

CHAPTER 1 INTRODUCTION

1.1 General

This report presents the results of "The Study on the Irrigators Association Strengthening Project in National Irrigation Systems" (the Study). This is in accordance with the Implementing Arrangement (I/A) on the technical cooperation and the Minutes of Meeting agreed dated October 1, 2001 between the Republic of the Philippines represented by the National Irrigation Administration (NIA) and the Japan International Cooperation Agency (JICA)

1.2 Background and Objectives

1.2.1 Background of the Study

One of the major reasons for the fluctuation of production in Philippine agriculture is insufficient and poorly managed agro-infrastructure, particularly irrigation facilities for food-crop production. The Government of the Philippines (GOP/the Government) is attempting to stabilize crop production by increasing the irrigated areas to a ratio of 73.8% of all irrigable areas nationwide by the year 2005, mainly through the construction and rehabilitation of existing irrigation facilities. The NIA is responsible for irrigation development. However, various problems such as shortage of operating budget and insufficient finance, poor management systems, and low collection efficiency of the irrigation service fee (ISF) have greatly affected the NIA's capability to accelerate irrigation development. To improve the situation, the GOP through the assistance of JICA in the year 2000 to 2001 conducted the study on strengthening of NIA's management systems. The NIA is about to start the restructuring of its management system in accordance with the programs formulated in the said study.

The NIA is similarly implementing the irrigation management transfer (IMT) program, the purpose of which is to turn the responsibility for operation and maintenance (O&M) of irrigation systems below the main facilities of the national irrigation system (NIS) over to irrigators associations (IAs). The program is being implemented in accordance with the Agriculture and Fisheries Modernization Act (AFMA, 1997). However, there are significant technical and managerial

weaknesses of IAs that affect their capacities to implement IMT effectively. In fact, most IAs are faced with similar constraints, i.e., low rates of ISF collection, poor condition of facilities, inadequate O&M, and unstable water supply. To ensure stable food-crop production, the efficient management of irrigation systems at the farm level is essential, and should be achieved through building the capacity of IAs.

With this background, the Government requested the Government of Japan (GOJ) in June 1999 to extend technical assistance for conducting an investigation and study on NISs concerning, among other things, clarification of constraints in IAs, formulation of institutional strengthening programs of IAs, and verification of strengthening programs in the representative NIS areas and IAs. In response to this request, the GOJ sent a preparatory study team to the Philippines and conducted the preliminary study. Both governments agreed to implement the Study.

1.2.2 Objectives of the Study

The objectives of the Study are to:

- 1) formulate an action plan for strengthening irrigators associations (IAs) of the National Irrigation Systems (NISs), aiming at efficient management of irrigation systems and achieving the objectives of IMT; and
- 2) transfer technology for planning procedures and relevant methodologies to counterpart personnel and IA members.

1.2.3 Study Target

The Study Target consists of two groups to be conducted in two phases:

- 1) Phase 1 : All 196 NISs, and 2,000 IAs located nationwide; and
- 2) Phase 2 : Selected NISs and related IAs and some well managed/functional IAs in Communal Irrigation Systems (CISs).

1.3 Study Procedures and Progress

1.3.1 Study Procedure

The Study was carried out in two phases. Phase 1 was comprised of the first fieldwork and its results were presented in an Interim Report. Phase 2 consisted of two periods of field work and two periods of home work; all results of the Study are presented in this final report. The components of the study in each phase were as follows:

(1) Phase 1

(a) 1st Field Work:

- discuss inception report;
- identify international partnership assistance projects/programs;
- identify and analyze present conditions and constraints on NISs and IAs;
- classify NISs and IAs and select representative NISs and IAs;
- formulate draft action plan; and
- prepare interim report.

(2) Phase 2

(a) 2nd Field Work:

- discuss interim report;
- carry out detailed investigation and study on representative NISs and IAs;
- formulate action plan;
- prepare implementation program of action plan and evaluate outputs of action plan; and
- present overall assessment and recommendation.

(b) 1st Home Work:

- prepare draft final report;
- discuss and compile draft final report; and
- produce campaign tools and materials for dissemination seminar.

(c) 3rd Field Work:

- discuss draft final report; and
- hold dissemination seminar.

(d) 2nd Home Work:

- prepare final report.

1.3.2 Study Progress

The study progress is chronologically described below.

(1) Preparatory action in Japan (March 2002)

- 1) Preparation of inception report
- 2) First advisory committee at the JICA headquarters in Tokyo on March 19

(2) Progress in Phase 1 (May - August 2002)

- 3) Inception meeting between NIA and the Study Team on May 8
- 4) Orientation workshop at NIA central office on May 14 - 15

- 5) Regional orientation workshops at the 12 places for the period from May 20 to June 3
 - 6) Collection of supplemental data and information on NIS and IAs through the inventory survey conducted for the two-month period from May to July
 - 7) Orientation workshop at NIA central office for the Regional Office Managers and the representatives of the provincial confederation of IAs on June 19
 - 8) Inter-agency coordination committee at NIA central office on June 21
 - 9) Production of a campaign video showing an advanced IA in June and July
 - 10) Preparation of draft manuals for IA training and IA operation in June to August
 - 11) Second advisory committee at JICA headquarters in Tokyo on July 15
 - 12) PCM workshop at NIA central office for formulating draft action plan for IA strengthening on July 18 and 19; joint participation of NIA counterparts, representatives of NIS superintendents and JICA Team
 - 13) Production of homepage for the Study in July
 - 14) Third advisory committee both at the JICA headquarters in Tokyo and JICA Philippines Office through tele-conference system on August 9
 - 15) Preparation of Interim Report
 - 16) Explanation of Interim Report to NIA on August 16 and preparation of the Minutes of Meeting between NIA and the Study Team based on the discussion
- (2) Progress in Phase 2 (September 2002 - July 2003)
- 17) Explanation of final version of Interim Report to NIA on September 19 and preparation of the Minutes of Meeting between NIA and the Study Team based on the discussion
 - 18) Second inter-agency coordination committee at NIA central office on September 20
 - 19) Participatory based field survey and workshops in the 17 pilot IAs selected from six NISs; Angat (September 23 - October 11), San Fabian (October 16 - 26), Bago (October 21 - 31), Pulangui (November 4 - 15), Labangan (November 18 - 29) and Mal (November 21 - December 2)
 - 20) Site reconnaissance of three NISs (Balanac, Sta. Maria and Agos) under IMT in Region IV in September
 - 21) Participation in technical exchange program between NIA and Chinese mission organized by JICA (China Irrigation and Drainage Development Center / Ministry of Water Resources under JICA technical assistance project) at site (Mal NIS) and NIA central office in Manila during November 21 to 25
 - 22) Development of GIS database and GIS system on IAs
 - 23) Site reconnaissance of Badagoy CIS in South Davao Province as an advanced community irrigation system on December 3
 - 24) Site reconnaissance of Districts 3 and 4 of MRIIA under IMT in Region I in December
 - 25) Production of the 2nd and 3rd campaign videos showing NIA and IA partnership in irrigation system management and process of action plan development by IA members themselves
 - 26) Preparation of a campaign poster to appeal to the unity and cooperation of IAs
 - 27) Fourth advisory committee both at the JICA headquarters in Tokyo and JICA Philippines Office through tele-conference system on December 26
 - 28) Study and development of IA strengthening Action Plan
 - 29) Update of the Study homepage as of September and December
 - 30) Preparation of Progress Report

- 31) Explanation of Progress Report to NIA on February 24, 2003 and preparation of the Minutes of Meeting between NIA and the Study Team based on the discussion
- 32) Third inter-agency coordination committee at NIA central office on February 26, 2003
- 33) Fifth advisory committee both at the JICA headquarters in Tokyo and JICA Philippines Office through tele-conference system on April 7, 2003
- 34) Preparation of Draft Final Report
- 35) Explanation of Draft Final Report to NIA on April 29, 2003 and preparation of the Minutes of Meeting between NIA and the Study Team based on the discussion
- 36) Action workshops in San Fabian RIS (May 5 - 9) and in Bago RIS (May 19 - 23)
- 37) Orientation and training of GIS developed in the Study on May 15 - 16
- 38) Post-study seminar on the Study on May 28
- 39) Wrap-up meeting between NIA and JICA on May 29
- 40) Preparation of Final Report

1.4 Technology Transfer

The Study Team transferred technology to the following counterpart personnel in the course of the field study.

Name List of JICA Study Team Personnel and NIA Counterpart Personnel

| JICA Study Team | | NIA Team | |
|--|------------------------|---|--------------------|
| Position | Name | Name | Department |
| Team Leader/Development Plan | Mr. Yutaka Murai | Mr. Avelino M. Mejia | IDD/NIA |
| Irrigators Association / Organization Management | Mr. Yuuichi Fukasaka | Mr. Renato S. Gamboa | IDD/NIA |
| Water Management | Mr. Keisuke Sakurai | Mr. Celso G. Bernardo | SMD/NIA |
| Agricultural Infrastructure | Mr. Akira Kawai | Mr. Basilio Lozano, Jr. | SMD/NIA |
| Agriculture / Post Harvest Processing | Mr. Akio Maeda | Mr. Bayanip Ofrecio | IDD/NIA |
| Agricultural Policy / Legal Systems | Ms. D. C. E. Erfe | Atty. Charlotte Cabida | LD/NIA |
| Socio-economy | Mr. Masashi Takano | Mr. Carmelo M. Cablayan | IDD/NIA |
| Rural Sociology / Farmers' Organization | Mr. V. E. Cabezon | Mr. Leo L. Gallego | IDD/NIA |
| GIS | Mr. Ki-ichiro Nishioka | Mr. Reynaldo P. Baloloy | PDD/NIA |
| Database | Mr. E. B. Tato, Jr. | Ms. Candida O. Ginez Mr. Celso G. Bernardo | IDD/NIA SMD/NIA |

Note: IDD : Institutional Development Dept., SMD : System Management Dept., LD : Legal Dept.

The Study Team conducted technology transfer to the counterpart personnel and IA members involved during the field study period primarily through on-the-job-training. Prior to the field work, the respective team members explained to the counterpart personnel and IA members information about: (a) the purpose of the field investigation, (b) formulation of an action plan, (c) methodology of the

works to be investigated, (d) analytical methods and (e) application of the investigation results to the planning. A participatory approach was extensively used during the field investigations through the conduct of several workshops. The technology transfer was achieved through a series of exchange of views and opinions among the counterpart personnel, IA members, personnel of concerned central and local agencies and the Study Team members.

The Study Team monitored the progress and performance of technology transfer through monthly reviews of reports prepared by the respective counterparts.

CHAPTER 2 POLICY FRAMEWORK ON NIS-IA STRENGTHENING

2.1 Overall Policy and the NIA's Mission

The NIA's mission, as a government corporate entity under the administrative supervision of the Department of Agriculture (DA), is essentially to provide irrigation through sustainable development of the country's water resources. It is a service institution catering to the needs of no less than two million farmers in lowland irrigated areas. There are currently about 3.12 million ha of potential irrigable area, 43% of which, or roughly 1.34 million ha, is irrigated. The irrigated areas comprise around 679,000 ha of NISs, 486,000 ha of communal irrigation systems (CISs), and 174,000 ha of private irrigation systems (PISs).

Under the AFMA, the task of developing the remaining potential irrigable lands and maintaining existing irrigation systems has been clearly delineated among the the NIA, LGUs and IAs. The NIA's work is focused on NISs, with the exception of some selected and donor-assisted CISs. While the CIS is taken away from the NIA, its premier role in irrigation and water resource development is not diminished. The NIA is still mandated to continue providing technical support to the LGUs in planning, construction, design and institutional development of CISs.

The basic policies explicit in the AFMA as regards the development of NISs are: (a) to generate additional irrigated areas, either through construction and/or rehabilitation; (b) to gradually transfer the operation and maintenance of national systems, notably secondary laterals and other tertiary facilities to IAs; and (c) to review and recommend reasonable ISFs to cover the cost of operations and maintenance of the systems. The NIA's program over a 10-year period (2001-2010) is to generate 477,000 ha of new areas and 814,000 ha of rehabilitated areas. Realizing these targets is not easy due to the increasing budget deficit of government and fragile financial position of the NIA. The option thus far is letting the IAs maintain the systems under an agreed sharing of benefits and costs.

2.2 The NIA's Streamlining Plan

The NIA released the latest version of its streamlining plan in January 2002, borne out of the recommendations of the JICA-assisted study on strengthening of the NIA's management system completed in October 2001. The streamlining plan essentially adopted the structural recommendations of the JICA-funded study, on: (a) the consolidation of regional offices from 13 regional and two operations offices

(MRIIS and UPRIIS)¹ to six area operations offices; and (b) the merging of the Provincial Irrigation Office (PIO) with the National Irrigation System Office (NISO) into the Irrigation Management Office (IMO) at field level. A comparative analysis of the organizational features between the streamlining plan and the JICA-funded study is given in Table 2.1.

The Department of Budget and Management (DBM) has completed evaluation of the NIA's streamlining plan and recommendations and is waiting for an Executive Order (EO) to be issued by the President of the Philippines, subject to Congressional deliberation and approval. Meanwhile, a committee chaired by the Deputy Administrator is also preparing guidelines for the reorganization. The National Economic and Development Authority (NEDA) is closely monitoring the reorganization as this will have an impact on the processing of any future NIA. The foremost issue in implementing the streamlining plan is to secure the required budget and/or funds, most of which would be used as retirement benefits for redundant personnel. Without this fund, the intended effect of having a financially viable agency that can adequately allocate its resources on O&M and accelerate the implementation of IMT would be derailed.

2.3 Irrigation Management Transfer

IMT is a generic term being used by the NIA to describe its participatory approach to the O&M of the NIS. It generally involves a transfer of the management of the O&M of NIS secondary canals and tertiary facilities to IAs. There is a term of Joint System Management (JSM) that has the same meaning as IMT. The NIA uses IMT to differentiate it from other forms of turn-over programs. Thus even prior to the AFMA, the NIA has in fact been implementing various forms of IMT, broadly termed as Management Transfer Program (MTP), in the form of "stage" or "type" contracts. NIA implements Type I, II, and III contracts as part of the irrigation management transfer program. Type I is canal clearing. Type II is ISF collection and Type III is full turn-over including the assets. These contracts are still being implemented in the absence of a concrete IMT policy. Type III is very rare because of the AFMA.

The present IMT in the NIS considers the transfer only of the management of the system's secondary facilities and does not allow for the wholesale transfer of the assets to the IAs. IMT or JSM issued under some of the NISs under IOSP II, WRDP

¹ MRIIS : Magat river integrated irrigation system
UPRIIS : Upper Pampanga river integrated irrigation system

and ISIP II² funded by the World Bank (WB) and Asian Development Bank (ADB), respectively integrated maintenance and collection of the ISF into a single contract. This is similar to combined Type I and II, and thus substantially not different, except in the compensation mode.

The NIA compensates the IAs for services rendered either in cash (for canal clearing) or as an allocation from collected ISFs. The rates are fixed for Type I and II contracts.³ In the case of the existing IMT/JSM contracts, the sharing of ISF funds between the NIA and IA varies from one system to another, either at 50%-50%, 40%-60%, or 30%-70%. The bigger share can either go to the NIA or IA depending on the extent of obligation between each party and expected productivity. The IAs are obliged to do minor repairs of canals using their share from ISFs, unlike in Type I where the IA concerned is paid by the NIA for canal clearing.

The NIA has not articulated a vigorous policy on IMT. The NIA's draft policies and guidelines are generally inadequate in terms of: (a) delegation of adequate authority (ownership) to the IAs; (b) sufficient mutual accountability between the NIA and IA; and (c) adequate incentives to develop self-reliant IAs. The NIA will retain greater de facto control. The NIA should explore all the legal means to have a clear-cut IMT policy given its reduced financial support from the national government. A case in point is the on-going ADB-assisted Southern Philippines Irrigation Sector Project (SPISP) where ownership of the irrigation facilities will be transferred to the IAs. Drawing from its experience in CISOs, the SPISP and a few Type III contracts, where IAs have complete control over the facilities, the NIA can prepare a unified policy for the remaining NISOs.

2.4 Major Development Studies and Projects

The total irrigated area is currently estimated at only 1.34 million ha or an increase of 148% over a period of the past 37 years. The growth has been generally slow mainly due to depleted funds and inefficient management systems by the NIA. As a result of the latter problem, the JICA-assisted study on the strengthening of the NIA's management system completed in 2001 recommended structural changes and several of the recommendations are now being considered by the agency.

During the period from the 1970s until the early 80s, ODA in the form of technical

² IOOSP : Irrigation Operation Support Project (WB)
WRDP : Water Resources Development Project (WB)
ISIP : Irrigation System Improvement Project (ADB)

³ A brief review and progress of IMT is presented in Chapter 5 in this report.

and loan support for the development of NISs expanded remarkably. Two of the largest multi-purpose water resources development projects, UPRIIS and MRIIS, which covered about 190,000 ha corresponding to 27.7 % of the current NIS service area, were constructed in the 1970s.

In the late 1980s, however, the WB and ADB changed their focus to financing rehabilitation projects rather than new irrigation projects, mainly due to the low irrigation performance of existing NISs. The Japan Bank for International Cooperation (JBIC) and JICA, the largest donors to the irrigation sector in the Philippines, have continued to support development of NISs and capacity building of IAs in line with the government's policy on irrigation. Clearly, the government encourages capital investment in small to medium-sized irrigation projects and allows the IAs to take an active part in O&M of the systems. The following table summarizes the major features of important irrigation projects being implemented.

Features of Major Irrigation Projects

| Project (Fund) Period | Project Component | Institutional Organization of IA | ISF sharing | Turn-over Subject | Extent of Turn-over |
|-------------------------|---|---|---|---|---|
| IOSP-II (WB) 1993-2000 | - Rehabilitation of 17 NISs - Improvement of O&M - Institutional development for NIA & IA - Agricultural support | CIA | Variable (e.g. NIA: 50%, IA: 50%) | O&M and ISF Collection | Full and Partial turn-over of system: Secondary and tertiary |
| WRDP (WB) 1997-2002 | - Improvement of water resources planning and management - Improvement of watershed management - Rehabilitation of 18 NISs - Institutional development for NIA & IA - Environmental improvement | CIA | Variable | O&M and ISF Collection | 1) Full turn-over of system less than 3,000ha: All system, 2) Progressive turn-over of O&M more than 3,000ha: Secondary and tertiary |
| ISIP-II (ADB) 1997-2004 | - Rehabilitation of 9 NISs - Institutional development for NIA & IA - Agricultural improvement - Environmental and social improvement and monitoring | Farmer Irrigators Service Cooperative (FISCO) | Variable | O&M and ISF Collection | Joint System Management (JSM): IA is responsible for secondary and tertiary |
| SPISP (ADB) 2000-2006 | - Institutional development for NIA and LGU - Participation and transfer to IA - Construction and rehabilitation of more than 10 CISs, 10 NISs and 8 small reservoir irrigation system - Construction of access and service roads - Environmental and social measures | IA | Full cost recovery Following CIS policy | Irrigation facility | After Interim partial transfer and joint management phase, full turn-over of system less than 3,000ha: All system |
| Casecanan-IC (JBIC) | - Development of new irrigation are of 30,500 ha - Rehabilitation of UPRIS area of 103,000ha - Improvement of O&M - Institutional development | COFIA (Council of Farmers Irrigation Association) | Progressive sharing scheme | Operation, Maintenance, Billing & collection of ISF | Lateral canals cover about maximum of 2,000 ha |

Source : NIA

2.5 Issues, Recommendations and Lessons Learned

The following is a summary of issues, recommendations and lessons learned extracted from available project documents.

(1) Active Participation of IAs

The active participation of IAs has been proven essential in the entire spectrum of rehabilitation works, beginning from planning to execution. Conscientious implementation and assurance of sustainability have been documented in past projects involving full participation of IAs. In this context, capacity development of IAs and provision of effective tools for IA

participation are required.

The link to this success is provision of Institutional Development Officers (IDOs) who constantly provide coaching and technical support to IAs. Recently, however, IDOs have been terminated at NISO due to funding problems borne out of the termination of O&M subsidy to the NIA. To resolve this problem, redeployment of existing IDOs from other NISO and Regional Irrigation Offices (RIOs) is being suggested.

(2) O&M cost

O&M cost can be significantly reduced through: (a) improved structures; and (b) rationalization of systems management. One of the important considerations to effect this change is to replace the current NIA's ISF billing system from retail to wholesale. Direct billing of IAs is suggested to replace the current and costly practice of collecting ISFs from individual farmers (water retailing).

(3) IMT

In promoting the IMT, staff redundancy in field offices is a serious issue. The responsibility of the NISO is reduced from O&M of the system to only monitoring the IA on O&M activities. Therefore, adequate financing for early retirements is indispensable to implement the IMT. The elimination of direct and indirect O&M subsidies to the NIA should follow the NIA's downsizing. After completion of rehabilitation works and IMT, the subsidies for O&M are not necessary. The NIA and IA should generate their O&M cost from collection of fees from the beneficiaries.

For the implementation of the IMT, the IMT contract needs further refinement, since it does not have a self-sustaining mechanism to ensure proper O&M by the IAs, and the sharing of ISF revenue is still fraught with problems. Although the IAs have autonomy for O&M of their irrigation systems and receive some funds in the form of a share of ISFs, they remain dependent on the NIA. Therefore, the IOSP II and WRDP proposed that an O&M fund be specifically earmarked in the IAs' share of the ISF revenue and that a trust fund for system improvements be established consisting of farmer's equity, i.e., cash payment. The ISF sharing system proposal has its drawbacks. The IAs frequently complain of late remittance of their share by the NIA. Providing farmers with the option of continuing with ISF sharing or having

fixed payment based on cavans/ha or volume of water supplied by the NIA is recommended.

CHAPTER 3 IRRIGATION WATER ECONOMY AND LEGAL FRAMEWORK OF NIS-IA

3.1 Water Pricing and ISF

The irrigation sector uses approximately 42.42 km³/year or 79% of the total water of the nation followed by 5.91 km³/year or 11% for domestic or municipal consumption and 5.37 km³/year or 10% for industry. The NIA's treatment of water pricing and ISF determination, however, is rarely determined from an economic point of view. The current ISF rate solely represents the cost of facilities and services required for storage and distribution of water because water is conceived as a social good. The 10-year deferment of water cost payment to the National Water Resources Board (NWRB) by the NIA indicates that irrigation water is not an economic good.

On the contrary, the NWRB considers water resource as an economic good. The NWRB is authorized to collect fees for water rights from concerned government agencies and private sectors based on quota and progressive demand. The NWRB currently bills the NIA for irrigation water rights at the rate of Php 5.50/liter/per sec plus a flat rate of Php 500 or roughly Php 8.60 per ha at 50% irrigation efficiency.

The NIA is not paying the NWRB at all. Unlike the private sectors to which the NWRB levies a strict penalty in case of delinquency, most government agencies, with the exception of the Water Districts under Local Water Utilities Administration (LUWA), are ignoring the payment to the NWRB. The total accumulative amount due during the period 1980 - 1999 chargeable to the NIA is estimated at Php 33 million.

3.2 NIS Cost Recovery and Issues

3.2.1 Present Status and Issues on Cost Recovery and the ISF

Under the existing law, there is no cost recovery for national irrigation systems. Instead, the IAs are obliged to pay an ISF, which forms part of the NIA's operating budget, and is the largest single source of revenue. ISF rates are based on unit area (ha) of land irrigated/benefited. Implicitly, there is subsidy involved because capital cost is not recovered. The current ISF rates per ha for the surface gravity type of irrigation scheme are two cavans of paddy during the wet season and three cavans during the dry season. Pumps are charged at a higher rate of about eight cavans of paddy during the wet season and 12 cavans during the dry season. Valuation is

based on the existing support price for paddy. The payment can be either in cash or in kind. The NIA has a policy of waiving the payment of the ISF, however. The 40-cavan exemption rule, exempts a farmer from paying the ISF, if the harvest is 40 cavans or below per ha. On top of this policy, the NIA gives cash rebates of 10% for payment made in cash before the deadline.

