Sector Management Cost							
Engineering Studies							
Feasibility Study and Detail Design	8,214	5,860	1,856	1,856	928	18,713	66,773
Construction supervision	590	1,793	2,149	2,149	1,793	8,473	33,042
Community Development and Training							
Institutional development & logistic support	4,086	3,820	3,820	3,820	2,059	17,604	78,268
Sub-total	12,890	11,472	7,824	7,824	4,780	44,790	178,083
<b>Total Direct Cost</b>	28,044	57,050	62,300	62,300	50,358	260,053	1,006,746
Contingencies							
1. Physical Contingency	4,207	8,558	9,345	9,345	7,554	39,068	151,012
2. Price Contingency	6,773	21,716	33,251	43,740	44,682	150,162	N.A.
<b>Total Investment Cost</b>	39,023	87,324	104,896	115,385	102,594	449,223	1,157,758

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 22.6% 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	39,023	87,324	104,896	115,385	102,594	449,223
Expected available fund						
National	0	0	0	0	0	0
Local (IRA)	14,398	17,018	19,806	23,717	26,599	101,538
Others	0	0	0	0	0	0
<b>Total</b>	14,398	17,018	19,806	23,717	26,599	101,538
Shortfall in funding (Additional Fund Requirements)	24,625	70,306	85,089	91,668	75,995	347,685

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 Calintaan, Paluan and Sablayan are more than or near double comparing to the provincial average of 22.6%. Others are in the range between 13 and 36% to the requirements.

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

Unit: 1,000 Pesos

Municipality	IRA Allocation to Municipalities <sup>1</sup>												Available Fund of Municipality (a)	Phase I Investment Cost Required <sup>2</sup> (b)	Achievement Percentage (%) in Finance (a)/(b)
	Urban Water Supply			Rural Water Supply			Urban Sanitation			Rural Sanitation					
	Allotted from Provincial Government <sup>3</sup>	Municipality Fund	Total	Allotted from Provincial Government	Municipality Fund	Total	Allotted from Provincial Government	Municipality Fund	Total	Allotted from Provincial Government	Municipality Fund	Total			
Abra de Ilog	0	0	0	1,538	4,007	5,545	126	339	465	84	212	296	6,306	18,643	33.8
Calintaan	2,138	2,443	4,586	184	676	860	73	278	351	179	634	813	6,610	11,741	56.3
Looc	2,138	1,587	3,725	527	302	829	84	50	135	0	0	0	4,689	36,029	13.0
Lubang	2,138	727	2,865	3,575	2,021	5,596	86	50	136	126	69	195	8,792	54,051	16.3
Magsaysay	2,138	2,017	4,154	2,588	1,649	4,237	132	87	220	224	138	363	8,974	65,092	13.8
Mamburao (Capital)	1,425	627	2,052	3,906	3,081	6,988	337	275	613	239	182	421	10,074	56,283	17.9
Paluan	2,138	3,583	5,721	138	403	542	100	310	414	36	103	139	6,816	16,105	42.3
Rizal	1,425	2,795	4,220	0	0	0	88	168	256	417	747	1,165	5,640	21,381	26.4
Sablayan	1,425	8,242	9,667	1,422	4,922	6,344	232	828	1,060	314	1,053	1,367	18,438	46,329	39.8
San Jose	1,425	3,464	4,890	4,676	4,558	9,235	372	375	747	630	595	1,225	16,097	98,316	16.4
Sta. Cruz	1,425	498	1,924	1,805	4,201	6,006	62	150	213	295	666	961	9,103	25,253	36.0
<b>Total</b>	<b>17,815</b>	<b>25,988</b>	<b>43,804</b>	<b>20,360</b>	<b>25,821</b>	<b>46,181</b>	<b>1,697</b>	<b>2,912</b>	<b>4,608</b>	<b>2,545</b>	<b>4,490</b>	<b>6,945</b>	<b>101,538</b>	<b>449,223</b>	<b>22.6</b>

(1) A sum of fund from National Government and from Provincial Government.

(2) Provincial IRA for urban water supply is distributed to the municipalities according to the ranking arrangement. Others are distributed in proportion to their required costs in Phase I.

(3) Phase I investment cost required: A total of construction cost and other cost for sector management and contingencies.