Several issues affect the current ISF policy. First, the ISF rates are considered very low, as they are based on the 1975 level and have never been adjusted upward since then. This has badly affected the NIA's cash flow, and consequently O&M for system maintenance has been neglected. Second, the 40-cavan exemption has: (a) deprived the NIA of substantial ISF revenue, (b) been inequitable for farmers whose harvest is slightly above 40 cavans, and (c) been considered a lucrative business for abuse and collusion between NIA's field personnel and farmers. The policy has likewise severely affected the cash flow of the NIA. The 10% rebate also contributed to the deteriorating financial position of the NIA. In addition, the payment "in kind" has contributed further losses in the form of poor quality and pilferages. Compounding these problems is the low collection efficiency, which stood at around 40%-50% of billed ISF over the past five years. The ADB Cost Recovery Study has estimated the losses to be significant and recommended the need to amend these policies to improve the deteriorating financial position of the NIA.

Relative to IMT, the NIA's challenge is to formulate a cost recovery scheme, in light of its financial difficulties and continuing role to increase productivity among lowland irrigated rice farmers and consequently reduce poverty. The NIA has two options: (a) to charge for the full cost of O&M, which implies upward adjustment of the current ISF rates coupled with increased ISF collection efficiency; or (b) full cost recovery for whatever capital cost is spent for new and rehabilitation projects eligible for turn-over to IAs. Its cost recovery policy with the on-going ADB-assisted SPISP, including the previous CISOs, should serve as legal precedent.

3.2.2 ADB's Study on ISF Alternative

In general, the ADB Study completed in 2000 recommended new ISF rates to be able to recover the full cost of O&M and a portion of the capital investment. As per the AFMA's direction, the NIA estimated the rate in 1998 to be about Php 3,292/ha, while the ADB estimated at Php 3,325/ha.¹ The latter cost estimate was based on

¹ The current ISF rate (5 cavans for two crops a year) is priced at Php 2,350/ha/year, applying the NFA's rate of Php 9.5/kg on an average of wet and dry season cropping.

the weighted average cost of diversion dam and reservoir systems, corresponding to 6.5/7.5 cavans /ha of paddy subject to a selling price of Php 9.50/kg.

The ADB Study further assessed the full O&M cost recovery at NIS level, on the basis of the NIA's estimate in 1998 of Php 2,300/ha, corresponding to about 4.8 cavans/ha. This amount was found to be more than double the actual O&M expenditure by the NIA of Php 1,109/ha in 1999. The breakdown is given below.

Comparison of O&M Cost ADB Assessed and Current Expenditure

| O&M expenditure item | Recommended O&M cost at NIS level (Php 2,300/ha) | | Actual expenditure of NIS in 1999 (Php 1,109/ha) | |
|--------------------------------------|--|---------------------|--|---------------------|
| a. Water scheduling and gate open | Php | 736 (32%) | Php | 576 (52%) |
| b. Canal cleaning labor | Php | 644 (28%) | Php | 344 (31%) |
| c. Gate repairs / greasing and locks | Php | 391 (17%) | Php | 78 (7%) |
| d. Hand held radios | Php | 115 (5%) | | 0 |
| e. Equipment rental | Php | 414 (18%) | Php | 111 (10%) |
| Total | Php | 2,300 (100%) | Php | 1,109 (100%) |

Source: Review of Cost Recovery Mechanisms for National Irrigation Systems, ADB, September 2000

The relative shares of each expenditure presents an alternative on how the ISF shares can be allocated between the NIA and IA as regards ISF sharing in IMT. Accordingly, the system O&M portion of the ISF (Php 2,300/ha) should be retained by the system and ear-marked for system O&M. The balance between ISF and the full cost of O&M at NIS level (Php 1,025/ha) would represent the NIA's share of the ISF (31%).

3.2.3 Cost Assessment for O&M and Rehabilitation

The Study Team verified the ADB proposed ISF rate by comparing the cost levels between 1974 and 2001 using real prices. Actual price increase in O&M expenses account for around a 16 fold increase (Php 64/ha to Php 1,000/ha), and the price of one cavan of paddy accounts for a 14 fold increase (Php 35/cavan to Php 475/cavan) compared with 1974 average. However, the NIA's current O&M expenses at Php 1,000/ha a year does not reflect the actual O&M requirement as pointed out by ADB TA. If the ADB assessed O&M expense at Php 2,300/ha is adopted, its actual price increase is calculated at 40 times (Php 64/ha to Php 2,300/ha), that is higher than that of paddy. Increase of consumer price index (CPI) during the period 1974 to 2001 is about 15.8 times the 1974 constant price. It is obvious that the difference between inflation, at more than 40 times the O&M cost, and paddy account increase, at more or less 14 times the ISF income, principally jeopardized the existing ISF scheme. The price escalation on cash expenditure overwhelmingly exceeds CPI, while cash income (paddy) has increased less than the CPI.

This means that the current ISF rates of 2-3 cavans/ha, which are still based on the 1974 level are no longer applicable given the huge increase in prices to date. The ADB proposed ISF rate of Php 3,325/ha is of the right magnitude to cover the required O&M cost of Php 2,300/ha. Converted to paddy, the proposed ADB ISF rate is equivalent to 6.5 to 7.5 cavans/ha. These rates are generally ideal to cover the required O&M cost, if it were implemented today.

3.3 Legal Framework

3.3.1 Irrigators Association

(1) Policy on IA Organization

Participatory approaches adopted by foreign-assisted projects have largely involved the IAs. More recent laws such as RA 7607 (Magna Carta of the Small Farmers) and RA 8435 (AFMA) further emphasized the strengthening of the IAs to support the NIA's turnover of systems management. From the mere involvement of IAs as subcontractors in canal construction and O&M, the framework for IA organization has considered more significant involvement in systems management.

The DA is mandated to ensure that farmers are provided with the necessary support services including capacity building activities to increase their productivity and enable them to compete globally. The implementing rules and guidelines of RA 8435 provide that the DA and NIA should collaborate on a program of capacity building for IAs. However, at present, the NIA still has to get a specific allocation from DA's annual appropriations under the General Appropriations Act (GAA) for the strengthening of IAs. The NIA also has to mobilize support from other institutions that provide capacity building services for the IAs.

(2) IA By-Laws

The IAs are registered as non-stock, non-profit organizations with the Securities and Exchange Commission (SEC). The actual operation of IAs is directly dictated by their by-laws. IA by-laws can be issued or amended through the consensus of at least 2/3 of their members. However, many of the provisions of the by-laws hinder the effective and efficient operation of the IAs. Aside from the defective by-laws, enforcement of policies and monitoring also remain as issues of concern in IA operation.

(3) Considerations

To enhance institutional development for IMT, the DA and NIA should consider IA strengthening as a priority agenda with appropriate funding allocation. An explicit policy on IAs should be pursued to highlight their role in IMT. Similarly, a review of IA by-laws and internal systems is imperative to ensure the sustainability of their operation and the optimal use of irrigation services. The issuance of an NIA Memorandum Circular (MC) is required to address IA policy deficiencies and guide the IAs in the enhancement of their by-laws. A legislative act, such as an IA Law, should be considered to provide a more binding framework for IA organization and operation.

3.3.2 NIA Irrigation Management Transfer

(1) Framework for Systems Turn Over

RA 3601 and PD 552 provided sufficient mandate to the NIA to transfer the “management” of irrigation systems to duly organized cooperatives or associations based on terms and conditions imposed by the NIA’s Board of Directors (BOD). This mandate has been adopted in the loan agreements of foreign-assisted projects. Loan agreements with the WB for the implementation of IOSP II in 1993 and WRDP in 1995, respectively, required the actual transfer of systems management to the IAs to ensure their sustainability. These projects implemented the IMT or JSM approach based on the principle that systems sustainability can be best achieved if both the capacities of the NIS and participating IAs are improved. The framework pursued by these projects involved the full transfer of O&M responsibilities, excluding assets, to IAs after the implementation of necessary rehabilitation and improvements of the irrigation facility. Full management transfer was envisioned in the NIS with service areas of 3,000 ha or less and JSM for those with service areas of more than 3,000 ha. More specific provisions in the loan agreement for the ADB-funded SPISP in June 1999 required that the NIA turn the relevant NIS over to the IAs under certain equity investment and repayment terms.

Prior to IMT, a series of NIA MCs defined the shared management and turn over schemes and procedures for contracts entered into by the NIA and the IAs. The shared-management program was implemented in the early 1980s to June 1990 basically to assist the IAs in their capital build up through the provision of incentives for different levels of ISF collection efficiency and participation in O&M activities under Stage I-III contracts. The MC 41 series of 1990 required the

conversion of Stage contracts into Type I-II contracts to strengthen the NIA's partnership with the farmers. Stage/Type III contracts provided for the turn over of ownership of the systems through amortization by the IAs.

In 1997 the AFMA limited the scope of the turnover process to "operation and maintenance" of secondary canals and on-farm facilities to IAs in the NIS. This negated previous policies allowing the transfer of asset ownership as implemented under Type III contracts and several loan agreements. Since 1997, the NIA has not pursued arrangements related to Type III contracts.

(2) Policy Concerns Related to IMT

While the NIA now adopts the AFMA provision, there have been inconsistencies in IMT implementation. Policy concerns on IMT arise from the interpretation of the NIA's mandate to turnover the management of NIS and the lack of a definitive IMT policy. These have resulted in varying interpretations of the process, weak contracts between IAs and the NIA, and enforcement problems.

a) Interpretation and intention of IMT policy framework.

The NIA believes that it does not have the authority to transfer the irrigation assets to IAs in the NIS based on the AFMA provision. The AFMA policy, however, is rendered moot and academic under specific loan agreements made by the government and donor agencies which require the outright transfer of NIA's assets to the IA through equity investment and repayment. Loan agreements are legally binding international commitments that should be met by the government. Reported inconsistencies between the prescribed IMT procedures under such loan agreements and existing laws could be due to varying interpretations and may need clarification through a DOJ opinion.

The NIA's position has also been argued based on certain provisions in RA 3601 and PD 552:

- The NIA's mandate to charge, collect and recover the cost of construction and rehabilitation of both CIS and NIS (RA 3601 Par. a, Sec. 2 and PD 552 Par. b, Sec. 2). The NIA's authority to collect or recover the cost of construction legally allows it to transfer ownership of the irrigation assets to the IAs. The IA conversely gains the right to own the irrigation system by paying or reimbursing its cost or contractually committing to pay or reimburse it within a certain time frame. This transfer of ownership can be legally conducted through a contract of sale consented by both parties and

a deed of conveyance.

- The NIA's blanket authority to transact businesses incidental or conducive to the collection and recovery of the costs of irrigation investments and to exercise all powers of the corporation under the Corporation Law (RA 3601, Par. B, Sec. 2 and PD 552 Par. f, Sec. 2). This provides the NIA sufficient authority to draw up policies related to the management as well as transfer of its assets.

Operationally, there is no distinguishing difference in the development and management by IAs of the CIS and NIS except for the size of the service area and the scale of physical infrastructure. Thus, the turnover process involving the transfer of assets in a CIS may similarly be undertaken for the NIS. In fact, the NIA has actually transferred the ownership of small NIS systems, i.e. mostly below 500 ha, to IAs under IOSP II and even prior to the implementation of these projects through the issuance of Certificates of Ownership to IAs.

b) Absence of clear-cut IMT policy guidelines

Except for RA 8435, which broadly requires IMT, there is no policy explicitly embodying guidelines for the IMT process, including the conversion of all existing Type I-III contracts to IMT contracts. Conversion of Type I-III contracts is evidently required for systems covered by foreign-assisted projects such as the SPISP and WRDP. The absence of clear-cut operational policies has resulted in varying interpretations of the process.

(3) Considerations

IMT implementation should not only consider the legal framework but also the capacity of IAs to assume responsibilities related to systems management. The NIA may transfer system ownership if the IA has proven its capacity to manage and sustain the systems. The full turn over of the systems to the IAs will not only transfer O&M costs and responsibilities but also the ownership rights and full benefits from the systems. By turning over system ownership, the IAs will have more flexibility in water utilization and allocation and the financial burden on the NIA will be lifted. Furthermore, considering manageability and ease of monitoring, the NIA should prioritize the strengthening of IAs for systems comprising 2,000 ha and below to prepare them for full system turn over.

The NIA should also pursue the following to enhance the IMT policy framework:

- a) seek the legal opinion of the Department of Justice (DOJ) to clarify the varying

interpretations of existing laws; and

- b) lobby for the enhancement of existing laws, to include a clear cut IMT policy and the accompanying cost recovery mechanisms.

The NIA should proceed with the implementation of its current IMT program. In this regard, the IMT operational guidelines should be finalized through an NIA MC to have a common framework for its implementation. The guidelines should contain:

- a) criteria for IMT contracting based on IA membership level, financial viability and other functionality factors;
- b) basis of or options on sharing arrangements;
- c) time frames when the NIA will fully turn over system O&M with certain conditions (may be done in a phased manner taking into consideration capacity of IA);
- d) defined boundaries of service areas covered by the contracts;
- e) sanctions and penalties;
- f) benefits from the contract; and
- g) sustainability mechanisms for long-term O&M, repair, rehabilitation and IA viability.

The conduct of a more in-depth study covering the legal and operational framework of the IMT process is recommended to guide the formulation of the NIA's IMT policy guidelines.

3.3.3 Water Rights and Pricing

(1) Water Rights

PD 1067 or the Water Code of the Philippines embodies the rules and regulations concerning water rights and the use of water. The NWRB issues a water permit to the NIA for every irrigation system that it constructs. The permit serves as the deed of conveyance of the NIA's right to extract water for irrigation purposes. The NWRB collects fees from the NIA for water rights based on allocative and progressive demand.

The transfer of water rights in whole or in part is allowed under the law with prior approval of the NWRB. Thus, the water permit for an irrigation system can be transferred fully or in part to the IAs serviced by the system. Article 19 of PD 1067 reinforces the legal status of IAs by giving them the right to allocate and distribute irrigation water within their membership. To transfer water rights from the NIA to

IA, either of the two parties can file a petition to the NWRB for transfer of permit. If there is no opposition to the petition, the permit is issued in the name of the IA. The permit indicates the allocation of water that can be extracted by the holder and serves as the basis of water fees collected by the NWRB.

The transferability of rights on water use further supports the legality of devolving systems ownership to IAs under NIA's IMT program. The transfer will allow the NIA to pass on system costs to the IAs to have more flexible use of irrigation water.

(2) Water Pricing

RA 3601 and PD 552 mandate the NIA to impose fees on irrigation service. At present, ISF rates, which are based on 1975 levels provided in MC 21 s 1974, are fixed for all systems and barely cover the O&M costs of the irrigation systems. This uniform pricing scheme also has negative implications on system operation and maintenance and consequently the quality of irrigation service provided to the IAs. The fixed rates also do not encourage efficient use of water. A glaring implication also, is that fixed rates do not distinguish IA members from non-members, thus, do not provide price incentives to farmers to join the IAs. The NIA is vested with the authority to charge and collect fees. It has done so through the series of MCs it issued related to the ISF.

(3) Considerations

In general, there are no impediments to the transfer of the NIA's water rights to the IAs. Advocacy on this policy needs to be intensively pursued to inform the IAs of the benefits of acquiring their rights over the use of water in irrigation systems and the NIA of the advantages of transferring water rights to the IAs. Likewise, the NIA should adopt a water-pricing scheme that reflects the varying O&M and other transaction costs between systems.

CHAPTER 4 IRRIGATORS ASSOCIATIONS IN THE NATIONAL IRRIGATION SYSTEMS

4.1 Overview of the NIS and Performance

4.1.1 Service Area

As of the year 2002 there were 196 NISs nationwide with total service area of 689,000 ha. Around 65% of the service areas are concentrated in Luzon and the rest are in Visayas and Mindanao. NISs with a service area of 1,000 ha and below have the highest frequency and the least common are systems above 6,000 ha and between 3,000 -and 6,000 ha. The regional distribution of the number and service area of NISs is summarized below.

Number and Area of NISs per Service Area

| | <u>Luzon</u> | | <u>Visayas</u> | | <u>Mindanao</u> | | <u>Philippines</u> | |
|--------------------|----------------------------|------------|---------------------------|-----------|----------------------------|-----------|-----------------------------|------------|
| | Area (ha) | Num | Area(ha) | Num | Area(ha) | Num | Area(ha) | Num |
| Less than 1,000 ha | 28,947 (4.2%) | 50 | 6,017 (0.9%) | 10 | 3,283 (0.5%) | 5 | 38,247 (5.6%) | 65 |
| 1,001 ~ 2,000 ha | 39,499 (5.7%) | 28 | 14,322 (2.1%) | 9 | 6,346 (0.9%) | 4 | 60,167 (8.7%) | 41 |
| 2,001 ~ 3,000 ha | 54,682 (7.9%) | 23 | 9,780 (1.4%) | 4 | 27,513 (4.0%) | 11 | 91,975 (13.3%) | 38 |
| 3,001 ~ 6,000 ha | 25,038 (3.6%) | 7 | 22,216 (3.2%) | 5 | 55,300 (8.0%) | 14 | 102,554 (14.9%) | 26 |
| More than 6,001 ha | 304,586 (44.2%) | 17 | 21,526 (3.1%) | 2 | 69,955 (10.2%) | 7 | 396,067 (57.5%) | 26 |
| Total | 452,752 (65.7%) | 125 | 73,861 (10.7%) | 30 | 162,397 (23.6%) | 41 | 689,010 (100.0%) | 196 |

Source: Systems Management Department (SMD), NIA

4.1.2 Facility Status

Roughly 80% of NISs need rehabilitation and/or improvement of system facilities. The table below summarizes the results of the NIS facilities status survey conducted in 2001. More than 60% in length of the main and lateral canals were found to require rehabilitation works, mainly desilting canals and reshaping and heightening embankments. In addition, more than 50% of control structures provided on main and lateral canals also require rehabilitation and improvement.

Facility Status

| | Head Works | | Main Canal | | Control Structures (MC) | |
|-------------|---------------|------------------|-------------------------|-----------------|-------------------------|-----------------|
| | Total (Nos) | To be rehab.(%) | Total (km) | To be rehab.(%) | Total (Nos) | To be rehab.(%) |
| Luzon | 92 | 23 | 2,493 | 61 | 7,655 | 54 |
| Visayas | 18 | 4 | 425 | 65 | 1,367 | 52 |
| Mindanao | 35 | 7 | 999 | 57 | 2,401 | 54 |
| PHILIPPINE | 145 | 34 | 3,917 | 61 | 11,423 | 53 |
| | Lateral Canal | | Control Structures (LC) | | Service/Access Road | |
| | Total (Km) | To be rehab. (%) | Total (Nos) | To be rehab.(%) | Total (km) | To be rehab.(%) |
| Luzon | 6,415 | 57 | 26,608 | 56 | 9,257 | 70 |
| Visayas | 1,279 | 74 | 6,696 | 58 | 1,310 | 97 |
| Mindanao | 2,605 | 76 | 6,645 | 57 | 3,400 | 76 |
| Philippines | 10,299 | 63 | 39,949 | 56 | 13,967 | 74 |

Note: Control Structures covers Head Gate, Check Gate and Turnout.

Source: MC13 inventory survey, SMD

4.1.3 Operation and Maintenance (O&M)

Funds for O&M generally taken from ISF collections are not enough to support ideal maintenance work. For one, ISF collections from farmers have been very low. The consequence is poor service and this greatly discouraged the beneficiaries from paying their obligations. Loan proceeds from foreign funded projects, notably the WB, supplemented the meager fund at the rate of Php 148/ha and the government continued the subsidy at the rate of Php 126/ha. However, this was terminated in 2002 due to budget constraint. Since then, the NIA was not able to support systems operation at the desired service level. The pattern of O&M expenditure given below has been declining annually.

O&M Expenditure (Php/ha)

| Area | 1997 | 1998 | 1999 | 2000 | 2001 |
|------------|-------|-------|------|------|------|
| Luzon | 1,066 | 924 | 869 | 839 | 784 |
| Visayas | 973 | 1,011 | 854 | 846 | 606 |
| Mindano | 965 | 971 | 920 | 819 | 745 |
| PHILIPPINE | 1,035 | 943 | 879 | 835 | 756 |

Note: Incremental O&M costs under ISOP-II includes Php 169.9 /ha in 1997 and Php 148.32 /ha in 1998
O&M Subsidy includes from 1999 to 2001

Source: Systems Management Department

As regards repair and rehabilitation works, funding comes directly from the National Budget. The national average of repair and rehabilitation costs in 2001 was estimated at Php 351/ha.

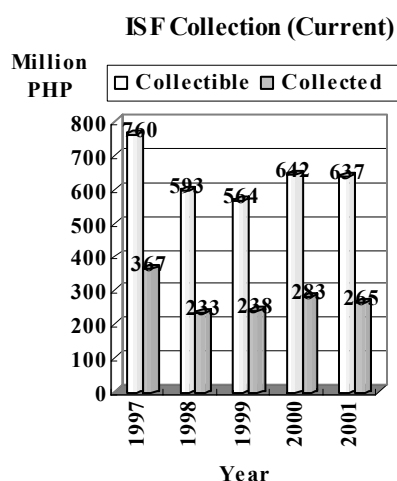
4.1.4 Cropping Intensity

The national average of cropping intensity was 71% in the wet season and 67% during the dry season. Cropping intensity in Mindanao was more than 150%, and

slightly higher than Luzon and Visayas due to stable weather and abundant rainfall.

4.1.5 ISF Collection

The ISF collection efficiency and collected amount are summarized below. The socialized ISF rates implemented in September 1998 badly affected collection efficiency. ISF collectibles were reduced by 30% from the previous ISF rate. As a result, the collected ISF amount and collection efficiency in 1998 declined from the previous year.



ISF Collection Performance

| Year | Collectible (Php/ha) | Collected (Php/ha) | O&M Cost (Php/ha) | Collection Efficiency (%) |
|------|----------------------|--------------------|-------------------|---------------------------|
| 1997 | 1,147 | 553 | 865 | 48.3 |
| 1998 | 880 | 345 | 795 | 39.2 |
| 1999 | 831 | 351 | 740 | 42.3 |
| 2000 | 939 | 414 | 701 | 44.1 |
| 2001 | 925 | 385 | 651 | 41.7 |

Note: O&M Cost excludes loan and subsidy
Source: SMD

With the implementation of Executive Orders 197 and 218 in 2000 that allowed all government agencies to upgrade fees and charges, the ISF rates were restored to the previous level beginning in July 2001. This policy, however, has not improved collection performance.

4.2 Overview of IAs in the NIS

4.2.1 Profile of IAs

Table 4.1 shows selected indicators depicting the profile of 2,000 NIS-IAs. Selected indicators are described below.

- (a) **Membership:** Membership is defined as the ratio of members to total farmers. Less than 1% of total IAs have membership of 60% and above. The membership rate of most IAs ranges from 50 to 59%. This stems from the voluntary nature of membership participation, which is considered defective. Further room for expanding membership should be promoted to strengthen the IAs' foundation.
- (b) **Land Holding:** A typical IA member has an average farm size varying from 1.1 to 1.5 ha. About 30% of total members have this landholding size, regardless of tenure, and 20% have landholdings of 0.6 to 1.0 ha. Overall, roughly 50% have

land of 1.5 ha and below. Only 7% have farm holdings above 2.6 ha. The IA member farm size is relatively low by general standards. The smallness of farm holdings is a deterrent in getting higher farm incomes unless farming is complimented with improved technologies.