#### 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.

#### 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 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.

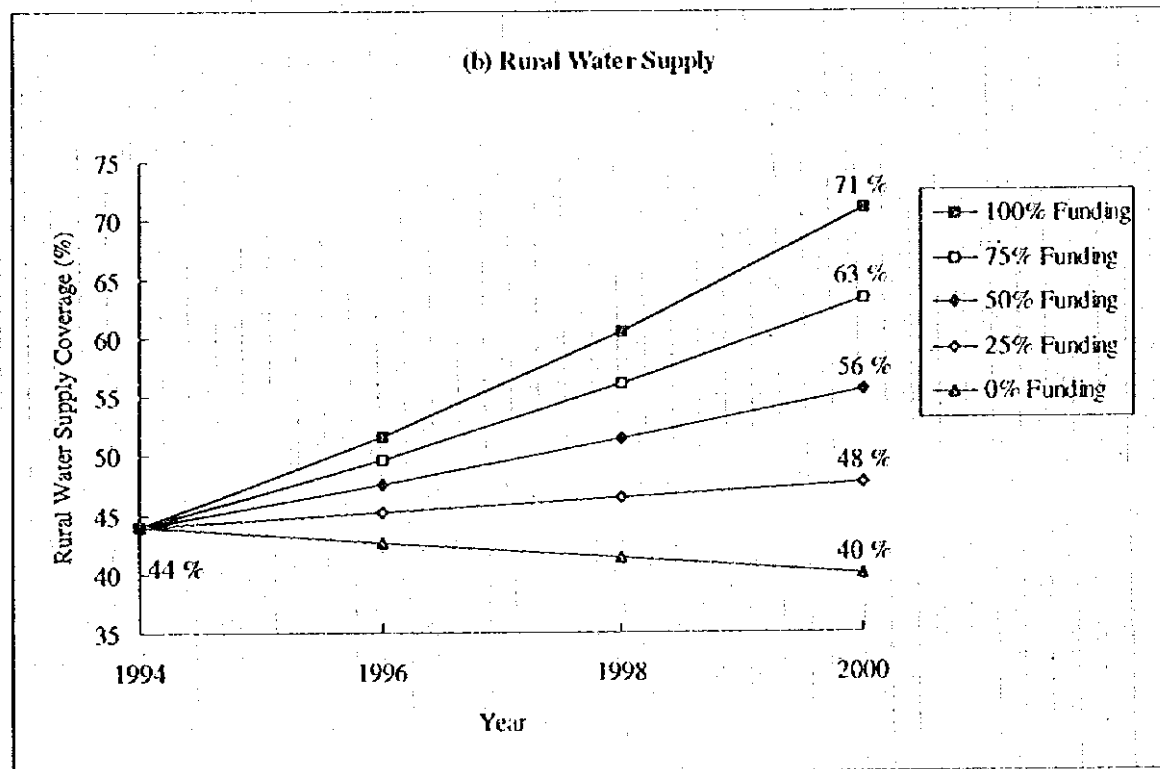
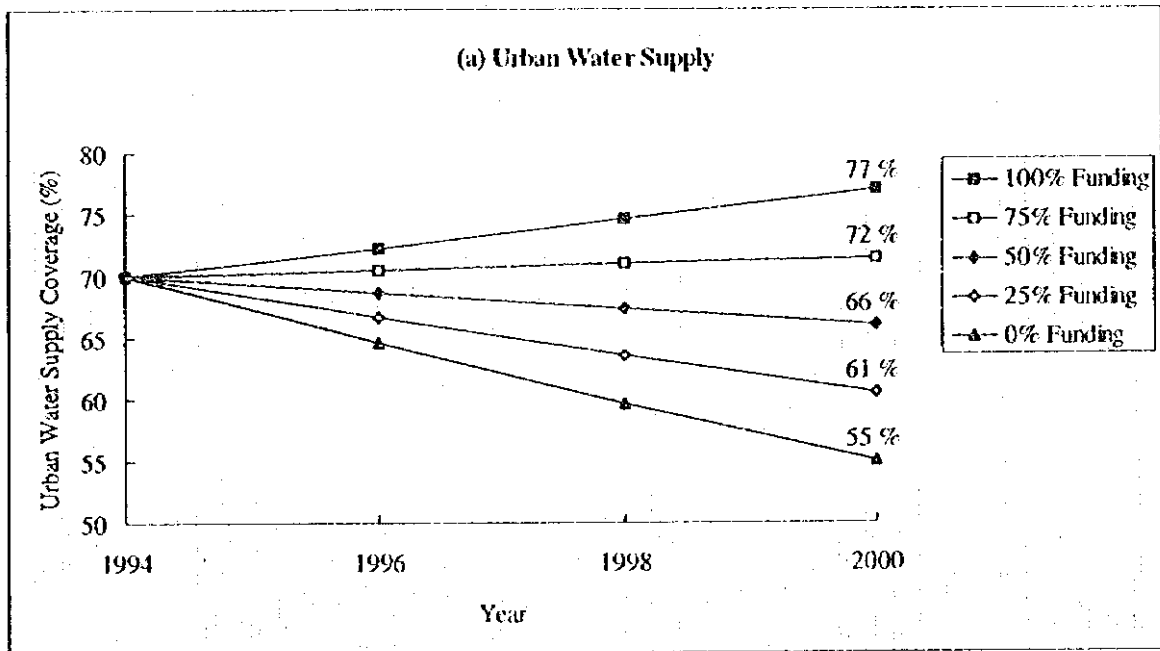
##### (2) The Second Reference Scenario