- (c) Land Tenure Status: Owner cultivators and Certificate Land Transfer (CLT) holders (who by definition are the actual tillers) account for 55% of total members, while tenants represent about 25%. Lessees represent about 17%, and transient farmers comprise roughly 3%. Incidence of tenancy is thus high by general standards. This rate goes as high as 45% in medium-sized IAs. The incidence of tenancy is even more apparent in non-functional IAs located across hydrological boundaries, ranging from 34 to 63%, as revealed in the 200-sample IA inventory survey. The implication is that the owner-cultivator reported by the NIA is likely to be an absentee landowner and thus the tenancy rate is understated. Tenancy is thus considered a deterrent to active participation since land occupancy is temporary. Landlords can replace the tenants anytime and thus the incentive to participate in IA activities is minimal.
- (d) Productivity: The average yield of paddy is relatively low. Only 7% of total IAs registered yield above 100 cavans per ha during the dry season and only 1% during the wet season. The modal yield ranges from 70 to 90 cavans per ha, and 55% of IAs achieved this range for both the dry and wet seasons. About 37% and 27% have achieved a yield of 70 cavans and below per ha during the wet season and dry seasons, respectively. The relatively low yields achieved limit the IAs from fulfilling their obligations in paying the ISF and widening their business opportunities.
- (e) Service Area: 57% of total IAs, have service areas ranging from 151 to 500 ha (medium). The next largest group is represented by IAs whose service area is below 150 ha, roughly 29% of total. The large service area, above 500 ha, is accounted for by 14%.
- (f) ISF Collection Efficiency: ISF collection efficiency among IAs is generally low. More than 30% have collection efficiency below 50%, and only 11% have attained 81 to 100% collection efficiency. About 18% have attained 66 to 80% and 51 to 65% collection efficiency, respectively. The low collection efficiency affects both the financial viability of the NIA and the IA, and it is considered a major hindrance to better delivery of service by both institutions.
- (g) Networth: More than 40% of total IAs have networth of less than Php 20,000 in 2001, and only 4% have posted Php 100,000 and above. With very limited capital base, it is extremely difficult for IAs to engage in short-term investments

to expand sources of revenue. This condition stems from (i) IAs inability to access credit from formal sources largely because of their non-bankable structure; and (ii) limited income arising largely from poor ISF collection. Roughly 50% of IA members have family income below Php 20,000 per cropping season, and savings mobilization among members to generate short-term funds can be initiated for livelihood projects.

- (h) Management Contract: Almost 50% of IAs have both Type I and II contracts. IAs with only Type I contracts account for 13%, while Type II represents about 10%. JSM being enforced under the ADB and World Bank-assisted projects, and considered the current program for IMT, accounts for 12%. IAs that have existing contracts are paid by the NIA, and that payment represents the major part of their income. Those that do not have a contract (about 14%) are not eligible and thus may be considered weak.
- (i) Implementation of O&M Plans: Hydrological locations affect the intensity of implementing various O&M plans. Functional to moderately functional IAs in upstream areas generally implement cropping calendar, water delivery and distribution, repair and maintenance and ISF collection plans. The record, however, shows that only 50% of total IAs do these tasks. Non-functional IAs have never bothered to implement such plans. This is primarily the reason why IAs are poor in O&M activities.
- (j) Gender Equality: IAs' members are male dominated, which stemmed from the by-laws' provision that only the household head (who is usually a male) is considered a bona fide member. IAs with 100 and above male members represent 65% of total IAs. In contrast, the concentration of female members is in the 10 or below bracket, accounting for 30% of the total. The current structure restricts women's participation, as core partners for off-farm and non-farm activities.

4.2.2 Institutional Development of IAs

(1) Present Situation

The NIA's fundamental strategy for institutional development is participatory management. The training is basically the classroom and lecture-type series. Leaders are given at least one round of training during the early stages of development on courses such as basic leadership development, systems management, and financial management. The second round is given at the request of the IA, providing 50% of the cost. With the virtual depletion of the NIA's

operating funds, however, the momentum has been disrupted. Over the last three years, the degree of training has been declining as shown in the table below.

Physical Accomplishment of Training Given to NISs as of December 2001

| Description | 1999 | 2000 | 2001 | Change1999-2001 |
|----------------------------|---------|---------|---------|-----------------|
| 1. IA Training | | | | |
| 1.1 Number of batches | 2,790 | 1,284 | 845 | -69.71% |
| 1.2 Number of participants | 69,756 | 38,528 | 28,931 | -58.53% |
| 2. Staff Training | | | | |
| 2.1 Number of batches | 984 | 8 | 160 | -83.74% |
| 2.2 Number of participants | 24,608 | 192 | 4,075 | -83.44% |
| 3. IA Sustenance | | | | |
| 3.1 Number of IAs | 1,651 | 931 | 832 | -49.61% |
| 3.2 Area covered (ha) | 485,702 | 326,700 | 209,269 | -56.91% |
| 3.3 Number of farmers | 295,091 | 226,474 | 136,702 | -53.67% |

Source: Institutional Development Department (IDD), NIA

Because of the limited funds coupled with the common bias of low funding priority given to institutional training vis-à-vis systems improvement, the NIA has been resorting to a target-based allocation of its institutional budget, using the service area as the main criterion. This penalizes small areas from getting the required funding so they are likely to end up with a smaller budget. Hence the quality of the training is often being sacrificed. Shifting this to a demand-based approach is necessary to permit objectivity in meeting training requirements. From a unit cost standpoint, the NIA is neither prudent nor efficient, with almost 41% going to overhead. Direct training cost is 27% of total unit cost.

IA Training Cost per IA participant (Php)

| Cost Item | 1999 | 2000 | 2001 | Average | Share (%) |
|------------------------|--------|--------|--------|---------|-----------|
| Salary for IDO | 83.03 | 76.74 | 292.25 | 150.67 | 31.86 |
| Direct Training | 56.99 | 102.9 | 224.21 | 128.03 | 27.05 |
| Overhead (Supervision) | 90.23 | 174.64 | 318.48 | 194.45 | 41.09 |
| Total | 230.25 | 354.28 | 834.94 | 473.15 | 100 |

Source : IDD, NIA

Training needs assessment (TNA) of the NIA's regular training program has not been conducted for quite a long time. The existing training package suffers from: (a) limited innovative subjects; (b) limited upstream activities on water conservation/saving measures; (c) limited information on marketing and entrepreneurial activities; and (d) less reliance on role model trainers. With the influx of ADB, WB, and JICA assistance, this deficiency has been partly resolved. These donors have formulated different training strategies. However, more often than not, the strategy is tied up with the nature of assistance.

(2) Training Approaches and Strategies of Donors

There are two essential elements of the WB training intervention. The training was focused on leaders, and second was the funding of IDOs who were responsible for the regular coaching job. The IDOs supported the monthly meeting of the BODs and O&M conferences three times in two croppings per year. The training was centered on Turnout Service Area Group (TSAG) leaders, aimed at canal operation and financial management. The NIA, however, has not sustained the salaries of IDOs after project completion. As such, only a few of the assisted-IAs were able to mature and function as real organizations.

ADB through the on-going SPISP introduced the so-called cascading system of small group activities and on-the-job training. The principle is that “trainees at one level, becomes trainers at the next lower level.” The NIA’s staff and SPISP consultants direct their training efforts at the implementation of group activities and on- the- job training on the FIA. The FIA trainers prepare the IA trainees to conduct small group of activities at the TSAG level with their membership. The FIA trainers become available for supervision and support at the TSAG level when the IA personnel conduct the training. The cascading system essentially ensures that the well –informed observations, insights and constraints provided the trainers at higher level is also happening at the lower level.

JICA assisted the IAs by way of its in-country training approach. The in-country training introduced in early 2001, is a mixture of classroom discussion and cross visits to well-managed irrigation systems, research institutions and successful IAs locally. It utilizes in-house resource people, primarily the NIA’s senior staff members from the Central Office (CO) and selected JICA experts. The cross visit component is relevant as it opens the door of opportunities for IAs to learn from actual interaction with practitioners of successfully managed institutions. The participants are mixtures of the NIA’s staff and IA officers.

The different training approaches have demonstrated their own merits and strengths. The NIA has actually been offered a menu of training designs through these various strategies, which can be replicated utilizing internally generated resources. To be responsive and sustainable, however, the NIA will have to stick to its role as facilitator and transfer whatever technology it has to the IAs, so that the advanced IAs will eventually assume the role of major trainers. To do this, the NIA should restore the permanent appointment of IDOs at the field level.

4.2.3 IA Functionality Survey and Results

The JICA Study Team inputted the weighted scores submitted by the field offices, and the results of the classes during the last three years are summarized below.

Results of IA Functionality Survey (Number of IAs)

| IA Classes | 1999 | Share (%) | 2000 | Share (%) | 2001 | Share (%) |
|-------------------|-------|-----------|------|-----------|-------|-----------|
| Outstanding | 20 | 1.6 | 46 | 5.4 | 69 | 4.2 |
| Very Satisfactory | 122 | 10.0 | 181 | 21.2 | 297 | 18.0 |
| Satisfactory | 313 | 25.8 | 332 | 38.9 | 480 | 29.0 |
| Fair | 280 | 23.0 | 167 | 19.5 | 373 | 22.6 |
| Poor | 481 | 39.6 | 128 | 15.0 | 434 | 26.2 |
| Total IA | 1,216 | 100.0 | 854 | 100.0 | 1,653 | 100.0 |

Source : IDD and Field Offices, NIA
IDD Rating: Outstanding – 95 and above; Very satisfactory – 85 to 94; Satisfactory – 75 to 84;
Fair – 65 to 74; and Poor – below 65

The relative total revealed that there has been a slight improvement in the functionality of IAs, nationwide over the three-year period. The relative shares of fair and poor classes decreased to 48.8% in 2001, from 62.5 % in 1999, while the relative shares of very satisfactory and satisfactory classes improved significantly, from 35.7% in 1999 to 46.9% in 2001. The relative share of outstanding also increased moderately, from 1.6% in 1999 to 4.2% in 2001. Generally, however, the proportion of fair and poor classes of about 50% in 2001 is significant, an indication of weak and non-functional IAs.

There are limitations to the functionality survey, and interpretation of the results should be qualified. Among its limitations are: (a) wide ranking variability due to differences in perceptions and absence of standards; and (b) arbitrary scoring due to lack of logistics support. A number of National Irrigation System Offices (NISOs) field personnel failed to appreciate the usefulness of the survey, and perceived it to be an additional burden. The survey was administered merely for the sake of compliance rather than as a management tool to monitor the IAs' degree of intervention. With these limitations, this Study formulated an alternative method of ranking and classifying IAs through a multivariate analysis that considered a wider array of information such as technical, infrastructure, socio-economy and institutional. The results are discussed in Chapter 6.

4.2.4 IA Activities Assessment

(1) Survey of 200 IAs

About 200 IAs, stratified according to hydrological location and functionality, were surveyed to get a deeper assessment of O&M and other activities. The distribution of samples is given below.

Distribution of 200 Sample IAs

| Category | Upstream | | Midstream | | Downstream | | Total | |
|-----------------|----------|----|-----------|----|------------|----|-------|-----|
| | Nos. | % | Nos. | % | Nos. | % | Nos. | % |
| Functional | 42 | 53 | 14 | 18 | 23 | 29 | 79 | 100 |
| Mod. Functional | 36 | 38 | 28 | 30 | 30 | 32 | 94 | 100 |
| Non-Functional | 8 | 30 | 5 | 19 | 14 | 52 | 27 | 100 |
| Total | 86 | 43 | 47 | 24 | 67 | 34 | 200 | 100 |

Source : Study Team

The results of the 200 IAs surveyed are summarized in the following table.

IA Activities' Assessment

| (1) Preparation of O&M Plan | | | | |
|--|--------------------|---|------------|--------|
| Description | IA Category | Implementing Rate | Highest | Lowest |
| 1.1 Cropping calendar | Functional IA | 14 - 44% | U/S | M/S |
| | Mod. functional IA | 15 - 30% | D/S | M/S |
| | Non-functional IA | | | |
| 1.2 Water delivery and distribution | Functional IA | 14 - 46% | U/S | M/S |
| | Mod. functional IA | 15 - 30% | U/S | M/S |
| | Non-functional IA | | | |
| 1.3 Repair and maintenance | Functional IA | 4 - 32% | U/S | M/S |
| | Mod. functional IA | 4 - 33% | D/S | U/S |
| | Non-functional IA | | | |
| 1.4 ISF collection | Functional IA | 11 - 35% | U/S | M/S |
| | Mod. functional IA | 7 - 29% | U/S | M/S |
| | Non-functional IA | | | |
| (2) Implementation of O&M Plan | | | | |
| Description | IA Category | Implementing Rate | Highest | Lowest |
| 2.1 Cropping calendar schedule | Functional IA | 17 - 45% | U/S | M/S |
| | Mod. functional IA | 6 - 23% | M/S | D/S |
| | Non-functional IA | | | |
| 2.2 Water delivery and distribution schedule | Functional IA | 11 - 34% | U/S | D/S |
| | Mod. functional IA | 13 - 29% | D/S | U/S |
| | Non-functional IA | | | |
| 2.3 Repair and maintenance schedule | Functional IA | 8 - 25% | U/S | M/S |
| | Mod. functional IA | 9 - 20% | U/S | M/S |
| | Non-functional IA | | | |
| 2.4 ISF collection | Functional IA | 11 - 35% | U/S | M/S |
| | Mod. functional IA | 10 - 22% | U/S (both) | |
| | Non-functional IA | | | |
| (3) Conduct and Attendance in Meeting | | | | |
| 3.1 TSA meeting | Functional IA | Conduct 60% - rare Attend 80% - rare | U/S | M-D/S |
| | Mod. functional IA | Conduct 20 - 45% Attend 75% | U/S | D/S |
| | Non-functional IA | Conduct 18 - 55% Attend 30 - 84% | D/S | M/S |
| 3.2 BOD meeting | Functional IA | Conduct 16 - 90% Attend 80 - 90% | U/S | M-D/S |
| | Mod. functional IA | Conduct 20 - 40% Attend 90% | U/S | D/S |
| | Non-functional IA | Conduct 40 - 52% Attend 80 - 90% | D/S | M/S |
| 3.3 General Assembly (GA) meeting | Functional IA | Conduct 70 - 75% Attend 65 - 90% | U/S | M-D/S |
| | Mod. functional IA | | | |
| | Non-functional IA | Conduct 50% Attend 80% | U/S | M-D/S |

Note U/S : Upstream area, M/D : Midstream area, D/S : Downstream area / Source : Study Team

The above table clarifies that IAs located in the upstream of the irrigation system are generally more active, but denies a prejudice that those in the downstream must be the poorest. The features of inventory results are described below.

(2) Preparation of O&M Plans

- (a) Cropping Calendar: Preparation of a cropping calendar for every cropping season (at least two per year) is low. Under functional IAs, the rate ranges from 14% to 44% of total, with the highest in the upstream and lowest at midstream. Moderately functional and non-functional IAs posted lower rates, ranging from 15% to 30%, with the highest downstream and lowest at midstream.
- (b) Water delivery and distribution: Preparation of a water delivery and distribution schedule for every cropping season follows the same pattern as the cropping calendar. Under functional IAs, the rate varies from 14% to 46% of total, with the highest in the upstream and lowest at midstream. Moderately functional and non-functional IAs recorded lower rates from 15% to 30%.
- (c) Repair and Maintenance: Preparation of a repair and maintenance plan following the regular cropping cycle is relatively low. Functional IAs recorded rates as low as 4% (midstream) to 32% (upstream) of total. Moderately functional and non-functional IAs posted rates ranging from 4% to 33%, with the highest rate in the downstream area posted by non-functional IAs. It can be inferred that non-functional IAs in downstream areas made the effort to prepare this plan to ensure that the facilities were in a good condition, so as not to be unduly deprived of water during critical periods.
- (d) ISF Collection: ISF collection plan preparation following the regular cropping cycle is low. Functional IAs recorded rates ranging from 11% to 35% of total, with the lowest midstream and highest upstream. Moderately functional to non-functional IAs, recorded even lower rates ranging from 7% to 29%, with lowest midstream and highest upstream.
- (e) Budget and Business Plans: Preparation of other plans is generally not given due importance. Less than 5% of IAs bothered to prepare such plans, implying limited perspective for expanding business opportunities. This is indicative of the acute lack of skills in project development and preparation.

(3) Implementation of O&M Plans

- (a) Cropping Calendar: Very few fully implement the cropping calendar plan. Rates of full implementation among functional IAs ranges from 17% to 45% of total, with the highest upstream and lowest in the midstream area. Moderately

functional to non-functional IAs reported lower rates, varying from 6% to 23%, with the lowest downstream and highest at midstream. Failure to fully implement a cropping calendar plan is affected by the lack of readily available cash to purchase farm inputs and seeds for timely planting, and shortage of water downstream during critical irrigation periods.

- (b) Water delivery and distribution: Full implementation of a water delivery and distribution schedule is low. Rates of compliance under functional IAs vary from 11% to 34% of total, with the lowest downstream and highest upstream. Moderately functional to non-functional IAs recorded rates of compliance ranging from 13% to 29%, with the lowest upstream and highest downstream. With these rates of compliance, inequitable use of water is rampant.
- (c) Repair and Maintenance: Full implementation of a repair and maintenance plan is low. Rates of compliance under functional IAs ranges from 8% to 25% with the lowest at midstream and highest upstream. Moderately functional to non-functional IAs recorded rates varying from 9% to 20%. Regardless of the functionality, IAs generally do not bother to fully implement a repair and maintenance plan. This is a serious problem as this is the primary cause for the rapid deterioration of the irrigation facilities and structures.
- (d) ISF Collection: Full implementation of an ISF collection plan is low. Rates of compliance under functional IAs vary from 11% to 35% with the lowest at midstream and highest upstream. Moderately functional to non-functional IAs reported rates ranging from 10% to 22%, with both the lowest and highest upstream. This is indicative of the lack of seriousness of pursuing a good collection scheme; hence collection efficiency is always below normal.

(4) Conduct and Attendance at Meetings

- (a) TSA Meeting: About 60% of functional IAs located upstream conduct a monthly TSA meeting, and these have an attendance rate of 80%. In contrast, functional IAs located in midstream and downstream rarely hold monthly meetings. Monthly meetings of moderately functional IAs are held by only 20% to 45%, with an attendance rate of 75%. Around 18% to 55% of non-functional IAs conduct their monthly meeting, with an attendance rate of 30% to 84%. Unless there are conflicts to be resolved at the tertiary level, the TSA meeting appears to have little importance as far as moderately and non-functional IAs are concerned.
- (b) BOD Meeting: Roughly 50% of functional IAs located upstream hold monthly BOD meetings, with an attendance rate of more than 90%, while only 16% to

30% of functional IAs located in midstream and downstream conduct monthly meetings, with attendance rates of around 80%–90%. Monthly meetings of moderately non-functional IAs are held by 20% to 40%, with an attendance rate of 90%. Non-functional IAs have relatively high compliance with monthly meetings, ranging from 40% to 52% with attendance rates of 80% to 90%. While the attendance rate is relatively high, compliance is still poor, and given the policy nature of a BOD meeting, IAs are normally left without updated policies.

- (c) GA Meeting: A quarterly GA meeting is relatively common in functional to moderately functional IAs located upstream, with 70% to 75% compliance and 65% to 90% attendance. Non-functional IAs located upstream prefer to have semestral meetings, with 50% compliance and 80% attendance rate. On the other hand, IAs regardless of functionality, and located in the midstream area and downstream generally followed an erratic schedule. The GA meeting is considered the venue for all members to be appraised of the IA’s policies and programs. With the erratic schedule for GA meetings, it is not surprising to find out that cohesiveness in less functional IAs is getting weaker.

(5) Implementation of Contracts

Generally, upstream areas had the advantage of having the most contracts renewed regardless of the IAs functionality, as shown in the table below. All types of contracts recorded net gains. In contrast, the midstream and downstream areas had the most contracts rejected. This is understandable given the better physical conditions and relative performance of IAs upstream vis-à-vis midstream and downstream areas.

Status of Renewing and Rejected IMT Contract

| Contract | Upstream | | | | Midstream | | | | Downstream | | | | Total |
|-----------|----------|-------|--------|---------|-----------|-------|--------|---------|------------|-------|--------|---------|-------|
| | 1st | Renew | Reject | S-total | 1st | Renew | Reject | S-total | 1st | Renew | Reject | S-total | |
| Type I | 17.8 | 12.7 | 12.1 | 42.6 | 8.9 | 5.1 | 5.7 | 19.7 | 17.8 | 9.6 | 10.2 | 37.6 | 100 |
| Type II | 22.3 | 13.6 | 12.6 | 48.5 | 7.8 | 3.9 | 6.8 | 18.5 | 15.5 | 8.7 | 8.7 | 32.9 | 100 |
| Type I&II | 19.4 | 12.5 | 11.1 | 43.0 | 11.1 | 7.6 | 9.7 | 28.4 | 12.5 | 6.9 | 9.0 | 28.4 | 100 |
| JSM/IMT | 26.4 | 15.7 | 12.1 | 54.2 | 12.1 | 9.6 | 3.6 | 25.3 | 13.3 | 3.6 | 3.6 | 20.5 | 100 |

Source of Raw Data: 200 IA Questionnaires, JICA Study Team

(% indicates present IMT status out of IA’s belonging to respective IMT Types)

(6) Approach and Participation Rate in Maintenance

Group work is generally high in functional and moderately functional IAs located upstream, but very low in midstream and downstream areas. More than 60% of total labor types are accounted for by IAs located in these areas. Voluntary and

assignment are also high, accounting for more than 40% and 60% respectively. In contrast, non-functional IAs, located upstream and downstream prefer hired labor and assignment over other types, accounting for more than 80%. It can be inferred that cooperation among members is relatively easier for IAs whose preference is group and voluntary work than those IAs opting for hired labor. This implies that water, which is normally plentiful in upstream areas, is a key element for bonding and cohesiveness. Membership according to hydrological location can be an alternative for reforming the current IA structure, to increase the level of participation.

4.2.5 Issues

The functional issues affecting the IAs are summarized in Table 4.2. The systemic issues are discussed below in relation to the promotion of IMT and devolution of the NIA's major functions to IAs.

- (a) Defective Membership Structure: Inherent defects in the membership include:
 - (i) the voluntary nature of membership hence the difficulty of enforcing penalties and sanctions among non-members;
 - (ii) high incidence of absentee landowners, thus defeating the purpose of actual-tiller membership;
 - (iii) high degree of inactive members from downstream users;
 - (iv) dominance of pseudo leaders who are inactive in farming; and
 - (v) multiple membership arising from transient farming. The bonding and cohesiveness of IAs is superficial and continuously being eroded, as a result of these basic flaws. The consequence is regular rejuvenation of IAs and the NIA's effort to sustain IAs is getting costlier.
- (b) Weak Absorptive Capacity: Only 3% of total IAs can be considered self-reliant and providing relatively good service to their members on water management and systems maintenance, including related farm businesses. These are exceptional IAs, managing their operations strictly from a sound business principle. They are financially liquid and can afford to make investments. As service providers, they are relatively better off than the NIA's field office. On the other hand, the greater number of IAs have difficulties replicating the good ones due to: (i) low level of skills; (ii) poor leadership; (iii) lack of supportive members; and (iv) lack of financial resources. These are IAs that often fail to fulfill their contractual obligations with the NIA.
- (c) Defective By-laws: The existing by-laws are restrictive. There are: (i) no formal recognition of the rights of members to an equitable supply of water vis-à-vis landholding size; (ii) no progressive development into market-driven organization; (iii) no incentive schemes to expand membership and operations;

and (iv) limited access to formal credit sources. The restrictive by-laws essentially stemmed from the NIA's consideration of IAs as mere sub-contractors and not as genuine partners in irrigation development. The responsibility given to IA's as collector of ISF and clearing canals under Type I and II Contracts is sub-contracting in the real sense. This has created a syndrome of dependency in IAs for continuing support from the NIA.

- (d) Conflict of Interest in the NIA's IMT: Instead of encouraging IAs to grow independently, they are prevented because of the NIA's preference to retain its field personnel over IMT implementation. The NIA's oft-repeated argument about the non-preparedness of IAs to assume the bigger role of O&M is being used to keep its field personnel. A permanent solution for the NIA's personnel to be displaced must be in place to permit orderly and independent growth of IAs.
- (e) Inadequacy of Training: Skills are limited in terms of O&M, ISF collection and project development to enhance an IA's livelihood opportunities. These limitations apply to leaders as well as members. The assistance provided by donors have given the NIA a varied menu of training approaches, but the outreach is often stifled due to: (i) improper identification of training needs due to the absence of a TNA; (ii) lack of trainers, especially in IAs, who can relate better with their counterparts; and (iii) low funding priority for training by the NIA vis-à-vis other support.
- (f) Low Financial Resources: The IAs relatively low financial resources are inherent in their structure. Currently, the main sources of revenue are from ISF shares and compensation for canal clearing (Type I), with the former accounting for the bulk portion. The problem with the ISF share is that it is being used by the IAs to finance maintenance activities. Most often, the ISF share is insufficient to fund O&M because the volume of collection is low, which is affected by low rates, unreported billing and low collection efficiency. There has not been any intervention to expand the capabilities of the IAs to become market-driven institutions. With relatively low productivity and small land holdings coupled with low ISF collection, the problem has become endemic to the organization.

CHAPTER 5 IMT AND JOINT SYSTEM MANAGEMENT

5.1 Current Status of NISs under IMT and JSM

5.1.1 Implementation of IMT and JSM Schemes

There are 44 NISs (17 IOSP II, 18 WRDP and 9 ISIP II) where IMT/JSM is intensively pursued. IOSP II and WRDP are both funded by the WB, and ISIP II by the ADB. Two types of IMT were considered based on the service area. Full turnover, referring to full transfer of management of the secondary canals and other tertiary facilities was envisaged for systems with an area of 3,000 ha and below. Progressive turnover was envisioned for systems with a service area above 3,000 ha. All systems have undergone repair and rehabilitation before turnover to IAs.

Under IOSP II completed in 2000, the 17 systems have 185 IMT contracts issued covering about 52,300 ha or 56% of the total service area. Nine out of 12 systems with a service area of 3,000 ha and below and two (2) systems above 3,000 ha were fully turned over. MRIIS comprising Districts I, III and IV had only 50% of its service area with IMT, and three other small systems (Baggao, IAAPIS, and Sta. Maria-Mayor) failed to complete the full turnover.

The WRDP started in 1999. As of June 2002, only three out of the nine systems under 3,000 ha have completed full turnover. Above 3,000 ha, the accomplishment was also way below the targets. Only 29% of the programmed area is with IMT, 31% of the total laterals transferred, and 17% or 14 out of 81 contracts have been issued. A total of 47 out of 170 IAs or 27% have benefited. The slow implementation is brought about by: (a) delayed release of counterpart funds; (b) reduced staff, particularly IDOs, to implement institutional activities; and (c) less enthusiastic support coming from ditch-tenders due to labor displacement. It is to be noted that ditch-tenders are terminated the moment the system has been turned over to IAs.

The ISIP II targeted 51 IAs covering 9 NISs located in Leyte. Roughly 22% or 11 IAs have JSM contracts with the NIA as of the end of 2002. About 44 IAs or 86% formed Irrigation Service Cooperatives separate from having JSM contracts. Implementation was behind schedule due to delayed procurement of contracts and slow institutional development efforts.

The recently completed IOSP II reported that a considerable number of farmers, about 20% of farmers interviewed, are not familiar with IMT. The common

perception is simply management transfer. The duties and responsibilities of IAs, including the benefits to be received were reportedly unclear. This has been the source of irritation and frustration of some IA members, a reflection of inadequate information dissemination by the NIA.

5.1.2 Performance of ISF Collection Efficiency

Table 5.1 shows the 1996-2000 ISF collection efficiency for NISs covered by IMT and/or JSM. Overall performance is mixed, some increasing, some decreasing and some unchanged. Excluding 11 NISs whose ISF records are incomplete, the performance of 8 NISs has been increasing, while for 21 NISs it has been declining.

5.1.3 Site Reconnaissance of Four Pilot IMT-IAs

(1) Objectives of site reconnaissance

Four NISs comprising Balanac RIS, Sta. Maria RIS and Agos RIS in Region IV representing a smaller to medium scale group, and MRIIS in Region II representing the large scale irrigation system were investigated. The main purpose was to find out the actual performance of system management by IAs, particularly to identify the impacts and benefits IMT has brought to IAs. Technical discussions about the four NISs and others details of the site reconnaissance are given in Annex 4.

(2) Findings

The major findings are described below.

1) Process to IMT contract

It took from half to one year to conclude the IMT contract between the IA and the NIA. The major issues in the contract negotiation were: (i) rehabilitation of system facilities, in particular provision of concrete lining; (ii) required O&M fund; and (iii) the ISF sharing ratio between IA and the NIA. The time lag was principally the period devoted to provision of facilities and institutional improvement.

Before the IMT, system facilities were rehabilitated and/or improved in all four NISs. Under the IOSP-II in Region IV, the NIA provided concrete lining on the main and lateral canals, some parts of which were undertaken by the IA on a contract basis with the NIA. The NIA provided the IA with equipment and materials for the construction, and earnings from the construction contract were deposited as the IA's fund. In MRIIS, the rehabilitation works were

limited to minor repair works and desilting except for system improvement on lateral canals (operated and maintained by the NIA). Control devices for non-operation or low operation, including long-crested weirs for water level control, proportional dividers and diameter-reduced off-take pipes were also provided.

2) Water management and O&M

All the system facilities down to the sub-lateral canals remained the property of the NIA, and only the responsibility for system management was transferred to the IA. The NIA operates the diversion dam (Region IV) and the headgate of the lateral canal (MRIIS) and the IA is responsible for water distribution along the lateral canal including operation of control structures. Although the IMT contract does not give a clear-cut delineation on responsibility sharing for repair and rehabilitation works, the IA has to undertake the maintenance of lateral canal facilities with paid assistance from the NIA.

The IA, jointly with the NIA, prepares the cropping calendar and water delivery schedule. The NIA's gatekeeper operates the headgates in the presence of the IA's representatives, while the IA's ditch-tenders operate the gates on lateral and sub-lateral canals. The IA, using its own members as labour, undertakes canal cleaning and desilting works prior to onset of the cropping season. The members get paid Php 100 - Php 160 per day, or with snacks and drinks only, depending on the resources of the IA/CIA¹.

3) Institutional activities

The BOD offices are well staffed but the officers are compensated with a wide range of allowance from Php 4,000 per month to only Php 100 - Php 250 per meeting. The IA holds regular meetings, such as monthly TSAG and GA, and special meetings as the need arises. The attendance rate varies from 70% to 95%. The IA regularly prepares quarterly O&M, monthly collection and financial reports.

4) ISF collection

In Region IV, the IAs collect the ISF direct from members although some members prefer to pay directly to the IA office. The ISF collection efficiency

¹ CIA : Council of Irrigators Associations

increased to 70% to 80% (dry season crop in 2001/2) from the previous 30% to 50%, except in Agos RIS where the collection efficiency is still low at 25%. The reasons for not paying the ISF are low farm income and non-delivery of water.

In MRIIS, the ISF collection efficiency has been slightly improved after IMT in some CIAs. The reasons for not paying the ISF include, among other things, family problems, money requirement for education, etc. A penalty at 1 % per month is imposed on any slow paying member. The list of non-paying members is disseminated in public places to compel the members to meet their obligations. Recalcitrant members, often influential persons such as politicians, lawyers, etc., who do not pay the ISF in some CIAs, contributed to low ISF collection efficiency of about 60%.

5) Training

Members have been provided intensive training under the IOSP-II. The members generally welcomed the training programs given before IMT, and admitted that they could not have undertaken management and system's O&M, had these training programs not been provided. At present, the members identify various training needs such as cooperative activities (Region IV), livelihood development and marketing (MRIIS).

6) Agriculture and Agro-supporting Services

In Region IV, the average yield of paddy varies widely from 65 to 100 cavans/ha. The low yield was mainly caused by flood, rats and snail attacks and partly by poor soil conditions. Difficulties in accessing adequate farm inputs (seeds, fertilizer, and pesticide) and technical guidance were also cited as causes for lower yield. The lack of post harvest and marketing facilities also restricted achievement of better agricultural production. The Sta. Maria NISO supported the IA in obtaining a loan of about Php 200,000 from the Sta. Maria Municipality Office and this amount became a trust fund for procuring fertilizer and making it available to members on a loan basis.

In MRIIS, the average yield of paddy ranges from 80 to 100 cavans/ha. The productivity was fairly high owing to the good supply of irrigation water and the gradual extension of the use of hybrid seeds. Difficulty in accessing credit was one of the major constraints to agricultural production. Almost all farmers

rely on private dealers as their credit suppliers with interest rates as high as 30 - 40% per cropping season.

7) Cooperative

The BRISIA Inc. established a cooperative, registered with the Cooperatives Development Authority (CDA) as a separate organization from the IA. Overlaps in the management structure between the IA and cooperative do not exist. The cooperative has about 30 members, while the IA has 928 members. No plans have been firmed up to expand the economic activity of the cooperative.

(3) Impact of IMT

Observation of the on-going operation of the four NISs gave the following impact of IMT, as derived from interviews with IA members:

- a) The local government units (LGUs) have recognized the CIA/IA as a potent economic group, and the response from public institutions, including the NIA has become more positive owing to the unity of farmers. The CIA/IA can receive quick and better public services from these institutions after IMT.
- b) Agricultural production increased owing to improved water supply.
- c) Irrigation water can be delivered flexibly in accordance with the IA's own programmed cropping calendar.
- d) The IA's management can respond quickly to any problem arising in the service area in collaboration with the NISO.
- e) Awareness of mutual assistance among the members has been enhanced.
- f) Officers and TSA leaders are encouraged to participate in the IA's activities owing to the regular payment of incentives covering the ISF and salaries arising from construction work.

The positive factors that may have brought favorable performance are: concrete lining of canals; intensive training and strong leadership, though it is believed to be an indigenous human relationship between big landowners and members.

(4) Summary of Findings

While favorable signs of improved performance (although unable to be measured) were noted, the impact of IMT is still inconclusive insofar as improvement in income and livelihood is concerned because of the short IMT experience. The

activities of the IAs are still in the development stage under the guidance of the NISO. Sustainability may thus be a potential issue mainly because of the following:

- a) The perceived impact of IMT on MRIIS District III and IV appears to be restrained due to conflict in objectives between reduced ISF income and inability to retrench redundant personnel. If the NIA cannot accelerate the implementation of its streamlining, the overall impact on reduced cost will be deferred.
- b) With the exception of some CIAs, the ISF collection efficiency in MRIIS has generally not increased.
- c) They merely feel that the IA can receive better public services than before IMT. However, such benefit could have been available irrespective of the IMT.
- d) The socio-economic conditions of farmers remained unchanged particularly in terms of an incomplete IA membership structure due to land tenure issues and indebtedness of farm households to private dealers and money lenders. The sustainability of IMT would be endangered and fragile without the mitigation of these constraints.
- e) The incentive received from collected ISFs is generally insufficient to cover adequate O& M. The amount may be a prerequisite for officers in terms of honoraria and salaries, but a careful and transparent financial operation is still desired, in particular for reserving funds for unexpected repair and maintenance works in future.

5.1.4 Performance of IMT

Although there have been few written records, performance of IMT in terms of ISF collection efficiency has not always been impressive. The ISF collection was increased immediately after the IMT contract was implemented in Sta. Maria RIS. However, in MRIIS the effect was mixed, with some CIAs showing gradual declines. It seems that the monetary incentive increased the motivation of personnel during the initial period of IMT. However, inappropriate allocation of shared ISF between the CIA and IAs may discourage paying the ISF, resulting in stagnation and decline of ISF collection. Except for some pump irrigation systems that were transferred to IAs together with the assets in 1980s, the implementation of all of the pilot IMT - IAs is still in the early stages and thus it is still too early to evaluate whether or not it is successful.

It should be noted that all of the service areas under the IMT were provided with rehabilitation and/or improvement of system facilities through the assistance from the WB and ADB. Almost all of the main and lateral canals in Sta. Maria RIS and Balanac RIS in Region IV are concrete lined and this has remarkably improved the water management conditions. In MRIIS, on the other hand, rehabilitation and improvement focused on the control structure and removal of silt deposited in the canal, and all the earthen canals remained unchanged without concrete lining. The irrigation systems in MRIIS are well operated with good water management and this implies that the canal lining is not necessarily a pre-condition to the implementation of IMT.

A few of the NISs under the IMT such as Sta. Maria RIS, Balanac RIS and MRIIS are well managed by the IAs. While the IAs are functional, governance in general is far from satisfactory. The mode of governance is based on the traditional social structure and most IA management officers are large landowners. Thus it is generally parochial and a patronage system of management. Their major concerns focus on transactions of the fund shared from the ISF rather than managing it to reserve for future facility repair, rehabilitation and replacement. The present IAs' situation is fragile institutionally and financially and bound to disintegrate. Further and continuous coaching and monitoring is essential.

5.2 Issues in the IMT Contract

Having reviewed the IMT contract documents between the NIA and IAs, while discussing present constraints and future prospects with IA members, several issues, crucial for sustainability of IAs under IMT, were identified in the IMT contract.

- (1) Lack of legal framework: The contract document does not refer to any law on which the IMT contract is based. The IMT contract is merely a kind of private business agreement between the NIA and IA, and the IA is not a socially recognized entity under existing laws. The IAs are primarily established to achieve a social role in food production through the operation of irrigation facilities. In addition, institutional development initiatives of the NIA are provided, which indirectly constitute a subsidy by government. Potential misappropriation of public funds may arise unless the IAs are duly recognized under appropriate laws and regulations. Legal remedy appears necessary to resolve it through the enactment of an Irrigators Association Law.
- (2) Inadequate penalty and sanctions: Penalties and sanctions are not explicit in the contract. The IAs do not have the right to demand delivery of bulk water on time,

as the NIA is not obliged to do so. Similarly, the NIA more often than not does not remit the ISF shares due to IAs on time. The delayed remittance of ISF shares is the consequence of the IAs non-compliance with clearing and maintaining secondary canals.

- (3) Ambiguous responsibility sharing: The IMT contract defines the repair works of system facilities transferred to IAs into two categories. Major repair involves expenditure more than Php 50,000 to Php 100,000 and requires the use of heavy equipment, while minor repair involves work manually executed. In principle, the NIA's obligation is to provide heavy equipment, on a rental basis, as well as technical guidance. Thus all the expenditure has to be carried by the IA. The contract provisions in this context are ambiguous, resulting in conflicts between IA and the NIA. In addition, there is no definite provision on the responsibility sharing in terms of expenditure for repair works of facilities damaged by natural calamity.
- (4) Inappropriate ISF sharing scheme: The IMT contract allows change to the ISF sharing scheme between the NIA and IA on the condition that the IA performance is rated "very satisfactory". The IA performance evaluated by the IDD is not necessarily related to assessment of the financial viability of the IA. Thus the ISF sharing has to be reviewed and amended on the basis of financial analysis between the NIA and IA.
- (5) Responsibility for Renewing Facilities: There is no provision in the contract for responsibility for replacement of system facilities which have overextended their physical and/or economic life span. Unless the ownership of system facilities is transferred to the IA under the Type III Contract, all of the facilities belong to the NIA properties. The management of system facilities is only transferred to the IA under the IMT contract. This implies that all of the system facilities will be renewed by the NIA in the future, but this will burden the NIA with huge cost.

5.3 Volumetric ISF Pricing

5.3.1 Background

The current ISF sharing between the NIA and IA is fraught with inefficiencies and delays in payment of the IA share. The sharing also provides little incentive to the IA to levy its own ISF rate on the members. The World Bank suggested that farmers should be given several options for cost recovery, including sharing of ISF, such as

payment of a fixed amount denominated in cavans/ha, and payment by volume of water supplied by the NIA (volumetric pricing).²

In 1996, the NIA launched a longer-term objective to move from direct billing to volumetric pricing at the head of lateral canals. This concept was incorporated in WRDP and pilot-tested in MRIIS, Sta. Maria RIS, and Roxas-Kuya RIS. The pilot testing started in 2000 and continues to date. The volumetric priced ISF was actually applied to the CIA of Lateral D2B in MRIIS.

5.3.2 Irrigation Water Pricing

The ADB Study introduced the concept of “Marginal Value Productivity (MVP)” pricing based on the assumption that water is priced at its marginal cost and used until the marginal cost is equal to the marginal benefit. Using this model, the ADB estimated the marginal product of rice per cubic meter of water used to be about 10 grams/cum. during the dry season. The MVP of irrigation water during the dry season is thus calculated at Php 0.10/cu.m. (0.01 kg x Php 10/kg), while MVP during the wet season is assessed at Php 0.036/cu.m.

5.3.3 Volumetric and Two-tiered ISF Mechanism

To recover the full cost of O&M, the ADB Study suggested the volumetric irrigation service pricing with a two-tiered ISF mechanism. The two-tiered concept requires the NIA to charge volumetrically at the main lateral head-gates, and the IAs set an internal ISF to be paid by members along the laterals, sub-laterals and tertiary canals to farm turnouts. The local ISF at the lateral level could either be area-based or volumetric, depending on members’ choice. The ADB Study estimates the volumetric revenues per ha to be Php 2,176 /ha as calculated below.

Volumetric Revenues estimated by ADB Study

| Season | Water volume payable (cu.m./ha) | | | Unit ISF rate (Php/cu.m.) | Amount (Php/ha) |
|--------------|---------------------------------|---------------|--------|------------------------------|--------------------|
| | Farm use | System losses | Total | | |
| Dry | | | | 0.10 | 1,600 |
| Wet | 10,368 | 5,628 | 15,996 | 0.036 | 576 |
| Total | | | | | 2,176 |

Source : Review of Cost Recovery Mechanisms for National Irrigation Systems, ADB, September 2000

The estimated volumetric revenue of Php 2,176/ha is equivalent to about 4.5 cavans of paddy. It suggests that this revenue collected by the NIA would be used to:

² Aide Memoir on WRDP and IOSP II, World Bank, March 2000

operate and maintain main channels and infrastructure; provide irrigation and farming system technical support services to IAs; and promote capital build-up at the regional and systems level for emergency repairs and O&M to support IAs during periods of typhoons and other natural disasters. It also suggests that the proposed two-tiered ISF would leave approximately Php 1,200/ha (2.5 cavans) remaining from the proposed weighted average ISF of 7 cavans/ha needed for full cost recovery of sustainable system O&M, and the 2.5 cavans collected by each IA for its turnover laterals would be used by the IA to maintain and operate the lateral network. The 2.5 cavans account for 36% of 7 cavans, which is close to the prevailing ISF sharing between the NIA and IA such as 50%: 50%, 60%: 40% and 40%: 60%.

5.3.4 Pilot-testing and Implementation of Volumetric ISF in MRIIS - District IV³

The pilot on Lateral D2B of MRIIS started in 2000. The measurement device installed at the headgate is a calibrated staff gauge type. Following the installation of the measuring device, the memorandum of agreement (MOA) was signed on November 15, 2001, and ISF collection on the basis of volumetric rate started in the dry season. The ISF rate to be paid to the NIA by the IA was Php 0.05/cu.m or US\$ 0.001. The result of the experiment was generally successful. The WB reported that the 2002 dry season ISF collection efficiency was 100%. The Study Team confirmed this through an interview with the D2B CIA President made in December 2002.

5.3.5 Assessment of Volumetric ISF Pricing

With the successful pilot-testing of volumetric ISF billing and collection in the Lateral D2B CIA of MRIIS, the NIA issued MC64 which mandated the field offices to replicate the pricing system in all of the Districts in MRIIS and other systems with completed rehabilitation works. The volumetric ISF pricing has now become an alternative cost recovery to the area-based paradigm. Its major advantages are that:

- a) greater water use efficiency results in expansion of the irrigation service area through surplus water and/or in transferring surplus water to other purposes;
- b) the NIA can save the cost of handling the ISF collected in kind resulting in

³ Sources : (1) Progress Report on Volumetric Pricing Pilot Test at Lat. D2B, MRIIS - District IV, March 18, 2002; and (2) WRDP, Aid - Memoir of World Bank Mission, September 2002

- allocating more funds for systems O&M; and
- c) accountability of ISF transactions is secured resulting in dispelling abuse and collusion between the NIA's field personnel and farmers.

On the other hand, constraints have to be resolved to accelerate its application. The most crucial issue is to find an accurate, reliable and easy to handle measuring device. The WRDP installed a flow meter locally fabricated with cast iron and aluminum at a cost of Php 129,000 at Roxas - Kuya RIS. The JICA also provided six sets of accumulated water volume measuring meters for AMRIS in Region III and Santa Cruz RIS in Region V for trial running. Acceptable and low cost devices are still needed. The second issue is the requirement of a considerable fund for enough repair and rehabilitation of systems' facilities to supply water to the headgates of lateral canals. In addition, the NIA has to establish a uniform volumetric pricing formula acceptable to both the NIA and farmers. The unit price (regional basis) may be variable depending on the cost of water delivery by each system.

In conclusion, the following steps should be undertaken to promote the wider application of volumetric ISF pricing:

- a) The present attempt to introduce volumetric ISF pricing has great potential for water conservation, both for the NIA and irrigation water users.
- b) The physical and administrative steps such as provision of system rehabilitation and adequate measuring devices, institutional setting and specifically gaining the consensus of water users are crucially important and considered pre-conditions to extend volumetric ISF pricing. The extension of volumetric ISFs would need a gradual process at a pace in keeping with various programs in the Action Plan discussed in the Study.
- c) Conversion of water pricing to a volume based ISF would need further study and discussions in view of the various roles of irrigation water in that it is not only used for agricultural production but also has socio-economic and environmental impacts.

5.4 Recommendation for IMT Institutional Development

5.4.1 Process to IMT

The process of introducing the IMT contract was tested in the IOSPII pilot area, and it was manageable and reasonable. Some recommendations are put forward to reinforce the IMT process and institutional development on the basis of results obtained from the participatory rural appraisal of six pilot NISs, as well as site

reconnaissance of four pilot IMT - IAs. These include system rectification, IA financial capacity strengthening and legal amendment.

5.4.2 System Rectification

System rectification is the foremost pre-condition, especially by IAs, for entering into an IMT contract, particularly in meeting the demand to provide irrigation canals with full concrete lining. This is a crucial issue for the NIA being faced with serious financial problems, while the NIA is mandated to gradually implement IMT in accordance with the AFMA. The description below discusses appropriate solutions for the process of system rectification.