An intermediate scenario with 50 - 75 % funding range is considered. Urban and rural water supply coverages in the year 2000 are attained between 66 - 72% and between 56 - 63 %, respectively. For urban and rural sanitation (household toilets), coverage will reach to 67 - 72% and 70 - 73%, respectively on the assumption that required private investments are followed.

##### (3) The Third Reference Scenario

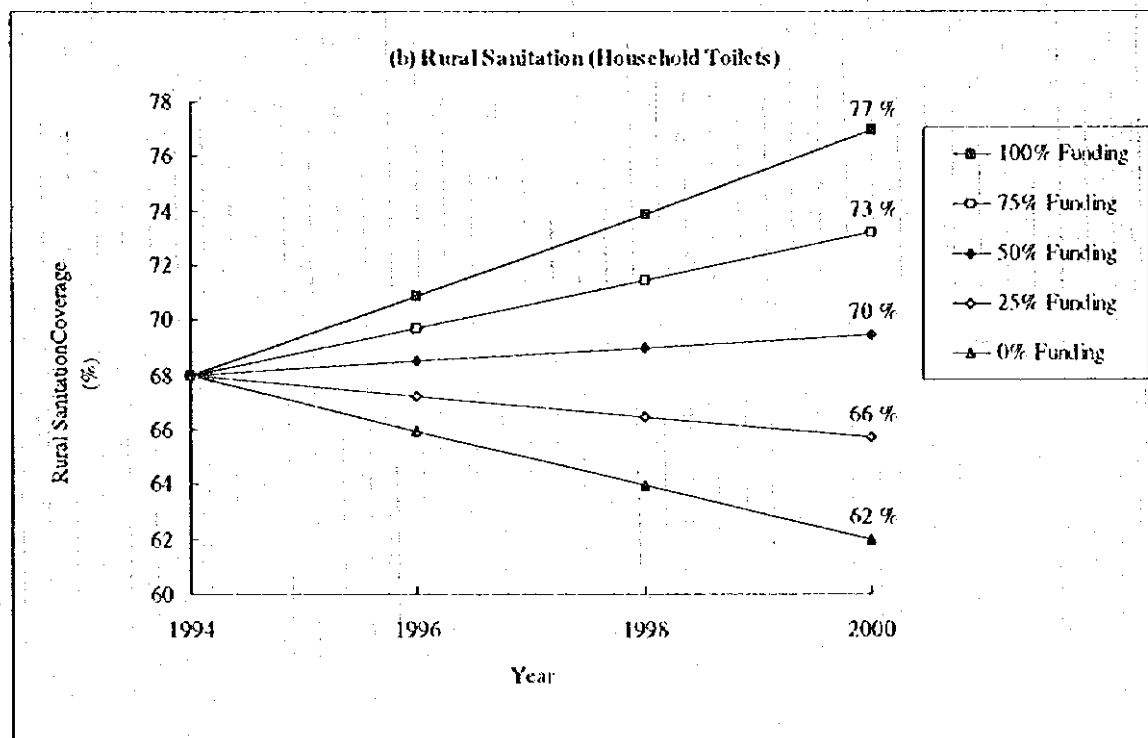
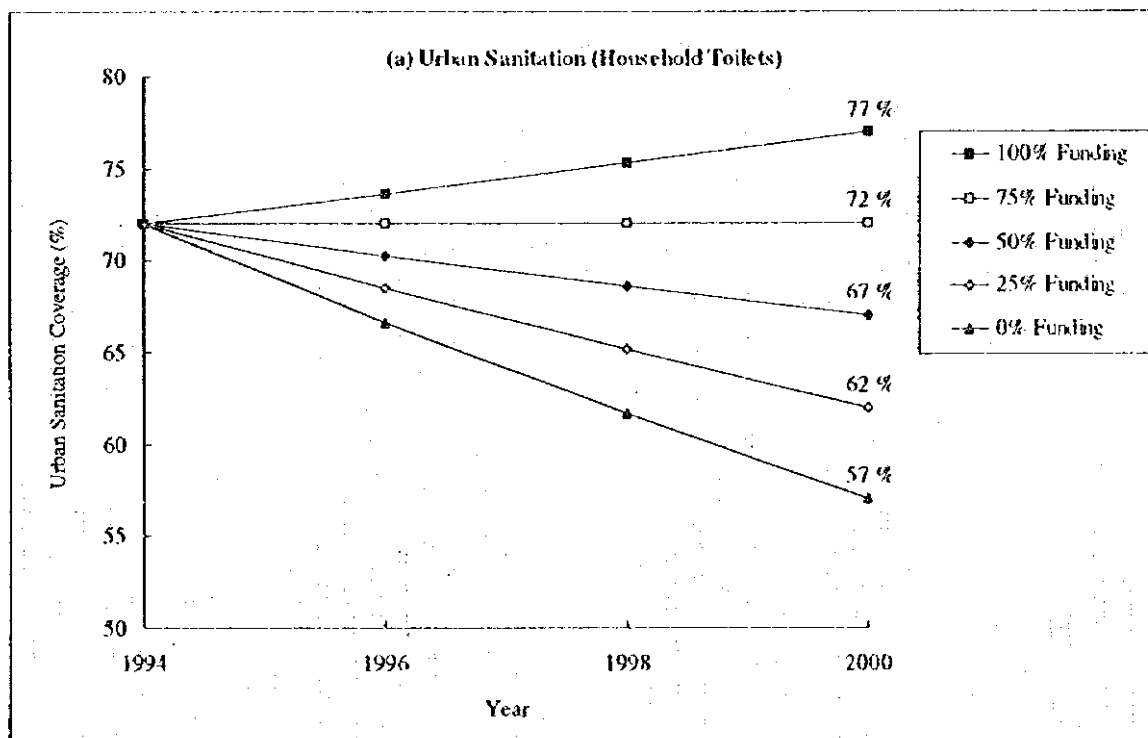
A 25% funding against the total requirements of Phase I is assumed as a possible achievement level with the augmentation of IRA. Urban and rural water supply coverage in the year 2000 will be attained at 61% and 48%, respectively, while urban and rural sanitation coverage will be at 62% and 66%.