(1) System Responsibility Demarcation

It is understood that there are two alternatives on the scale of the service area to be transferred to IAs for their autonomous O&M. One is 3,000 ha or less, the area recommended by the World Bank⁴, and the other is 2,000 ha internally viewed by the NIA. The Study Team attempted to assess the appropriate demarcation of system responsibility between the NIA and IA taking into consideration the following: (a) relief of the NIA from burden in taking care of system management; (b) whether the size of the CIA is enough to manage the transferred system institutionally; and (c) physical capacity of manual labor in maintaining transferred canals.

The table below shows the distribution and classification of NISs in number and area. To relieve the NIA of the burden, the area below 3,000 ha, comprising 144 NISs or 73% of the total would seem to be the appropriate size for transferring the systems to IAs entirely. However, this size appears to be too large. The succeeding tables (lateral canals vis-à-vis area) show a more manageable size than the 3000 ha threshold.

Distribution of Area-Classified NISs in Number (in Nos.)

| Area | NIS nos. | Classification of NIS Service Area | | | | |
|----------|----------|------------------------------------|----------------|----------------|---------------|---------------|
| | | <1,000 ha | 1,001-2,000 ha | 2001,-3,000 ha | 3,001-6,000ha | > 6,001ha |
| Luzon | 125 | 50 | 28 | 23 | 7 | 17 |
| Visayas | 30 | 10 | 9 | 4 | 5 | 2 |
| Mindanao | 41 | 5 | 4 | 11 | 14 | 7 |
| Total | 196 | 65 (33.2%) | 41 (20.9%) | 38 (19.4%) | 26 (13.3%) | 26 (13.3%) |

Source: Study Team

⁴ Implementation Completion Report on Second Irrigation Operations Support Project (IOSP II), World Bank, June 2001

Distribution of Area-Classified NISs in Area (in ha)

| Area | NIS S. Area (ha) | Classification of NIS Service Area | | | | |
|----------|------------------------|------------------------------------|--------------------|--------------------|--------------------|--------------------|
| | | <1,000 ha | 1,001- 2,000 ha | 2001,- 3,000 ha | 3,001- 6,000ha | > 6,001ha |
| Luzon | 452,752 | 28,947 | 39,499 | 54,682 | 25,038 | 304,586 |
| Visayas | 73,861 | 6,017 | 14,322 | 9,780 | 22,216 | 21,526 |
| Mindanao | 162,397 | 3,283 | 6,346 | 27,513 | 55,300 | 69,955 |
| Total | 689,010 | 38,247 (5.6%) | 60,167 (8.7%) | 91,975 (13.3%) | 102,554 (14.9%) | 396,067 (57.5%) |

Source: Study Team

The following table shows the distribution of lateral canals in that service area and in number of IAs belonging to a lateral obtained from the inventory survey carried out for the Study.

Distribution of Lateral Canals (in Nos.)

| Service Area per Lateral | Canal Nos. | (%) | Number of IAs belong to One (1) Lateral Canal | | | | | | | |
|-----------------------------|---------------|--------|---|------|-------|----|----|----|-----|-----|
| | | | Total | > 10 | 6 - 9 | 5 | 4 | 3 | 2 | 1 |
| > 3,000 ha | 34 | (4%) | 34 | 20 | 6 | 3 | 3 | 1 | 1 | 0 |
| 2000 - 2999 ha | 34 | (4%) | 34 | 13 | 5 | 4 | 5 | 5 | 2 | 0 |
| 1000 - 1999 ha | 89 | (11%) | 89 | 5 | 14 | 10 | 9 | 19 | 19 | 13 |
| 500 - 1000 ha | 196 | (25%) | 196 | 0 | 3 | 4 | 20 | 29 | 48 | 92 |
| 300 - 500 ha | 153 | (19%) | 153 | 0 | 0 | 0 | 1 | 11 | 35 | 106 |
| 100 - 300 ha | 216 | (27%) | 216 | 0 | 0 | 0 | 0 | 0 | 23 | 193 |
| < 100 ha | 76 | (10%) | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 76 |
| Total | 798 | (100%) | 798 | 38 | 28 | 21 | 38 | 65 | 128 | 480 |

Source : Study Team

On the assumption that the number of IAs forming a CIA would not be more than ten for realizing a sustainable federal organization, the maximum area serviced by a lateral would be 2,000 ha.

The following table shows the scale of canal sections on an average at canal head, subject to applying to a diversion water requirement of 1.8 L/sec/ha on an average of NISs.

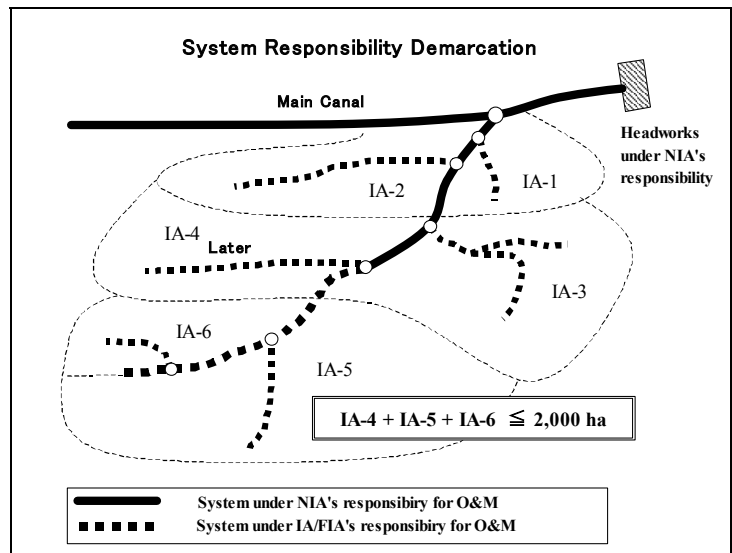
Average Canal Dimension (in meter)

| Canal Type | Q _{head} =5.4 cum./sec for 3,000 ha | | Q _{head} =3.6 cu.m/sec for 2,000 ha | |
|----------------------|--|--------------|--|--------------|
| | Bottom Width | Canal Height | Bottom Width | Canal Height |
| Unlined earth canal | 1.2 | 2.4 | 1.0 | 2.2 |
| Concrete lined canal | 0.85 | 1.9 | 0.75 | 1.6 |

Considering the physical capacity of manual labor in maintaining canals, such as removal of deposited soils and weeds, the canal height would not be greater than two meters. In addition, canal discharge would have to be as small as possible to

enable farmers to have enough control of running water. A service area not more than 2,000 ha would be an appropriate size.

From the above discussions, the maximum service area to be managed by a CIA/ IA under IMT would be 2,000 ha. It would practically fall into a range from 1,000 ha to

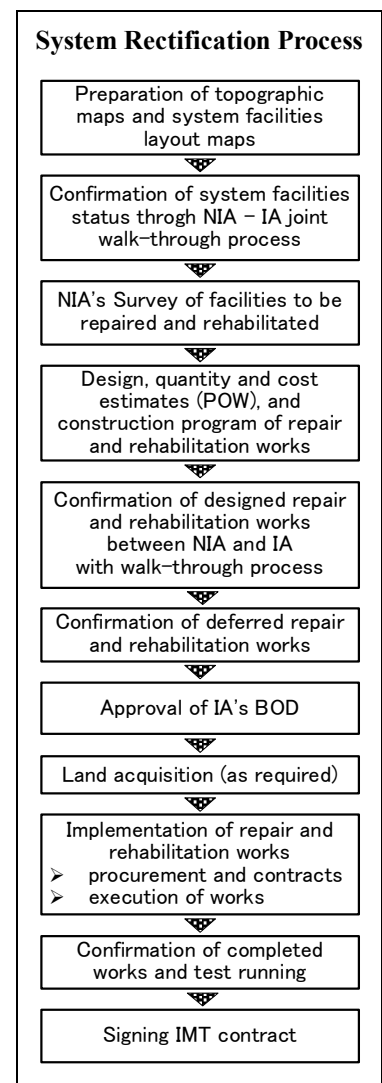


2,000 ha depending on the system layout. The system responsibility demarcation recommended would be as follows and as illustrated on the next page:

- a) The NIA is responsible for operation and maintenance of the head structure (diversion dam, reservoir dam, pump station) in general.
- b) The NIA is responsible for O&M of canals down to the point of a lateral headgate, below which the total service area would range between 1,000 ha and 2,000 ha, not exceeding 2,000 ha in general.
- c) The CIA/IA is responsible for O&M of the designated lateral in accordance with the IMT contract.

(2) System Rectification Process

It is essential to rectify system facilities to allow adequate water management both by the NIA and IA before transferring the management to the IA. Such system rectification includes the repair and rehabilitation of control and safety structures as well as removal of deposited silt for securing the required water flow area. The system rectification process, which has been expanded through the findings obtained in the participatory rural appraisal (PRA) for six pilot sites in the Study, is illustrated in the flow chart. The detailed steps are discussed in Annex 4.



(3) Rehabilitation and Repair Works

The system rectification as the pre-condition of IMT would be classified into two categories:

- 1) repair and rehabilitation works provided for lateral/sub-lateral canals to be operated and maintained by the IA under IMT, named “Lateral System Rectification”; and
- 2) repair, rehabilitation and improvement works provided for the main/lateral canal to be operated and maintained by the NIA, named “Main System Rectification”.

The concept of system rectification is discussed in terms of level of rectification and system efficiency below.

1) Lateral system rectification

The level of lateral system rectification would be limited to the essential works sufficient to perform proper O&M by the IA. Concrete lining of lateral canals would not be the absolute condition for IMT since unlined laterals in MRIIS proved otherwise. Concrete lining would be considered only in the following cases:

- full or partial concrete lining would protect canal facilities from heavy water leakage, serious soil erosion, etc. subject to technical and economic viability; and
- full or partial concrete lining would provide remarkable improvement of the entire system efficiency resulting in expansion of service area, subject to economic viability.

The lateral system rectification will be focussed on the removal of deposited silt in canals, functional recovery and/or improvement of control structures, and provision of access and “farm to market” roads along and in-and-around the canals.

2) Main system rectification

The objective of main system rectification is primarily repair and rehabilitation of main system facilities ensuring the satisfactory delivery of water to the headgates of laterals both in time and quantity. It would include removal of deposited silt in the canal, functional recovery and/or improvement of headwork, control and safety structures, measurement devices, roads for canal O&M, etc. Conditions for concrete lining are the same as those in lateral system rectification.

5.4.3 Legal Arrangement

There are several options to pursue IA institutional development to support IMT. In the immediate term, the following are recommended through the issuance of MCs requiring:

- (1) mandatory membership of the IAs;
- (2) enhancement of IA internal policies, systems and procedures including their by-laws; and
- (3) implementation of innovative schemes to consolidate IA activities to attain efficiency such as land trust arrangements and establishment of assembly markets for members' produce.

Similarly, the issuance of an explicit IMT policy should be pursued to clarify and strengthen the role of IAs in IMT. Suggestions on the elements of the proposed IMT policy are contained in Annex 6.

In the medium to long run, the IAs may opt to evolve into more entrepreneurial organizations. The IAs need to consider the requirements for transformation as well as the concomitant fiscal implications in the conversion process. Congressional action should be considered to provide a stronger impetus in IMT institutional development and implementation. The passage of a special law on IAs, for instance, can give a stronger basis for the organization and operation of the IAs. The proposed legislation will clearly define the social role of IAs in food production and guide their involvement in the management of NISs. The law will also make them legal recipients of government and donor support. Specifically, the proposed IA law should highlight

- (1) the purpose of organizing IAs;
- (2) IA roles and responsibilities;
- (3) benefits and privileges;
- (4) guidelines and procedures in IA organization and operations; and
- (5) institutional development mechanisms.

Effective and efficient IA operations, however, cannot be ensured without the support mechanisms in place. Thus, a comprehensive law on irrigation development is seen as more sustainable legislation in the long run. The law should be able to consolidate relevant policies on irrigation management, institutional strengthening of the NIA and the IAs, cost recovery mechanisms in the NISs, and other relevant matters, into a single piece of legislation. The law is envisioned to

expedite the implementation of the needed reforms and improvements in the irrigation sub-sector.

CHAPTER 6 ASSESSMENT OF NISs AND IAs

6.1 Classification of NISs and IAs

6.1.1 Statistical Analysis for NIS and IA Classification

Statistical analysis was adopted in classifying the 196 NISs and 2,000 IAs because of the fairly large amount of information to be processed. In addition, the method minimizes individual bias and thus objectivity is ensured. Principal component analysis (PCA), a multi-variate analysis technique, was applied: (i) to characterize NIS-IA based on the number of principal components describing the present conditions of NIS-IA using relevant data obtained mainly from the inventory survey; and (ii) to appropriately group all NIS-IA through cluster analysis based on the derived principal components.

6.1.2 NIS Classification

Only 194 out of the 196 NISs were included in the PCA. (Two NISs had ceased operation.) The PCA was derived using multi-variate computational software based on the following 63 data sets, categorized into five fields.

Data Used for Statistical Analysis

| Field | Number of data sets | Data source |
|-----------------|---------------------|--|
| Climate | 3 | PAGASA |
| Water resources | 4 | NIA, Results of past relevant studies |
| NIS facilities | 21 | NIA |
| NIS performance | 16 | National Irrigation System Offices (NISO) |
| Socio-economy | 19 | NISO, National Statistical Office, DA's statistics, DAR's statistics |
| Total | 63 | |

The results revealed that all NISs could be characterized by six indices: (i) level of NIS facilities, (ii) agricultural performance represented by cropping intensity; (iii) farmers livelihood; (iv) sufficiency of available water resources; (v) market accessibility; and (vi) NIS O&M performance. To explain these indices, ten Principal Components (PCs) were extracted from the PCA as shown below.

Result of PCA for Grouped Data-Set of Variables

| Index | PC | Meaning of PC interpreted |
|---|-------|---|
| 1) Level of NIS facilities | PC-1 | Density of system facilities |
| | PC-2 | Functionality of water control structures |
| | PC-3 | Functionality of canals |
| 2) Agricultural performance | PC-4 | Cropping intensity |
| 3) Farmers livelihood | PC-5 | Farming efficiency |
| | PC-6 | Degree of farm expenditure |
| | PC-7 | Degree of farm income |
| 4) Sufficiency of available water resources | PC-8 | Availability and sufficiency of water resources |
| 5) Market accessibility | PC-9 | Market accessibility |
| 6) NIS O&M performance | PC-10 | NIS O&M performance |

The cluster analysis was subsequently performed using the above ten PCs. All 194 NISs were classified into five groups based on their scores for each of the ten PCs. Interpreting the scale and combination of PC scores, the respective groups of NISs were characterized as shown in the succeeding page and summarized below.

Characteristics of Grouped NISs assessed by Statistical Analysis

| NIS Group | Characteristics of NIS Assessed |
|-----------|---------------------------------|
| 1 | Water Constraint Type NIS |
| 2 | Potential un-exploited Type NIS |
| 3 | Market-away Type NIS |
| 4 | Small Scale and Pump Type NIS |
| 5 | Urbanization affected Type NIS |

The distribution of NISs in the respective five groups is summarized below.

Group Distribution of NISs in number

| Area | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Total |
|----------|---------|---------|---------|---------|---------|-------|
| Luzon | 14 | 44 | 34 | 7 | 24 | 123 |
| Visayas | 4 | 9 | 17 | 1 | 0 | 30 |
| Mindanao | 3 | 20 | 15 | 0 | 2 | 41 |
| Total | 21 | 73 | 66 | 8 | 26 | 194 |
| (%) | 10.8% | 37.7% | 34.0% | 4.1% | 13.4% | 100% |

Group Distribution of NISs in Service Area (ha)

| Area | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Total |
|-----------------|---------|--------------------|---------|---------|---------|---------|
| Luzon | 45,093 | 336,393 | 44,936 | 3,372 | 19,034 | 448,828 |
| Visayas | 7,517 | 37,483 | 35,285 | 800 | 0 | 81,085 |
| Mindanao | 12,907 | 103,016 | 37,194 | 0 | 2,056 | 155,173 |
| Total | 65,517 | 476,892 | 117,415 | 4,172 | 21,090 | 685,086 |
| (%) | 9.6% | 69.6% | 17.1% | 0.6% | 3.1% | 100% |
| UPRIIS and MRIS | | 190,902 (27.9%) | | | | |

Source : Study Team

Characteristics Assessment of NIS Groups

| NIS Group | Index Evaluated | | Characteristics Assessed |
|-----------|--|-------------|---|
| | Index | Scale | |
| 1 | Level of NIS facilities | Low - Med. | (Water Constraint Type NIS) This group consists of NISs where irrigation water is insufficient. Although the system facilities are relatively well provided, O&M performance is at an insufficient level. These factors cause low cropping intensity. Farm income is at a medium level owing to relatively favorable market accessibility. |
| | Agricultural performance | Low | |
| | Farmers livelihood | Med. | |
| | Sufficiency of water resources available | Low | |
| | Market accessibility | Med. | |
| | NIS O&M performance | Low | |
| 2 | Level of NIS facilities | High - Med. | (Potential un-exploited NIS Type) This group consists of NISs where the majority of the sizes is large to medium scale. This includes all the Districts of UPRIIS and MRIIS. Irrigation water, infrastructure, drainage and marketing facilities are generally not limiting. Cropping intensity is thus in the medium level. Market accessibility is fairly favorable, resulting in a medium level of farm income. Potential is not fully exploited. |
| | Agricultural performance | Med. | |
| | Farmers livelihood | Med. | |
| | Sufficiency of water resources available | Med. | |
| | Market accessibility | Med. | |
| | NIS O&M performance | Med. | |
| 3 | Level of NIS facilities | Med. | (Market-away Type NIS) This group consists of NISs where facilities are fairly well equipped and supported by ample water resources, resulting in high cropping intensity. The performance of O&M services is generally high. However, the systems are located relatively distant from large markets, and this depresses farm incomes. |
| | Agricultural performance | High | |
| | Farmers livelihood | Low | |
| | Sufficiency of water resources available | High | |
| | Market accessibility | Med. | |
| | NIS O&M performance | High | |
| 4 | Level of NIS facilities | Med. - High | (Small Scale and Pump Type NIS) This group consists of NISs where systems are amply provided with water resources, and high density of system facilities, represented by a pump system. However, cropping intensity is in the medium level due to insufficient function of canal structure. Marketability is fairly low. NISs in this group are clearly characterized as small-scale systems of less than 1,000 ha, typical of pump irrigation systems. This results in medium farm income. |
| | Agricultural performance | Med. | |
| | Farmers livelihood | Med. | |
| | Sufficiency of water resources available | High | |
| | Market accessibility | Low | |
| | NIS O&M performance | High | |
| 5 | Level of NIS facilities | Low | (Urbanization affected Type NIS) This group consists of NISs where the majority is closely located to large markets, represented by most NISs in Region 4, and agriculture is negatively affected by rapid urbanization and industrialization. Agriculture is constrained by insufficient irrigation water and a low level of system facilities coupled with a low level of O&M performance, resulting in low cropping intensity. |
| | Agricultural performance | Low | |
| | Farmers livelihood | Low | |
| | Sufficiency of water resources available | Med. | |
| | Market accessibility | High | |
| | NIS O&M performance | Low | |

Note: Scaling "High", "Med." and "Low" is defined in Table 1.4 of Annex 7 to be attached to Draft Final Report

Source : Study Team

6.1.3 Assessment of Classified NISs

The results of the NIS classification were:

- (1) The key factor in classifying NISs is availability of water resources. However, NISs are affected by other physical and socio-economic conditions, meaning that ample water does not necessarily make an NIS productive and ensure higher farmer's livelihood.
- (2) The majority of NISs are classified in Group 2, as much as 38% in number and 70% in service area, including the entire districts of UPRIIS and MRIIS. The service area, even excluding both the large systems, occupies about 60% of the total area. Group 2 NISs are generally unsatisfactory at all levels. However, this group has potential for enhancement of system performance by re-activation. This group is further classified into two sub-groups: (i) Sub-group 2-1, about 64% of NISs in the group, are characterized by farmers having a relatively low livelihood and market accessibility; and (ii) Sub-group 2-2 consists of the better NISs within Group 2.
- (3) Group 3 ranked second in service area and number; it is composed of medium to small scale NISs amply provided with water resources. The performance of NISs and IAs under Group 3 is relatively better than those in Group 2. The disadvantage of this group is that most NISs are located too far from large markets.
- (4) Group 1 ranked third in service area and number, and the majority lack water resources. However, the system facilities are relatively well maintained.
- (5) NISs under Groups 4 and 5 have rather unique irrigation systems compared with the above three groups. The majority of systems in Group 4 are small-scale pump irrigation systems, while those in Group 5 are located around Laguna Lake where urbanization and industrialization of Metro Manila are vastly developed. Both Groups 4 and 5 were excluded for selection of target NISs for the Study.

On the basis of the above results and analysis, the proposed types of strengthening for the three groups are summarized below.

Strengthening Target of Grouped NISs

| Group | Type of strengthening target | Focussing issues |
|-------|---|--|
| 1 | Strengthening through improvement of water management | Although water resource is poor, agricultural performance and farmer's livelihood would be enhanced mainly through improvement of water management coupled with system modernization and institutional strengthening. |
| 2 | Strengthening through system and organizational re-activation | Factors related to the irrigation system are fairly favorable; therefore NISs have potential for enhancing agricultural and farmers livelihood through re-activation of systems and organizational management. |
| 3 | Strengthening through development of post harvest potentials | Under favorable conditions of water resource and higher system management capacity, NISs have higher development potential by exploiting higher value added agricultural products through improvement of post harvest facilities and technologies. |

6.1.4 IA Classification

The data used in the PCA for IAs consisted of two categories, (i) results of the IA functionality survey conducted by the NIA for the three-year period of 1999 - 2001 and (ii) results of an inventory survey made by the JICA Study Team. The data adopted for the PCA is summarized below.

Data used for PCA of IA

| Data Category | Data Field | Nos. of data set | Remarks |
|--|----------------------------|------------------|---|
| IA Functionality Survey by the NIA | IA Functionality | 1 | Overall functionality score |
| | IA profile | 7 | IA service area, IA membership, Location from head gate |
| IA Inventory Survey by JICA Study Team | Agricultural performance | 5 | Cropping intensity, Yields |
| | Land tenure | 2 | Owner or tenant |
| | ISF collection performance | 1 | Current Collection |
| | IA financial position | 1 | Net worth |
| | Farmers livelihood | 2 | Farm income |
| | IMT contract | 1 | |
| Total | | 20 | |

Source : Study Team

The PCA considered only 1,665 IAs out of 2,054 because of the lack of functionality survey data of 389 IAs. The PCA yielded four (4) principal components that best explain the characteristics of IAs. The meaning of each interpreted PC is as shown below.

Meaning of Interpreted PCs

| PC No. | PC Meaning |
|--------|--|
| 1 | Poverty level |
| 2 | Farming scale |
| 3 | Degree of IMT development |
| 4 | IA location from water source / intake |

Source : Study Team

The cluster analysis was made using four PCs and combined with the overall score of IA functionality. The analysis showed that the 1,665 IAs could be statistically grouped into five groups. However, almost all the IAs (99%) were within three of the groups as shown below. Those in the other two groups were excluded from the classification.

Distribution of Classified IAs

| Geographical Area | Group A | Group B | Group C | Group D | Group E | Total |
|-------------------|---------|---------|---------|---------|---------|-------|
| Luzon | 563 | 240 | 347 | 9 | 1 | 1,160 |
| Visayas | 24 | 25 | 79 | 3 | 0 | 131 |
| Mindanao | 186 | 68 | 115 | 1 | 4 | 374 |
| Total | 773 | 333 | 541 | 13 | 5 | 1,665 |
| (%) | 46.4% | 20.0% | 32.5% | 0.8% | 0.3% | 100% |

Source : Study Team

Interpreting the scale and combination of PC scores, the respective groups of IAs were characterized as shown below.

Characteristics Assessment of IA Groups

| IA Group | Index Evaluated | | Level of Farmers Livelihood, IA Performance and IA Location |
|----------|---|-------------|--|
| | Index | Scale | |
| A | Overall score of IA functionality | Med. - High | Farmers livelihood : Relatively higher IA performance : Relatively higher IA location : Upstream |
| | Poverty depending on land tenure status | Low | |
| | Farming scale depending on land tenure status | Low | |
| | Degree of IMT development | High | |
| | IA location from water source / intake | Closer | |
| B | Overall score of IA functionality | Med - Low | Farmers livelihood : Relatively lower IA performance : Relatively lower IA location : Mid stream |
| | Poverty depending on land tenure status | Med. | |
| | Farming scale depending on land tenure status | Med. | |
| | Degree of IMT development | Med. | |
| | IA location from water source / intake | Med. | |

(table continued)

| IA Group | Index Evaluated | | Level of Farmers Livelihood, IA Performance and IA Location |
|----------|---|-------|--|
| | Index | Scale | |
| C | Overall score of IA functionality | Low | Farmers livelihood : Low IA performance : Low IA location : Downstream |
| | Poverty depending on land tenure status | High | |
| | Farming scale depending on land tenure status | High | |
| | Degree of IMT development | Low | |
| | IA location from water source / intake | Far | |

Source: Study Team

6.1.5 Assessment of Classified IA

The results of the IA classification were:

- (1) The statistical analysis of IA classification shows a tendency that IAs located in the upper-stream of the system or closer to the water source/intake are productive and active, resulting in comparatively higher farmers livelihood. The IA functionality is also higher in the upper part of irrigation systems.
- (2) Land tenure is a major classification factor that affects farmer's livelihood and IA functionality. This factor was considered for target IA selection based on the results of the IA inventory survey and advice of the target NISO.
- (3) The distribution of classified IAs (A to C) is relatively uniform in Luzon and Mindanao areas, while the majority of Group C is in Visayas. This may be caused by geographical limitation. Particular attention will be given to the socio-economic enhancement of the NISs located in the Visayas area.

6.2 Selection of Target NIS-IA

6.2.1 Selection Concept and Method

Only the three groups (Groups 1, 2 and 3) of NIS were considered for selection of target NISs because of the unique nature of Groups 4 and 5. Both classifications were integrated into the following grouping:

Integrated Grouping of NIS and IA for Selection

| NIS Group | Geological Area | NIS (nos.) | IA Group | | | Total |
|-----------|-----------------|------------|----------|---------|---------|-------|
| | | | Group A | Group B | Group C | |
| Group 1 | Luzon | 14 | 44 | 28 | 15 | 87 |
| | Visayas | 4 | 2 | 0 | 7 | 9 |
| | Mindanao | 3 | 16 | 4 | 5 | 25 |
| | Sub-total | 21 | 62 | 32 | 27 | 121 |
| Group 2 | Luzon | 44 | 471 | 182 | 272 | 925 |
| | Visayas | 9 | 11 | 14 | 24 | 49 |
| | Mindanao | 20 | 90 | 49 | 85 | 224 |
| | Sub-total | 73 | 572 | 245 | 381 | 1,198 |
| Group 3 | Luzon | 34 | 39 | 23 | 50 | 112 |
| | Visayas | 17 | 10 | 11 | 43 | 64 |
| | Mindanao | 15 | 78 | 15 | 18 | 111 |
| | Sub-total | 66 | 127 | 49 | 111 | 287 |
| Total | | 160 | 761 | 326 | 519 | 1,606 |

Source : Study Team

All NIS-IAs were screened for selection of target NIS-IAs where the detailed field survey and study were conducted. The number of target NIS-IAs was six. The basic concepts adopted in the selection of target NIS-IAs were:

- (1) Target NISs represent the majority of NISs;
- (2) All IAs or selected IAs in a target NIS represent the majority of IAs; and
- (3) Selected NIS-IAs have a high potential for improvement in terms of IMT implementation and enhancement of farmer's livelihood.

The target NIS-IAs were selected following a three (3) step procedure:

- (1) NIS-IA Candidate Screening (1st Step): Screening of 160 NIS-IAs by pre-determined screening criteria, where candidate NIS-IAs were selected;
- (2) Target NIS-IA Selection (2nd Step): Screening of candidate NIS-IAs by pre-determined selection criteria, where six (6) target NIS-IAs were selected; and
- (3) Target IA Selection (3rd Step): Screening of all IAs belonging to target NISs by IA database and through discussions with target NIS offices, three (3) target IAs in the respective six (6) NISs were selected.

6.2.2 NIS-IA Candidate Screening

The results of the NIS-IA classification gave basic information for screening NIS-IA candidates. The following five (5) criteria were adopted for selecting possible candidates from the screening process:

- (1) NISs being and recently having been assisted by international funding institutions involving capital and institutional support were omitted in principle;

- (2) Non and less responding NISs in submitting results of the IA functionality survey with less than 50% of IAs are excluded;
- (3) NISs having service area below 1,000 ha are excluded;
- (4) NISs located in unfavorable areas in terms of security and accessibility are excluded; and
- (5) IAs classified in three Groups of A, B and C that are uniformly distributed in a candidate NIS as much as possible.

With the above criteria, all the classified NISs were screened (Table 2.1 in Annex 7). The results showed the consolidation of 27 candidates as summarized below.

Candidates for Target NISs

| Geo. Area | NIS Group-1 | NIS Group-2 | NIS Group-3 |
|-----------|---|---|---|
| Luzon | (1) Agno (R-1) (10,093 ha/20 IAs) (2) San Fabian (R-1) (2,288 ha/7 IAs) (3) Sinocalan (R-1) (2,570 ha/7 IAs) | (4) Upper Chico (CAR) (17,551 ha/40 IAs) (5) Apayao-Abulug (R-2) (10,048 ha/35 IAs) (6) Angat (R-3) (29,374 ha/89 IAs) (7) Gumain (R-3) (2,209 ha/4 IAs) (8) Massim (R-3) (2,111 ha/6 IAs) (9) St. Cruz (R-4) (3,100 ha/4 IAs) (10) Tigman-Hinagyanan (R-5) (2,244 ha/7 IAs) | (11) Laoag Vintar (R-1) (2,377 ha/5 IAs) (12) Bayto (R-3) (1,148 ha/5 IAs) |
| Visayas | | (13) Aganan (R-6) (4,863 ha/8 IAs) (14) Bago (R-6) (12,700 ha/17 IAs) (15) Sibalom-San Jose (R-6) (5,065 ha/6 IAs) (16) Bohol (R-7) (4,973 ha/13 IAs) | (17) Jalaur-Extension (R-6) (2,616 ha/6 IAs) |
| Mindanao | (18) Manulali (R-10) (4,395 ha/7 IAs) (19) Padada (R-11) (3,512 ha/6 IAs) | (20) Labangan (R-9) (3,195 ha/2 IAs) (21) Pulangui (R-10) (11,415 ha/17 IAs) (22) Saug (R-11) (3,900 ha/16 IAs) (23) Tago (R-13) (3,716 ha/22 IAs) | (24) Batutu (R-11) (3,269 ha/14 IAs) (25) Kipaliku (R-11) (2,317 ha/3 IAs) (26) Mal (R-11) (2,613 ha/15 IAs) (27) Simulao (R-13) (2,540 ha/16 IAs) |

Source : Study Team

6.2.3 Selection of Target NIS-IAs

From the 27 candidate NIS-IAs, six target NIS-IAs were selected through the following process:

- (1) NISs were geographically represented and selected proportionally from three groups of NIS (Groups 1, 2 and 3).
- (2) Two or more target NISs were excluded if all were from the same region.
- (3) NISs having a well balanced distribution of both the IA grouping (A to C) and the IA functionality groups (“outstanding” through “poor”) were preferably selected among the 27 candidate NIS-IAs.
- (4) A large irrigation system was selected as a representative model of large scale NISs;
- (5) NISs involving large IA or IAs with an area more than 1,000 ha were selected for assessing the possibility of full turnover to IAs;
- (6) Various scales of IA service area were uniformly distributed among selected NISs; and
- (7) The NIA’s recommendation was considered given its experience and accumulated information through institutional development activities.

From the above selection criteria, the six (6) Target NIS-IAs were selected as shown below.

Selected Target NIS-IAs

| Geographical Area | Region | NIS Name | NIS Group | Service Area (ha) | Nos. of IA | Aver. IA Area (ha)/(range) | Aver. IA Member (range) |
|-------------------|--------|------------|----------------------------|-------------------|------------|----------------------------|-------------------------|
| Luzon | 1 | San Fabian | Group 1 | 2,288 | 7 | 327 (189-540) | 262 (120-430) |
| | 3 | Angat | Group 2 (Sub Group 2-2) | 29,374 | 89 | 330 (30-1,400) | 190 (30-1,200) |
| Visaya | 6 | Bago | Group 2 (Sub Group 2-1) | 12,700 | 17 | 747 (310-920) | 243 (106-460) |
| Mindanao | 9 | Lagangan | Group 2 (Sub Group 2-1) | 3,195 | 2 | 1,597 (1,563-1,632) | 769 (768-770) |
| | 10 | Pulangui | Group 2 (Sub Group 2-1) | 11,415 | 17 | 671 (59-1,054) | 394 (58-669) |
| | 11 | Mal | Group 3 | 2,613 | 15 | 174 (87-327) | 107 (70-175) |

6.2.4 Selection of Target IAs

The target IAs were selected from the six NISs; the number of IAs was set at three in each target NIS. The list of IAs is shown in Table 2.2 of Annex 7. The process of selection was:

- (1) A lateral or secondary canal, for which the management will be transferred to IAs/FIA under IMT was selected in each NIS on the basis of system layout map, data and information from the IAs inventory survey and suggestion from NISO;
- (2) Three IAs were selected from those located in upstream, mid-stream and downstream areas, respectively, in the service area commanded by the selected lateral canal;
- (3) An IA that has a larger number of members, preferably not less than 100; and
- (4) An IA in which the types of land tenure are uniformly distributed.

The results of IA selection are tabulated below.

Selected Target IAs

(1) Name of NIS : San Fabian (R-1) / Name of Lateral : MC-J

| Locat. | IA Name | Service Area (ha) | IA Member | Land tenure | | IMT | IA Classification | |
|--------|--------------------|-------------------|-----------|-------------|--------------|---------|-------------------|-------|
| | | | | Owner | Tenant, etc. | | Group | Func. |
| U/S | Scientific Farming | 361 | 218 | 50% | 50% | Type II | C | F |
| M/S | BGM | 245 | 60 | 55% | 45% | Type I | A | F |
| D/S | San Juan Babasit | 221 | 70 | 57% | 43% | Type I | B | P |

(2) Name of NIS : Angat (R-3) / Name of Lateral : Lateral D

| | | | | | | | | |
|-----|-----------|-----|-----|-----|-----|-----------|---|---|
| U/S | Picaba | 494 | 354 | 55% | 45% | Type I&II | A | S |
| M/S | Balucoc | 488 | 300 | 40% | 60% | Type I&II | B | S |
| D/S | Josephian | 368 | 160 | 29% | 71% | Type I&II | A | S |

(3) Name of NIS : Bago (R-6) / Name of Lateral : Lateral E

| | | | | | | | | |
|-----|------------|-------|-----|-----|-----|-----------|---|---|
| U/S | Atidu | 908 | 108 | 61% | 39% | Type I&II | C | F |
| M/S | Amana | 942 | 243 | 59% | 41% | Type I&II | A | P |
| D/S | Bunasabala | 1,099 | 460 | 73% | 27% | Type I&II | B | F |

(4) Name of NIS : Labangan (R-9) / Name of Lateral : MC and Lateral A

| | | | | | | | | |
|-----|-----------|-------|-----|-----|-----|----------|---|---|
| U/S | Munchrist | 1,377 | 101 | 74% | 26% | No Cont. | B | P |
| D/S | Sandata | 1,383 | 135 | 76% | 24% | No Cont. | A | P |

(5) Name of NIS : Pulangui (R-10) / Name of Lateral : Lateral G

| | | | | | | | | |
|-----|------------------|-------|-----|-----|-----|-----------|---|---|
| U/S | Paradise G5 & G6 | 809 | 325 | 70% | 30% | Type I | C | P |
| M/S | Kahugpungan | 1,025 | 170 | 68% | 32% | Type I&II | C | P |
| D/S | Mad | 1,256 | 368 | 70% | 30% | Type I&II | A | P |

(6) Name of NIS : Mal (R-11) / Name of Lateral : MC Right

| | | | | | | | | |
|-----|------------|-----|-----|-----|-----|-----------|---|----|
| U/S | Weslasufia | 130 | 112 | 77% | 23% | Type I&II | A | F |
| M/S | Labakafia | 279 | 175 | 34% | 66% | Type I&II | A | F |
| D/S | Malkaira | 121 | 102 | 48% | 52% | Type I&II | A | VS |

Note: VS=Very satisfactory, S=Satisfactory, F=Fair, P=Poor

CHAPTER 7 PARTICIPATORY RURAL APPRAISAL (PRA) SURVEY

7.1 Procedure for the PRA Survey

The second field survey and study was conducted for about 5.5 months from September 17, 2002 to March 1, 2003. The PRA survey was conducted in six NISs, involving 17 IAs. Questionnaires involving the NISO, local agencies and IAs were prepared and used to collect the required information. A series of project cycle management (PCM) workshops were likewise held to reach consensus with and obtain first hand information from the various stakeholders. The composition of the field survey team and corresponding activities are shown in Figure 7.1.

7.2 Framework of the Action Plan for IA Strengthening

7.2.1 Framework Preparation

The workshop held on July 18 and 19, 2002 provided the major inputs in the drafting of the framework of the action plan. This was further substantiated in a series of post workshops. The major highlights of the assessment given below served as the foundation of the action plan framework.

(1) Assessment of problem trees

The major findings of the problem trees comprised the following:

- (a) IA Organization: Weak organizational capacity of IAs to manage irrigation system is caused by:

| 1st Causes | 2nd Causes |
|---|---|
| Only 20-50% members are active | <ul style="list-style-type: none"> • 50-90% members are not following O&M regulation and policies. • Around 80% of IAs have same set of officers, no democratic election. • 50% of TSA leaders are inactive. |
| Internal funds are not enough to sustain IA activities | <ul style="list-style-type: none"> • Financial management system is not established in IAs. • Collection of IA membership fees is low. |
| Only 10% of members are able to do situational analysis, planning, monitoring and evaluation. | <ul style="list-style-type: none"> • Skills gained in leaders' training are not continuously used. • Training package is provided only to about 10% of IA members. • There is no evaluation on training. |
| NIA, particularly the NISO does not provide assistance for IA organizational strengthening. | <ul style="list-style-type: none"> • NIA, particularly the NISO does not have both the quality and number of IDOs to perform institutional activities. |

(b) IA O&M Activities: Weak O&M systems and procedures at the IA designated service area is caused by:

| 1st Causes | 2nd Causes |
|---|--|
| Most O&M plans are not implemented. | <ul style="list-style-type: none"> • Most IAs have no written O&M policy and plan.. • Unfair O&M policy and plan. • IAs and NIA can not strictly implement O&M policy and plan. • Less IA membership and active members. • No advantage of joining IA activities. |
| Water delivery and distribution are not properly implemented. | <ul style="list-style-type: none"> • Inadequate water resources. • Deteriorated facilities and structures. • Waste irrigation water in the system. • Water users do not follow water distribution plan. • Inadequate skills in water delivery and distribution . |
| Participation of members to system maintenance and repair is limited at 30-50%. | <ul style="list-style-type: none"> • Many IA members are dissatisfied with IA activities. • 75% of IAs or more do not have funds to support O&M. • IA activities are not properly monitored. |

(c) IA Financial Performance: Low Level of financial Performance is caused by:

| 1st Causes | 2nd Causes |
|--|---|
| NIA's inability to satisfy its obligations on Type I and II and other IMT contracts. | <ul style="list-style-type: none"> • Un-updated master list of farmer beneficiaries. • Delays in processing IA share and remuneration by NIA. • Delayed payment of IA share and remuneration by NIA. |
| 90% of IAs are cash-starved, practically no funds for financial transactions. | <ul style="list-style-type: none"> • Poor collection of IA dues. • Only 45% of IAs pay ISF promptly. • Minimum increase of production and income among IA members |
| No adequate financial plan (planning, budgeting and control). | <ul style="list-style-type: none"> • IAs have limited skills in financial recording and fund source. • IAs lack skilled and dedicated financial managers. |

(2) Preparation and Assessment of objective trees

The participants prepared the objective trees and identified sub-projects. The sub-projects were prioritized by applying criteria such as doable, magnitude of effect, increase in farm income, etc. The selected sub-projects are summarized as follows:

- (a) IA Organization
 - Priority 1 Building Productive IAs (capacity and team building)
 - Priority 2 Installing Management Competencies
 - Priority 3 Providing Appropriate Assistance for IA's Organizational Strengthening
 - (Priority 4 Strengthening IA's financial management)
- (b) IA O&M Activities
 - Priority 1 Formulating Rational O&M Policy and Planning
 - Priority 2 Implementing Effective O&M
 - Priority 3 Providing Appropriate Assistance for IA O&M Activities
 - (Priority 4 Strengthening IA's financial management)
- (c) IA Financial Performance
 - Priority 1 NIA's Financial Management Strengthening
 - Priority 2 Collection Enhancement of IA's Dues and ISF
 - Priority 3 Assistance for IA's Capacity Building on Financial Management and other activities

(3) Preparation of Project Design Matrix (PDM) and Implementation Schedule

Three priority sub-projects per respective area, and a total of nine sub-projects were finally selected for IA strengthening. The PDMs for nine sub-projects and their implementation schedule were drafted.

7.2.2 PRA Survey and Preparation of IA Strengthening Action Plans

Under the PRA survey, the pilot IAs prepared their action plans focusing on five sub-projects: 1.1) building productive IAs; 1.2) installing management competencies; 2.1) formulating a rational O&M policy and plan; 2.2) implementing effective O&M; and 3.2) collection enhancement of IA's dues and ISF. Following the assessment, the contents of the PDMs and Plan of Operations prepared during the first field survey were revised incorporating the outcome of the pilot NIS-IA action plans.

7.3 Present Condition of Pilot NISs and NISOs

7.3.1 Socio-economy of Selected NIS Areas

There is a wide variation in socio-economic conditions among the respective seven provinces in which the selected NISs are located. Various socio-economic

indicators including human development index and minimum basic needs indicates that those provinces in Luzon area are relatively in a better economic environment with a higher percentage of families above the poverty threshold. Participation in organizations, however, is the lowest, an indication that families may be averse to organizing activities. No distinct difference in land tenure is seen among the provinces.

Owner farmers account for about 40% of farmers on average, while tenant farmers account for between 30% and 55%. The paddy yield in the provinces exceeds 3 tons/ha in general. However, there is a remarkable variation area to area, ranging from 3 tons/ha in Visayas and western Mindanao areas to 4.5 tons/ha in central to eastern Mindanao. Farmgate prices for paddy during the period 1995-2000 have been growing by about 7% annually. However, the monthly prices fluctuate considerably. In particular paddy prices are very low during peak harvest periods. This causes deterioration of farmers' financial standing, since most farmers are indebted to rice traders as their primary source of short-term credit. The NFA, a government-controlled corporation, protect paddy and corn farmers through a price support mechanism. It intervenes in the market nationwide when prices of these commodities are depressed. The NFA undertakes intensive procurement at support prices normally above the prevailing market prices. The volume procured, however, is limited. Market networking and intelligence is very weak, as a support mechanism to farmers' groups. There is no national information network that can render a sharing of a database on producers and buyers, as well as information and business leads gathered from local/international trade fairs and missions. Assembly marketing is barely practiced.

7.3.2 Agricultural Production and Marketing of Selected NIS Areas

With the exception of San Fabian and Labangan, the paddy production share of the other NISs is significant ranging from 20% to 30% of the total provincial production. The yield levels are within the provincial averages ranging from 3.2 tons/ha (San Fabian) to 4.2 tons/ha (Angat). The livestock and poultry are widely fed in the selected NISs for commercial purpose and/or supplementary source of income. San Fabian and Angat are extensively in broiler production, while Pulangui is extensively in cattle, swine and duck production. Labangan is in goat raising.

The estimated available rice supply in crop year 2000 in the selected NISs is more than adequate to meet the demand in the municipalities where the NISs are located with the exception of San Fabian. These NISs are relatively stable rice suppliers,

and thus the excess supply is likely to satisfy inter-regional market requirements. Solar dryers (concrete floor) and small-scale rice mills are the common post harvest facilities, and both are privately owned by influential people in the selected NISs. The cost for drying paddy is roughly Php 1.0 per 50 kg (cavan). The capacity of existing rice mills in the villages is generally adequate, as a single unit rice mill normally services about 50 to 150 ha. There is a lack of solar dryers, mechanical dryers and warehouses, and the poor condition of post harvesting facilities is compounded by low-standard farm-to-market roads in Pulangui and Mal. The prohibitive cost of transport dampens the farmgate prices of paddy.

The prevailing trader-farmer relationship dominates the marketing of paddy because most farmers are heavily indebted to LBP under the old cooperative lending program. Farmers normally secure their short-term credit at the prohibitive prevailing interest rate, more than 10% per month, and traders deprive them of postponing and even further processing the selling of their paddy for higher prices. There exist a number of multi-purpose agricultural cooperatives within the vicinity of the selected NISs. Although most of these cooperatives seem active, most of them are bankrupt and hence cannot perform marketing services to farmers.

7.3.3 Profile of Pilot NISs

The major features of the selected six NISs are shown in Table 7.1. The irrigation systems are diversion dam-type headworks, without any impounding and gravity-type water distribution system. In terms of service area, Angat RIS can be classified as a large scale system covering 31,500 ha, while Bago RIS and Pulangui RIS can be considered medium scale covering around 12,000 ha each, and San Fabian RIS, Labangan RIS, and Mal RIS as small scale systems covering about 2,000 ha to 3,000 ha. The oldest systems are San Fabian, Angat, Bago and Labangan RIS, having been in operation as early as 1960 to 1970, while the youngest are Pulangui and Mal RIS which began operation in 1984 and 1992 respectively.

Rehabilitation of the systems has been very rare. The present status of the facilities is summarized below, the details of which are given in Table 7.2. Almost all the canals, especially lateral canals, need desilting works to restore to their original function. More than half of the turnout gates are either non-functional or non-existent. Among the six NISs, Mal RIS is in the best condition, mainly because of the recent lining of the canal, including maintenance from member IAs. The worst is San Fabian RIS, where less than 20% of the facilities are functional.

Facility Status of 6 Pilot NISs

| | San Fabian | Angat | Bago | Labangan | Pulangui | Mal |
|------------------|------------|-------|------|----------|----------|-----|
| Canal | | | | | | |
| Main Canal | C | B | C | C | B | A |
| Lateral Canal | C | C | C | C | C | B |
| Structure | | | | | | |
| Head/Checkgate | C | A | B | C | B | B |
| Turn-out Gate | C | B | C | C | B | B |
| Conveyance | C | A | B | A | B | B |

Note : A: Good, B: Moderate, C: Worse
Source : Study Team

7.3.4 Pilot NISOs

(1) Manpower

The manpower per pilot NISO is given in the table below. In terms of workload, there is unequal distribution of staff per NISO. San Fabian and Mal NISOs have the lightest workload, while Labangan NISO has the heaviest workload. The inequity is further seen between Bago and Labangan NISOs. The workload per staff member is about the same and yet the service area of Bago is about four times bigger than Labangan. In terms of delivery of service, obviously a number of the staff are overworked. This becomes more distinct when the staffing is reviewed based on function. An O&M staff member in Labangan NISO has about 600 ha compared to about 300 ha in San Fabian, Pulangui and Mal NISOs. Institutionally, there is a deliberate attempt to eliminate this function, and this could be the foremost consideration as to why this activity has been neglected.