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



Note: Percentages of the coverage between 1994 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 1994 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.

LWUA Medium-Term Plan includes Sablayan and San Jose municipalites 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 Other Local Funds

Utilization of other funds, the 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 availed 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. Looc is identified as the first priority municipality, followed by Magsaysay.

**Table 11.4.1 Municipal Investment Need Ranking for Urban Water Supply**

Municipality	Evaluation Factor			Scoring by the Factor			Overall Weighted Score	Investment Need Ranking
	% of Underserved and Unserved Population In Base Year	% of Underserved and Unserved Population In Phase I	% of Population Unserved by Level III Systems In the Base Year	Underserved and Unserved Population In Base Year	Underserved and Unserved Population In Phase I	Population Unserved by Level III Systems In Base Year		
Antipolo	18	43	22	0.40	1.00	0.40	0.61	7
Baras	13	31	84	0.40	0.80	1.00	0.63	6
Binangonan (Talim)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Cardona	12	16	64	0.40	0.40	0.80	0.46	9
Jala-jala	43	46	100	1.00	1.00	1.00	1.00	1
Morong	27	34	63	0.60	0.80	0.80	0.70	3
Pililla	21	29	81	0.60	0.60	1.00	0.66	5
Rodriguez	16	34	70	0.40	0.80	0.80	0.60	8
San Mateo	7	27	48	0.20	0.60	0.60	0.40	10
Tanay	24	38	50	0.60	0.80	0.60	0.67	4
Teresa	27	32	100	0.60	0.80	1.00	0.73	2
PW4SP Study Area	18	36	49					

Note: 1. Scoring to Underserved and Unserved Percentage.