Present Manpower Staffing of Pilot NISOs

| Pilot NISO | Number of Staff | | | Service Area (ha) | Manpower-Output Ratio (ha per Staff) | | |
|------------|-----------------|-------|---------------|--------------------|--------------------------------------|-------|---------------|
| | Total | O & M | Institutional | | Total | O & M | Institutional |
| San Fabian | 20 | 12 | 1 | 3,594/a | 180 | 300 | 3,594 |
| Angat | 143 | 125 | 6 | 31,485/b | 220 | 252 | 5,248 |
| Bago | 49 | 28 | 3 | 12,700 | 259 | 454 | 4,233 |
| Labangan | 11 | 5 | 1 | 3,195 | 290 | 639 | 3,195 |
| Pulangui | 56 | 36 | 1 | 11,415 | 204 | 317 | 11,415 |
| Mal | 15 | 8 | 1 | 2,613 | 174 | 327 | 2,613 |

Source: National Irrigation Systems Office, /a Covers Dumuloc RIS, /b Covers Maasim RIS

(2) Budget Allocation, Income and Expenditure

The average budget allocation and the actual income and expenditures are given in the table below. As usual, the budget allocation is always above the expenditure level. There is a tendency among NISO superintendents to overstate their budget

request, but in reality they can only spend up to their income level. During the periods 1999-2001, only Pulangui, Labangan and Mal were more than able to cover their expenditures. The incomes of the three other NISOs, notably San Fabian, Angat and Bago failed to satisfy their expenditure requirements.

Average Budget Allocation, Income and Expenditure of Pilot NISOs (1999-2001)

| Pilot NISOs | Budget Allocation (Php '000) | Income (Php '000) | Expenditure (Php '000) | Surplus/Deficit (Php '000) |
|-------------|---------------------------------|----------------------|---------------------------|-------------------------------|
| San Fabian | 5,521 | 1,317 | 4,070 | -2,753 |
| Angat/a | 37,985 | 31,218 | 34,669 | -3,450 |
| Bago | /b | 5,718 | 7,599 | -1,881 |
| Labangan | 3,426 | 2,590 | 2,248 | 342 |
| Pulangui | 17,475 | 13,867 | 11,119 | 2,748 |
| Mal | 2,582 | 3,662 | 2,020 | 1,642 |

Source: National Irrigation Systems Office, /a Includes Maasim, /b No data

The income is derived mainly from ISF collection and rental earnings from equipment. Angat is an exception, having income coming from the use of water for hydropower. In terms of expenditure, salaries for personnel (80-90%) account for the bulk leaving very little for maintenance and other operating expenses (MOOE). Direct expenses for maintenance of irrigation facilities are practically nothing. For instance, Angat, which is the biggest system, spent an average of a measly 1% of its MOOE. Unless the national government provides subsidy to the NIA, there is virtually no fund available for maintenance of the irrigation facilities. The records of income and expenditure of the six NISs are summarized below.

Breakdown of Income and Expenditure (1999-2001)

| Pilot NISOs | Income (%) | | | | Expenditure (%) | | |
|-------------|------------|--------|--------|-------|-----------------|------|-------|
| | ISF | Rental | Others | Total | Personnel | MOOE | Total |
| San Fabian | 81 | 16 | 3 | 100 | 44 | 56 | 100 |
| Angat | 54 | 14 | 32 | 100 | 87 | 13 | 100 |
| Bago | 97 | 2 | 1 | 100 | 92 | 8 | 100 |
| Labangan | 65 | 21 | 14 | 100 | 84 | 16 | 100 |
| Pulangui | 77 | 21 | 2 | 100 | 85 | 15 | 100 |
| Mal | 76 | 23 | 1 | 100 | 93 | 7 | 100 |

Source: National Irrigation Systems Office, /a No breakdown of expenditure

(3) Over-all Performance

A summary of the performance on cropping intensity and ISF collection of the pilot NISOs during the last three years is given below.

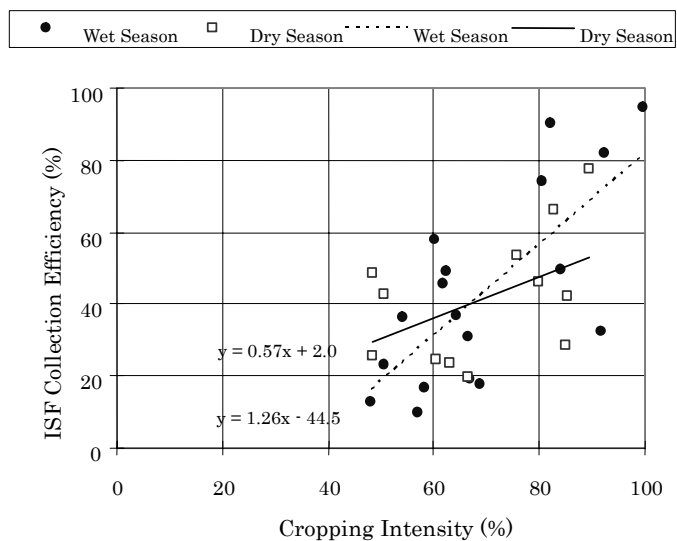
Six NISOs Performance in Last Three Years

| NISO | Trend during past 3 years | | Performance Feature |
|------------|---------------------------|---------------------|---|
| | Cropping Intensity | ISF Collection Rate | |
| San Fabian | C | B | Low cropping intensity, 65% in wet and 49% in dry, has not significantly changed in the last 3 years. ISF collection rate was little improved in 2001 compared with 1999. |
| Angat | B | A | High cropping intensity, 76% in dry, but low in wet 56%. ISF collection rate shows much improvement in wet season from 10% to 58%. |
| Bago | B | B | Low cropping intensity about 60% in wet and dry and low ISF collection about 30%+ were little improved. |
| Pulangui | D | A | High cropping intensity, about 86% in wet and dry but low ISF collection rate. In last 3 years, although cropping intensity was reduced little, ISF collection rate was much improved from 23% to 54%. |
| Labangan | E | D | Low cropping intensity about 118% and low ISF collection from 18% to 27% in last 3 years. Cropping intensity was reduced in last 3 years from 133% to 97% in annual. |
| Mal | C | C | High cropping intensity, 91% in wet and 87% in dry and ISF collection rate, 81%, has been maintained except draught in 1999 dry season |

Note : A: Improved, B: Little improvement, C: No change, D: Poor, E: Poorest

Source : Study Team

Cropping intensity and ISF collection are closely related. The graph below shows that increasing cropping intensity could result in increased ISF collection. Deficit pilot NISOs can increase their viability by improving their ISF collection efficiency to about 60%.



7.4 Profile of Pilot IAs

7.4.1 Organization

(1) Years of Existence and Membership

The reckoning period for the juridical existence of an IA is when it was registered with the SEC. The average age of pilot IAs is about nine years, while the rate of membership (defined as percentage of actual members to total farmers) is barely 40%. This observation becomes highly variable when the IAs are stratified according to hydrological location and NIS type as shown below. By NIS type, the lowest rate of membership is 20% and yet they comprised the oldest IAs. On the contrary, the youngest IAs have the highest rates of membership at 80%. The variability becomes more distinct when the IAs are compared individually. The perceived rate of active members is generally low, except for market-away. There is thus reason to believe that responsibilities of being a member are not well appreciated.

Upstream and midstream IAs likewise have no distinct advantage over downstream IAs. Downstream IAs with a membership rate of about 50% are faced with shortage of water during critical dry months, and this could be the reason why members opt to bond together to get a better leverage with the upper stream IAs.

Age and Membership Profile of Pilot IAs

| Item | Age (Years) | Membership Rate (%) | Perceived Active Member (%) |
|-----------------------------|-------------|---------------------|-----------------------------|
| 1. All 17 IAs | 9 | 43 | 28 |
| 2. By NIS Type | | | |
| • Water constraint | 14 | 22 | 28 |
| • Unexplored potential | 9 | 42 | 21 |
| • Market away | 4 | 82 | 52 |
| 3. By hydrological location | | | |
| • Upstream IA | 7 | 40 | 25 |
| • Midstream IA | 10 | 33 | 23 |
| • Downstream IA | 11 | 51 | 37 |

Source: Study Team

The following observations can be inferred from the above information:

- 1) Age and location has nothing to do with membership expansion. The campaign for membership expansion has never been a priority because of the low understanding about responsibilities and obligations of being a member.
- 2) There is a misconception among leaders about who constitute the legitimate members. The master list of most pilot IAs has not been updated and the current practice by original members to delegate the cultivation of their farms

to caretakers and tenants makes it difficult to distinguish genuine from pseudo members.

- 3) The intensity of members' participation given by the very low perceived rate of active membership is practically akin to de-facto organizations. This is likened to the IAs in San Fabian RIS, where leaders and members are only paying lip service to the associations' activities.

(2) Landholding, Yield and Cropping Intensity

A summary of landholding, yield and cropping intensity is given in the table below. The mean landholding is about 1.4 ha, which does not vary greatly by hydrological location. The size becomes slightly variable by NIS type, ranging from 0.50 to 1.6 ha. Fragmentation of landholding becomes distinct on an individual IA basis.

Farm Size, Cropping Intensity and Yield Data of Pilot IAs (Average Crop Year 1999-2000)

| Item | Farm Size (ha) | Cropping Intensity (%) | | | Paddy Yield (ton/ha) | |
|-----------------------------|----------------|------------------------|-----|--------|----------------------|------|
| | | Wet | Dry | Annual | Wet | Dry |
| 1. All 17 IAs | 1.36 | 78 | 69 | 147 | 3.78 | 4.00 |
| 2. By NIS Type | | | | | | |
| • Water constraint | 0.53 | 88 | 50 | 138 | 3.8 | 4.1 |
| • Unexplored potential | 1.58 | 59 | 60 | 119 | 3.7 | 3.9 |
| • Market away | 1.12 | 90 | 70 | 160 | 4.1 | 4.2 |
| 3. By Hydrological location | | | | | | |
| • Upstream IA | 1.36 | 87 | 76 | 163 | 3.7 | 4.0 |
| • Midstream IA | 1.02 | 75 | 69 | 144 | 3.9 | 4.0 |
| • Downstream IA | 1.08 | 73 | 62 | 136 | 3.6 | 3.7 |

Source: Study Team

The average yield of paddy is about 4.0 tons/ha for both the wet and dry seasons, while the cropping intensity is roughly 150% for all IAs. Cropping intensity becomes critical during the dry season, especially for water constraint NISs and downstream IAs, which is indicative of the inequity in the distribution of water. This problem appears to be critical compared to lack of water supply *per se* as the cropping intensity drops markedly from 80% (upstream) to 60% (downstream).

The following two organizational implications are evident from the above findings:

- 1) The landholdings and crop productivity of members are relatively low. Members have not taken advantage of better farming technologies to increase yield levels, and consequently have lower levels of farm income. The low

income is often the argument used by members to neglect and postpone ISF payment.

- 2) Water shortage or lack of water supply is not necessarily the reason for obtaining low cropping intensity. Given the experiences of the 17 pilot IAs, it is sometimes brought about by improper management of water demand. The ill-timed allocation of water results in inequitable distribution, prejudicing the downstream farmers chances of getting the right volume of water.

(3) Land Tenure

About 50% of total members are reported as owner-cultivators in all systems. With the exception of the three IAs in San Fabian RIS and Balucoc IA in Agno RIS, the proportion of owner-cultivators is high in the other IAs, about 40-75% of total members. However, this number may not reflect the true situation. Owner-cultivators have actually delegated their cultivation rights to tenants, caretakers and/or hired farm managers. In other instances, a member may be cultivating several areas of land, and he registers himself as member in one or two IAs covering the land where he is the cultivator. However, the real cultivator is a caretaker. The real owner-cultivators may just be a small fraction of total farmers.

Tenancy as reported by the NISO is rather understated. Combining the tenants with the caretakers and transient laborers, who are technically similar in most respects relative to production sharing and labor-landlord relationship, the proportion is about two-fifths of the total members, whether by system or hydrological location. High incidence of tenancy is prevalent in Malkaira, Labakafia, Picaba and Sandata IAs, where tenancy ranges from 50% to 70%.

Land Tenure Status of Actual Members in Pilot IAs

| All 17 IAs | % |
|--|------------|
| • Owner-cultivator | 49 |
| • Amortizing landowner | 11 |
| • Tenants, caretakers, transient, etc. | 40 |
| Total | 100 |

Source: Study Team

The present land tenure structure where there is a perceived incidence of absentee landowners affects the quality of participation in most IA activities. Because tenants and caretakers are just proxies to the real owner-cultivators, they seldom participate in IA activities, like canal clearing and attendance at meetings. Caretakers do not bother about following rules and regulations on water delivery and distribution. Their priority, which is basically survival, is to use water at all costs at the expense of legitimate members. From an organizational standpoint,

legitimizing caretakers and tenants as members of the IA is a further step in enhancing the base of the organization. What to do with the absentee landowner without necessarily diminishing their right and ownership status, is to introduce a land sharing arrangement (farmland trust) where they will entrust the custody of their lands to the caretakers who have become members of the IAs.

(4) Turnout Service Area (TSA)

TSA is important, as it is the basis for TSAG formation. A leader or chairman chairs each TSAG. From an organizational point of view, TSAG is the point of convergence of IA members, and the cohesiveness of an IA depends to a large extent on how well the coordination mechanisms of several TSAGs is working. The size of TSA, as shown in the table below, influences the extent of coordination a TSA leader can effectively manage, especially in the enforcement of O&M policies. The area per TSA is sometimes a better indicator in looking at the effectiveness of the IA (in terms of coordination) rather than the service area per se. The number of TSAs is also the IA’s parameter in determining the number of BODs.

The average service area per TSA is about 50 ha, and the number of farmers per TSA is about 40. The size ranges from 25 ha (Labakafia IA) to 90 ha (Kahugpungan IA). There are at least 4 IAs having TSAs that are above the average, and 13 IAs within the average. Grouped according to NIS type and hydrological location, the TSA sizes are within the average, except for water constraint and market away NISs as shown below.

Indicative Parameters of TSA of Pilot IAs

| Item | Area(ha)/TSA | Farmer/TSA |
|-----------------------------|--------------|------------|
| 1. All 17 IAs | 49 | 36 |
| 2. By NIS Type | | |
| • Water Constraint | 33 | 62 |
| • Unexplored Potential | 53 | 34 |
| • Market away | 29 | 26 |
| 3. By hydrological location | | |
| • Upstream IA | 55 | 40 |
| • Midstream IA | 47 | 31 |
| • Downstream IA | 53 | 36 |

Source: Study Team

In practice, however, the reported sizes may no longer be the same, as there are plenty of illegal turnouts being constructed by farmers inside the service area just to be able to draw as much water as possible. The proliferation of illegal turnouts

is one of the major hindrances in enforcing equitable distribution of water. This subsequently makes it difficult to implement synchronous planting.

The current sizes of TSA were presumably determined based on topography, irrigation efficiency, availability of water, etc. Notwithstanding these accepted parameters, the need to review them becomes imperative in light of existing organizational concerns. The NIA has neither defined an appropriate TSA size nor an appropriate service area for an IA. Large TSAs, which are consequently becoming the basic unit for TSAG formation, are unwieldy to manage, especially if the leader's role is expanded to providing agricultural extension services, over and above the usual O& M activities. Further, too many small TSAs, exacerbated by the proliferation of illegal turnouts, also yield similar problems. The ideal situation is to define a manageable TSAG that is both cost-effective and efficient to manage. Emerging examples of IAs that need TSA restructuring and eventually spinning off new IAs are Muchrist and Sandata IAs in Labangan, Atidu and Bunasabala IAs in Bago and Kahugpungan IA in Pulangui. The service areas of these IAs are quite large and yet there are very few TSAs.

(5) Functionality Rating

With the exception of Malkaira IA in Mal RIS, and the three (3) IAs in AMRIS, whose evaluation were very satisfactory and satisfactory respectively, the IAs have been rated from fair to poor. The general observation is that these IAs, despite their long existence, are dormant organizations characterized by poor governance. They have been unable to perform basic services required for their members. Factors that tend to support the very low level of functionality of the pilot IAs (culled from the results of the PCM workshops) are described in Section 7.5.

(6) Leadership and BOD Culture

Good leadership influence is a key factor in bringing the members closely within the organization. The results of the problem tree analysis would tend to show that the leaders are not good role models who can portray right behavior. This stems from the poor selection of leaders. The traditional practice of putting in a leader closely associated with politicians is evident in the Scientific Farming IA in San Fabian and Balucoc IA in AMRIS. The leaders were arbitrarily designated without the benefit of an election. Under this circumstance, it is common to note overstaying leaders whose interests have become parochial to the association. IAs in AMRIS, Bago, Labangan and Pulangui RIS have manifested this concern as a

consequence of the absence of regular election of officers.

In most IAs, the number of BODs is equated with the number of TSAs. This practice appears arbitrary. It is to be noted that the size of the BOD has nothing to do with organizational effectiveness. Designation of BOD based on merit and functional responsibilities may be a better alternative rather than this existing practice.

(7) Record Keeping

The results of the PCM workshops indicate neglect of basic record keeping. Records of IAs such as day-to-day records (minutes of meetings, by-laws, etc.) to the more sophisticated water management records (cropping calendar, water delivery schedule, program of work for maintenance, etc) and financial data are often missing and/or incomplete. This stems from the following: (a) poor knowledge about filing systems; (b) inability or poor skills in tracking essential data or information; (c) arbitrary handling of records due to limitation and absence of a custodian officer especially when officers are replaced after elections; and (d) no permanent office for a depository. For reporting requirements, it is difficult to monitor and evaluate performance and at the same time get the information required for preparing O&M plans. The argument often posed by the IAs (if anybody inquires about particular record) is to pinpoint the NISO as the source of information. The NISO, however, also has incomplete records.

From an organizational concern, the dearth of good records has badly affected formulation and implementation of O&M plans and policies. Conflicts about water delivery and irregular planting schedules are partially due to the absence of records that could exactly pinpoint the scope, date and duration of critical water shortage. Financial and other records supposed to be submitted to SEC are ignored. Eight out of 17 pilot IAs have not regularly submitted their SEC reports. The SEC may already have revoked the licenses of these IAs.

7.4.2 Operation and Maintenance

(1) Water Management

The preparation of cropping calendar and water distribution plan, a practice normally connected with water management, was observed. With the exception of Balucoc and Josephian IAs (AMRIS), the rest have water distribution plans, and all pilot IAs have cropping calendars. Low compliance with implementation of

their cropping calendar (about 20 to 40%) was reported for the three IAs in San Fabian, while high compliance, about 70 to 100% was reported for the remaining IAs. Notwithstanding the knowledge about preparation of these plans, the more important concern pertains to quality of preparation and enforcement of both plans. The execution of these plans is far from satisfactory, based on the results of the PCM workshop. Clearly, while the IAs have water distribution plans and cropping calendars, there is a deliberate attempt to ignore the rules and policies. The upstream IAs abuse the water allocated, using more than the required volume due to all sorts of illegal practices. Thus, competition for water becomes very keen among farmers within the same IA, particularly at the downstream IAs.

The perennial conflict in water distribution is an offshoot of membership and leadership flaws, many of which were cited in the previous section. The voluntary membership, for one, does not prevent a non-member from using the water. Non-members can use the water as long as they pay the ISF, but they have also been perceived as responsible for illegal practices. Second, the upstream IAs are bound to use excess water unless the lower stream IAs are strongly empowered to block any attempt by the upstream IAs to get more than they need. This brings the importance of the SMC as the venue for arbitrating conflict in water usage. However, most SMCs are dormant. Third, the preparation of water distribution and cropping calendar plans is essentially NISO-driven, and that is water supply based and hardly incorporates crop-water needs at all. IA leaders are immersed in the preparation, but members are not. Often there is a communication gap between leaders and members, and the latter are tempted to commit infraction. Water conservation is out of the picture and a strong advocacy instilled in the minds of the IAs would be a good step to proper water management.

(2) Maintenance

The costlier part of O&M is maintenance. Maintenance work is reinforced through a Type I contract. With the exception of Munchrist and Sandata IAs in Mal and Scientific Farming IA in San Fabian RIS, the pilot IAs have Type I contracts with the NIA. Indirectly, this practice has somehow exacerbated negligence among members to do their share in maintenance. To the extent that the NIA has the funds and can be disbursed on time, the IAs at least commit themselves to clean secondary canals. The NIA has more often failed than fulfilled its obligations. The agency takes two to three cropping seasons to generate funds to pay for services rendered to IAs. This has prompted IAs to abandon their responsibility in canal clearing. The neglected condition of canals and other laterals, including major

facilities, is now very evident. Canals and their embankments are being used as dumping grounds for garbage, planting trees and wallowing of carabaos. The worst situation is where the canal is being used as squatting ground, very prevalent on lateral D along the boundaries of the three (3) IAs in AMRIS as well as in Kahugpungan IA in Pulangui RIS.

The low priority of maintenance work by IAs cannot be overemphasized. The sense of ownership attached to the facilities is wanting primarily because of the poor quality of membership, and the assets do not belong to the farmers, unlike in the CIS. From an organization standpoint, the problem of poor maintenance can be attributed to the significant proportion of non-members. Non-members cannot be relied upon to clean the facilities, and in fact they perpetrate the most infractions. In the same vein, the current practice of original landowners assigning proxy members and delegating cultivation rights to tenants, caretakers and hired labor has aggravated the problem. These proxy cultivators cannot be expected to render care and attention in the same way as the real owners because of uncertainty in tenurial security. IA leaders as well have to be blamed because their interest in maintenance is restricted to collection of the compensation, and the money collected is not re-used for maintenance.

(3) Attendance at Meetings

The participation rate at meetings is one indication of the association's cohesiveness. Only the three IAs in Mal RIS regularly conduct BOD and GA meetings. The other IAs hold BOD meetings while the GA meeting is held on a needs basis, based on the observed frequency and rates of attendance. TSA meetings, which particularly emphasize O&M practices are not held as often as possible. This is again an offshoot of the poor discipline among members caused by the absence of good role model leaders.

7.4.3 Finance

(1) Revenue Generating Activities

The main source of revenue is remuneration from Type I and II contracts. Of the 17 pilot IAs, only Muchrist and Sandata IAs in Labangan do not have contracts. Collection of membership fees is negligible for two reasons. One is the meager amount of membership fee, and second, there is no seriousness on the part of the IAs to collect membership fees. Realization of Type I earnings is dependent on the timely payment by the NIA. The NIA is more than remiss in its obligation due to

fund constraint, however.

As regards Type II contracts, the earnings are not favorable because of low ISF collection efficiency by IAs. The effective ISF collection efficiency for both the wet and dry seasons during 1999-2001, based on physical area, was barely 30-40%. The only exceptions were two IAs in Mal RIS (dry season), and Labangan IAs (wet and dry seasons), where ISF collection efficiencies were above 50%. The outlook is even poorer if the IAs are grouped according to hydrological location and by NIS type. The dismal performance was enough to disqualify the IAs from participating, and worse, they cannot receive any commission because the ISF collection rate is below the threshold of 50%. Thus, the net incomes are negligible.