2. Weight Allocation to Score.

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

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 Municipalities for Urban Water Supply**

Unit: 1000 Pesos

Ranking	Municipalities	Fund Distribution		IRA to Municipalities from National Government (2)	Available Fund Distributed to Municipalities (1)+(2)	Phase I Requirements	Accomplishment Percentage (%)
		Fund Distribution from Provincial Government (1)	Distribution Percentage (%)				
7	Abra de Ilog	0	0.00	0	0	0	0.0
5	Calintaan	2,138	12.00	2,448	4,586	7,122	64.4
1	Looc	2,138	12.00	1,587	3,725	29,483	12.6
4	Lubang	2,138	12.00	727	2,865	13,706	20.9
2	Magsaysay	2,138	12.00	2,017	4,154	33,734	12.3
7	Mamburao (Capital)	1,425	8.00	627	2,052	8,474	24.2
3	Paluan	2,138	12.00	3,583	5,721	13,116	43.6
10	Rizal	1,425	8.00	2,795	4,220	16,105	26.2
7	Sablayan	1,425	8.00	8,242	9,667	25,379	38.1
6	San Jose	1,425	8.00	3,464	4,890	37,875	12.9
11	Sta. Cruz	1,425	8.00	498	1,924	2,282	84.3
	<b>Total</b>	<b>17,815</b>	<b>100.00</b>	<b>25,988</b>	<b>43,804</b>	<b>187,276</b>	<b>23.4</b>

**Table 11.4.3 Municipal Investment Need Ranking**

Municipality	Weighted Score by Sub-sector					Synthetic Municipal Investment Need Ranking
	Urban Water Supply	Rural Water Supply	Urban Sanitation	Rural Sanitation	Total Weighted Score	
Abra de Ilog	0.10	0.25	0.10	0.20	0.65	5
Calintaan	0.12	0.10	0.20	0.10	0.52	9
Looc	0.25	0.25	0.25	0.05	0.80	3
Lubang	0.14	0.25	0.15	0.10	0.64	6
Magsaysay	0.23	0.20	0.25	0.15	0.83	2
Mamburao (Capital)	0.10	0.25	0.20	0.15	0.70	4
Paluan	0.17	0.25	0.25	0.25	0.92	1
Rizal	N.A.	0.10	0.25	0.15	0.50	11
Sablayan	0.10	0.10	0.20	0.15	0.55	7
San Jose	0.12	0.15	0.15	0.10	0.52	9
Sta. Cruz	0.08	0.15	0.15	0.15	0.53	8

**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).

## 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 <sup>1)</sup>	:	0.7%
(c) Percentage of (a) to monthly low household income in 2000 <sup>2)</sup>	:	1.5%

---

Notes:

- 1) Provincial average monthly median income in 2000 (7,864 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 (3,619 pesos per household) is estimated using LWUA data in Region IV.

### (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; 15m<sup>3</sup> per household) and projected income in 2000.

The monthly recurrent cost for the standard household is estimated at about 55 pesos in 1995 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 133 pesos using an average figure of water districts in Region IV (annual inflation rate of 10% is assumed).

Using the monthly water rate of 133 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 4%, which is commonly affordable.

---

(a) Estimated water rate for 15 m <sup>3</sup> (pesos) <sup>1)</sup>	:	133
(b) Estimated minimum water rate (1-10 m <sup>3</sup> ) (pesos) <sup>2)</sup>	:	89
(c) Percentage of (a) to monthly median household income in 2000 <sup>3)</sup>	:	1.7%
(d) Percentage of (a) to monthly low household income in 2000 <sup>3)</sup>	:	3.7%
(e) Percentage of (b) to monthly low household income in 2000 <sup>3)</sup>	:	2.5%

---

Notes:

- 1) Estimated water rate (15m<sup>3</sup>) in 2000 referring to the average figure of existing water districts in 1994 in Region IV 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 10m<sup>3</sup> 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 740 pesos for a flush type and 260 pesos for a pour-flush type, respectively (refer to recurrent cost in Chapter 10). 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)	:	740
(b) Repayment for Pour Flush Type (pesos)	:	260
(c) Percentage of (a) to monthly median household income in 2000 <sup>1)</sup>	:	9.4%
(d) Percentage of (b) to monthly low household income in 2000 <sup>1)</sup>	:	7.2%

---

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 sector 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 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 determines 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, 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 FHSIS. (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. 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 (refer to item 5) 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.







JICA