ISF collection is basically a NISO activity. It is performed by almost all of the staff assigned in NISO because of the pressure to generate income mainly for salaries, even under Type II contracts. ISF collection is likewise a favorable breeding ground for corruption (for NISO staff) because of anomalous reporting of both the billing and collected areas. Unless the records are accurate it would be difficult to increase efficiency. The anomalous reporting starts from the billing because the current system allows for exemption.

(2) Market-related Activities

There is practically no activity involved in trading. Paddy is being sold directly to traders without the benefit of further processing, except for the IAs in Pulangui RIS, where 50% to 90% of production is sold as milled. The quality of paddy being sold cannot command the premium price because of high moisture content. Solar drying is done on multi-purpose pavements. During wet season, however, solar drying is limited because of the preponderance of rain. This puts pressure on the IAs to dispose of their produce immediately after harvest, at a time that prices are unfavorable. This is the argument raised by IAs about the low income received from paddy production. Consequently, members postponed ISF payment.

7.4.4 Status of Irrigation Facilities

(1) Facility Status

A joint walk through inspection, walking along canal and inspecting facilities and canals status, was conducted with IA members and NIA staff in selected IA area during the PRA survey. The results of a previous walk through inspection conducted by NISO staff pursuant to M.C. 13 in 2001 were used as initial

information base and verified during the joint inspection. Parcellary maps with structure locations were also used in the inspection to confirm critical problems on canals and structures as reported by farmers and NISO staff. Before the inspection, IA members and NISO staff selected the critical areas on the parcellary map and decided on a route of inspection. The status of structures was classified into four levels as presented below.

Classification of Structure Status

| Classification | | Remarks |
|----------------|---------------------|---|
| FF | Fully functioning | |
| PD | Partly deteriorated | Functioning in satisfactory range |
| SF | Slight functioning | Not functioning well and/or affecting the discharge |
| NF | Not functioning | Completely not functioning |

These results with some pictorial illustrations are compiled in Data Book II and summarized in Annex 10.

The functionality of irrigation facilities in pilot IAs is summarized the following table.

Functionality of Irrigation Facility in Selected IA Area

| NIS Name | Functionality (%) | | | | Number of UTO / TO |
|----------------|-------------------|------|----------|--------|--------------------|
| | Canal | Gate | Turn-out | Others | |
| San Fabian RIS | 56 | 0 | 0 | 29 | 30 / 78 |
| Angat RIS | 31 | 78 | 80 | 96 | 145 / 30 |
| Bago RIS | 51 | 43 | 44 | 86 | 71 / 105 |
| Labangan RIS | 30 | 19 | 5 | 93 | 92 / 242 |
| Pulangui RIS | 63 | 50 | 60 | 81 | 92 / 116 |
| Mal RIS | 34 | 67 | 60 | 60 | 1 / 15 |

Source : Study Team

San Fabian RIS is the worst among the pilot NISs. Most structures were deteriorated or damaged. All turnouts have no gates. Although a flume type canal was constructed in some sections of the main and lateral canals, damages on lining including illegal turnouts and overflow of irrigation water were observed, mainly due to siltation. Labangan RIS has generally the same condition as the San Fabian RIS, with the exception of the conveyance structures, such as culverts, drops, siphons and flumes. Only 5% of the total turnouts (242) have gates. Bago and Pulangui RIS have been found to be in a moderate condition. The ratio of unauthorized turnouts (UTOs), however, is relatively high. The UTOs were observed in the upstream and midstream areas, and this has caused a perennial shortage of water in the downstream areas.

The facilities in the selected IA area in Angat RIS were observed to be in relatively good condition. However, the lateral canals were silted, and

embankments were damaged. The canals were also used as a dumping ground for garbage and drainage for a sewerage system. The facilities in Mal RIS, were relatively well maintained. However, irrigation water was observed overflowing from the canal in many places due to the application of rotational water distribution.

(2) Rehabilitation Cost

The rehabilitation cost of each of the six NISs, estimated by the joint walk-through survey, is summarized below.

Rehabilitation Cost for Selected IA Area (Direct Cost)

| NIS Name | Area Cover (ha) | Total Rehabilitation Cost (Php) | Rehab. Cost per ha (Php/ha) | Essential Rehab. Cost (Php) |
|----------------|--------------------|---------------------------------------|-----------------------------------|-----------------------------------|
| San Fabian RIS | 854 | 11,126,000 | 13,028 | 2,848,000 |
| Angat RIS | 1,392 | 6,249,000 | 4,489 | 1,577,000 |
| Bago RIS | 2,234 | 8,569,000 | 3,836 | 4,352,000 |
| Labangan RIS | 3,195 | 35,543,000 | 11,125 | 9,068,000 |
| Pulangui RIS | 2,327 | 10,943,000 | 4,703 | 4,140,000 |
| Mal RIS | 558 | 11,304,000 | 20,258 | 804,000 |
| Total | 10,560 | 83,734,000 | 7,929 | 22,789,000 |

Source: Study Team

7.5 Problems and Objective Analyses Made by IAs

7.5.1 Elements of the Problem and Objective Trees

Table 7.3 summarizes the substantive elements of the problems and objective trees prepared by the IA leaders, members and non-members. The discussion below provides an integrated description of the problems and their causes, and the objectives to address the problem.

(1) Organization

The core problem is essentially poor governance, the extent or degree of seriousness of which depends on quality of leadership (management) and members. The so-called core management team is either missing or if it were existing, the system (absorptive capacity) is far from satisfactory. It is actually a de-facto organization. Descriptions put forward to describe this problem include non-functional association (San Fabian IAs), weak leadership and management and inability to execute rules and procedures (IAs other than San Fabian). The immediate causes are given in the table below.

Immediate Causes of Poor Governance

| Membership Flaws | Leadership Flaws | System and Procedural Flaws |
|--|---|--|
| <ul style="list-style-type: none"> • Low membership • Few active members • High incidence of absentee cultivators • High incidence of tenancy, caretakers, etc. • Low awareness about responsibilities • Low level of skills | <ul style="list-style-type: none"> • Low level of skills • Dearth of role models • Low awareness about responsibilities • Dearth of potential cadre of leaders • Inactive BOD, TSAG and other officers • Incompetent Officers | <ul style="list-style-type: none"> • Dearth of record keeping • Irregular elections • Irregular meetings and assemblies • Defective formulation of policies, rules and regulations • Weak information communications program (membership and obligations) • Weak coordination (inter and intra linkage) • Arbitrary and ad-hoc relationship among committees and day-to-day activity • Unwieldy TSAG size and IA boundary • Absence of financial control (transparency and audit) |

Source: Table 7.3

Consequently, the objective advanced by the IAs is to have strong and viable associations capable of providing services to improve the income of members.

(2) Operation and Maintenance

The core problem is generally low performance on O&M. This stemmed from the inability to manage water demand properly and to undertake essential maintenance. While shortage of water supply may also be a contributing factor, the over use of water, particularly in upstream areas, normally results in inequitable allocation. The immediate causes are given in the table below.

Immediate Causes of Low O&M Performance

| Water Management Flaws | Maintenance Flaws |
|---|--|
| <ul style="list-style-type: none"> • Inequitable water usage • Uncontrolled water distribution • Cropping calendar and water delivery infractions • Limited skills in formulating of O&M plans and policies • Weak enforcement of O&M plans • Limited dissemination of crop and water technologies (agricultural extension) • Limited capacity of canals | <ul style="list-style-type: none"> • Willful neglect in canal clearing • Rampant infractions (illegal turnouts, dumping of garbage, illegal checking, etc.) • Limited penalties and sanctions |

Source: Table 7.3

The objective stressed by the IAs is essentially to enhance the use of better water management practices (e.g. water conservation) and undertake their obligations in essential repairs and maintenance to effectively increase the cropping area and

prolong the economic life of the facilities, respectively.

(3) Finance

The core problem is the low level of financial viability. The IAs are basically cash-strapped or suffer from the problem of having an unstable source of quick or liquid funds. Access to formal credit sources is difficult due to the unsettled arrears of members (from a previous government lending program), and being a mere association (and not a cooperative) makes them also ineligible to the lending window of the LBP, the government's main supplier of agricultural credit. The immediate causes are given in the table below.

| Immediate Causes of Low Financial Viability | |
|--|---|
| Low Revenue | Financial Planning |
| <ul style="list-style-type: none"> • Poor collection of ISF • No collection of membership dues • Restricted income (besides Type I and II contracts) • No capital build-up (CBU) • Delayed compensation by NIA of Type I and II contracts | <ul style="list-style-type: none"> • Low skills in book keeping, basic accounting and other record keeping • Low skills in financial/investment management • Dearth of financial records |

Source: Table 7.3

The objective stressed by IAs is to become financially viable under a two-pronged approach: (a) greater and active collection efforts to increase ISF collection and other dues, and gradually expand to other income-generating activities and (b) continuous education on financial planning and project preparation/execution.

7.6 Assessment of IA Action Plans

7.6.1 Procedure

Under the supervision of the Study Team, the 17 pilot IAs prepared individual action plans based on the results of the problem and objective tree conducted in the PCM workshops. Participants in the PCM workshop were expanded to include members and non-members as well, particularly tenants and caretakers, to be able to get an objective assessment of the recurring problems of the IAs relative to their organizations and activities. These individual action plans were integrated to become the IA strengthening action plans covering the six pilot NISSs.

Three (3) broad areas of concerns, notably organization, operation and maintenance (O&M) and financial performance which emerged during the conduct of the workshop on Framework Action Plan on July 18 – 19, 2002 were

used to stratify the intervention areas. The PDMs and plans of operation covering five sub-projects under the broad areas of concerns were then prepared as follows:

1. IA Organization
 - Sub-project 1.1 Building Productive IAs
 - Sub-project 1.2 Installing Management Competencies
2. IA O&M Activities
 - Sub-project 2.1 Formulating Rational O&M plans and policies
 - Sub-project 2.2 Implementing Effective O&M
3. IA Financial Performance
 - Sub-project 3.2 Collection Enhancement of ISFs and IA Dues

7.6.2 Outputs of Action Plan

The outputs emerged as a result of consensus building among the members and officers of the IAs. The Study Team recommended the adoption of outputs in other NISs to the extent that they are essential based on the analysis of the problem tree.

(1) Sub-project 1-1: Building Productive IAs

The components of building productive IAs are summarized in the table below. It should be noted that the components are basic to formation of organizational structures. Virtually all of the pilot IAs (with the exception of the IAs in Mal) would require such intervention. The implication is that there has been serious deterioration in the absorptive capacities of these IAs. They cannot be relied upon to assume the greater role of the NIA in future IMT activities unless fundamental restructuring is undertaken.

Outputs Required by Pilot IAs, Sub-Project 1.1

| Components/Outputs | Water Constraint NIS | Potentially Un-exploited NIS | | | | | Market -Away NIS |
|--|----------------------------|------------------------------|------|----------|----------|-----|------------------------|
| | San Fabian | Angat | Bago | Labangan | Pulangui | Mal | |
| 1. Activation of members | | | | | | | |
| • Updated master list | ○ | ○ | ○ | △ | △ | | |
| • Mandatory registration of water user/farmers | ○ | △ | ○ | △ | ○ | ○ | |
| • Mandatory participation of farmers in all activities | ○ | △ | ○ | ○ | ○ | ○ | |
| 2. Improvement of leadership quality and functions | | | | | | | |
| • Regular election of officers and TSAG leaders | △ | ○ | △ | △ | △ | △ | |
| • Regular meetings and establishment of functional committees | ○ | ○ | △ | △ | ○ | △ | |
| • Review of by-laws | △ | ○ | ○ | △ | △ | | |
| 3. Reorganization | | | | | | | |
| • Re-delineation of service area based on hydrological feature | △ | ○ | ○ | ○ | | | |

○-IA Recommendation △- Study Team Recommendation

(2) Sub-project 1-2 : Installing Management Competencies

The components of installing management competencies are summarized below. In general, the pilot NISs would require most of the elements (sub-components) of the major components, especially training of leaders, record keeping and networking with support institutions. It is to be noted that these are consistent, as a preparatory step, in the establishment of management competencies. The case of Mal is rather an exception due to its higher state of organizational maturity vis-à-vis other NISs.

Outputs Required by Pilot IAs, Sub-Project 1.2

| Components/Outputs | Water Constraint NIS | Potentially Un-exploited NIS | | | | | Market- Away NIS |
|---|----------------------------|------------------------------|------|----------|----------|-----|------------------------|
| | San Fabian | Angat | Bago | Labangan | Pulangui | Mal | |
| 1. Improvement of systems and procedures | | | | | | | |
| • Systematic record keeping and update administrative records | ○ | ○ | ○ | ○ | ○ | ○ | |
| • Establishment of working/standing committee | ○ | △ | ○ | △ | △ | | |
| • Reconfirmation of juridical status with SEC | ○ | △ | △ | △ | △ | △ | |
| 2. Setting-up of networking system | | | | | | | |
| • Formation of IA council(s) | ○ | | | ○ | | | |
| • Establishment of linkages with NIA, LGUs, inter-IAs, etc | △ | ○ | △ | ○ | △ | △ | |
| 3. Training | | | | | | | |
| • Skilled/trained officers and leaders | ○ | ○ | ○ | ○ | ○ | ○ | |
| 4. Infrastructure Support | | | | | | | |
| • Establishment of a permanent office | | | ○ | △ | | | |

○-IA Recommendation △- Study Team Recommendation

(3) Sub-project 2-1: Formulating Rational O&M Plan and Policy

The components of formulating a rational O&M plan and policy are given in the table below. The components are essentially divided into enhancing the skills of officers and members in the formulation of O&M and establishing the support systems for execution. In general, the pilot NISs would require the majority of the elements in the two components, except in the adoption of an integrated cropping calendar and extensive application of Type I and II contracts.

Outputs Required by Pilot IAs, Sub-Project 2.1

| Components/Outputs | Water Constraint NIS | | | | | Market-Away NIS |
|---|------------------------------|-------|------|----------|----------|-----------------|
| | Potentially Un-exploited NIS | | | | | |
| | San Fabian | Angat | Bago | Labangan | Pulangui | Mal |
| 1. Improvement of skills in plan and policy formulation | | | | | | |
| • Written and practical O&M policies & regulation | ○ | ○ | ○ | ○ | ○ | ○ |
| • Adoption of integrated cropping calendar | ○ | △ | △ | △ | | |
| • Adoption of water delivery and distribution schedule | △ | ○ | ○ | △ | △ | |
| 2. Support mechanism to plan and policy execution | | | | | | |
| • Establishment of coordination among Inter-IAs | ○ | △ | △ | △ | △ | ○ |
| • Extensive application of Type I and II contracts | | | ○ | ○ | | ○ |
| • Mandatory/active participation of members in O&M | △ | △ | ○ | ○ | △ | ○ |

○-IA Recommendation △- Study Team Recommendation

(4) Sub-project 2.2: Implementing an Effective O&M Plan and Policy

The components of implementing an effective O&M plan and policy are summarized in the table below. The components are essentially strict enforcement of water management and maintenance policies and setting up the means for proper execution. In general, the pilot NISs would require practically all of the elements of the major components. An exception is in San Fabian, where there is a perceived need to control the use of shallow tube wells as a supplementary source of irrigation water during the dry season.

Outputs Required by Pilot IAs, Sub-Project 2.2

| Components/Outputs | Water Constraint NIS | | | | | Market-Away NIS |
|--|------------------------------|-------|------|----------|----------|-----------------|
| | Potentially Un-exploited NIS | | | | | |
| | San Fabian | Angat | Bago | Labangan | Pulangui | Mal |
| 1. Strict enforcement of O&M plan and policies | | | | | | |
| • Effective and equitable water distribution schedule | ○ | ○ | ○ | ○ | ○ | ○ |
| • Preventive maintenance of irrigation canals and farm ditches | ○ | ○ | ○ | ○ | ○ | ○ |
| • Repair and rehabilitation of irrigation canals and roads | ○ | ○ | ○ | ○ | ○ | ○ |
| • Sanctions and penalties for O&M violations | ○ | △ | △ | ○ | ○ | ○ |
| • Shallow tube wells as supplementary | ○ | | | | | |
| 2. Rehabilitation of conflict and service committees | | | | | | |
| • Resolution of conflict between upstream and downstream IAs in water distribution | △ | △ | ○ | | △ | △ |
| • Activation of service committees and TSA groups for effective execution | △ | ○ | ○ | ○ | △ | |

○-IA Recommendation △- Study Team Recommendation

(5) Sub-project 3-2: Collection Enhancement of IA's Dues and ISFs

The components are summarized in the table below. The components are focused

on improving collection systems and procedure; enhancing the skills of leaders and officers on basic accounting and financial management; and expanding market-related and other income activities. The Pilot NIS would generally require practically all of the elements of the three major components. The only exceptions are renewal of Type I and II contracts and operation of assembly markets, where these sub-components would be needed only in Bago, Labangan, and Mal and Pulangui.

Outputs Required by Pilot IAs, Sub-Project 3.2

| Components/Outputs | Water Constraint NIS | | | | | Market-Away NIS |
|---|------------------------------|-------|------|----------|----------|-----------------|
| | Potentially Un-exploited NIS | | | | | |
| | San Fabian | Angat | Bago | Labangan | Pulangui | Mal |
| 1. Improvement of collection systems and procedures | | | | | | |
| • Formulation of sound policies and procedures on ISF collection and members' dues | ○ | ○ | ○ | ○ | ○ | ○ |
| • Setting-up financial control-recording, budgeting and audit | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. Improvement of Skills | | | | | | |
| • Training of officers and leaders-bookkeeping, financial management, project preparation, etc. | ○ | △ | △ | ○ | △ | △ |
| 3. Establishment of market-related and other income activities | | | | | | |
| • Fund raising project | ○ | ○ | △ | △ | △ | △ |
| • Enhancement of CBU scheme | ○ | △ | △ | △ | △ | |
| • Extension/renewal of Type I and II contracts | | | ○ | ○ | | ○ |
| • Micro-lending (livelihood) assistance | ○ | ○ | ○ | ○ | ○ | △ |
| • Operation of assembly markets | | | △ | | △ | ○ |

○-IA Recommendation △- Study Team Recommendation

7.6.3 Action Plan Inputs

The inputs required to implement the components are summarized in Table 7.4. The nature of the inputs recommended by the IAs is variable, and seemingly specific to the conditions of the IAs. The technical assistance may thus vary from one IA to another. For the purposes of global programming of budget, the inputs can be broadly categorized into manpower and logistics support.

7.7 Resources of Government Agencies and Agreement with IAs

The IAs can avail themselves of potential resources of government agencies (other than the NIA) to support their technical and financial requirements. The resources provide a menu of possible assistance. This was decided upon in a one-day workshop in every pilot site where the IAs presented their action plans to the concerned public agencies. The agreements with the IAs focused on the following:

- (1) As regards training, it is open to any IA as long as the requesting party is able to satisfy the minimum requirements. This requires counterpart support, not necessarily in the form of monetary consideration. IAs have plentiful options coming from the various offers of training assistance by concerned government agencies.
- (2) As regards credit, the main suppliers are the LBP and QUEDANCOR. The foremost requirement is that, the members must not have any pending arrears with both credit suppliers, after which the IAs will have to satisfy the other eligibility requirements. The requirement on “being cooperative” can be waived through a special lending window for recognized groups of farmers.
- (3) As regards marketing assistance for paddy, NFA can give priority to IA as long as the minimum volume is met, which implies the need for consolidation of production of the IAs.
- (4) Assistance from municipal and barangay LGUs, especially settlement of conflicts and disputes on water distribution and other infractions can be negotiated through amicable settlement rather than the tedious process of legal suits. In addition ordinances to prevent infractions can be initiated at the barangay level.
- (5) Direct monetary support for maintenance of access roads and other minor repairs of irrigation facilities can be secured from the development fund of concerned LGUs, to the extent that they are available. IA leaders were thus encouraged to coordinate with their respective barangay captains for programming of funds.

CHAPTER 8 ACTION PLANS FOR IA STRENGTHENING

8.1 Procedure for Action Planning

The NIA counterparts and JICA Study Team jointly prepared the action plan framework for IA strengthening based on the results of workshops and studies undertaken during the first field survey. The framework of the action plan was finalized incorporating the results of the detailed PRA surveys conducted during the second field survey. The action plans prepared by the pilot IAs in six NISs, and subsequently reviewed and analyzed by the Study Team constituted the integrated IA Strengthening Action Plans.

8.2 Framework of the Action Plan for IA Strengthening

8.2.1 Framework Preparation

The PCM workshop held on July 18 and 19, 2002 provided the major inputs in the drafting of the framework of the action plan, as shown in Figure 8.1. Three areas of concern were identified, namely IA Organizational Strengthening, IA O&M Strengthening and IA Financial Performance. For each concern, sub-projects were identified and prioritized and a total of 9 sub-projects were considered a priority for IA strengthening as follows:

1. IA Organization
 - 1.1 Building Productive IAs (capacity and team building)
 - 1.2 Installing Management Competencies
 - 1.3 Providing Appropriate Assistance for IA's Organizational Strengthening
2. IA O&M Activities
 - 2.1 Formulating Rational O&M Policy and Plans
 - 2.2 Implementing Effective O&M
 - 2.3 Providing Appropriate Assistance for IA O&M Activities
3. IA Financial Performance
 - 3.1 NIA's Financial Management Strengthening
 - 3.2 Collection Enhancement of IA's Dues and ISFs
 - 3.3 Assistance for IA's Capacity Building on Financial Management and other activities

8.2.2 PRA Survey and Preparation of IA Strengthening Action Plans

Under the PRA survey, the pilot IAs prepared their action plans focusing on five sub-projects: 1.1) building productive IAs; 1.2) installing management competencies; 2.1) formulating rational O&M policy and plans; 2.2) implementing effective O&M; and 3.2) collection enhancement of IA's dues and ISFs.

Through the PCM workshops held in the pilot NISs, the IAs were made to prepare a problem tree, objective tree, PDMs and plans of operation. The JICA Study Team facilitated the preparation of these documents.

8.2.3 Application of Action Planning Procedure

The IA functionality survey initiated and supervised by the NIA-IDD covers the status of IA's organizational, O&M and financial performance and will be utilized for initiation of IA action planning. Using those IA functionality survey results, participatory diagnosis and IA strengthening action planning for the IA's organization, O&M and financial strengthening could be effectively made involving farmer beneficiaries. The technical guideline for the IA functionality survey, IA action planning using the PCM method, and the NISO-IA management module were combined to prepare the IA Strengthening Module (Ref. Section 10.1).

The action plans presented below are summaries of the respective elements for IA strengthening based on the NIA-JICA joint action planning and the PRA survey made in 17 IAs under six pilot NISs. The action plans will be implemented according to the situation of respective pilot NISs and IAs. The action plan activities need to be monitored and evaluated and these results will be reported for formulation of the national replication plan.

8.3 IA Organizational Strengthening

8.3.1 Target Outputs and Necessary Activities

Targets were set in order to achieve the objectives of the organizational strengthening plan. At the end of the project, the following targets are expected to have been achieved: (i) more than 75% of members are actively participating in meetings and O&M activities (Sub-project 1-1: Building Productive IAs); (ii) 90% of IAs have strengthened absorptive capacities capable of doing situation analysis, planning, implementation, monitoring and evaluation (Sub-project 1-2 : Installing Management Competencies); and (iii) 90% of IAs have received appropriate technical assistance in organizational concerns (Sub-project 1-3: Providing Appropriate Assistance for IA's Organizational Strengthening).

In order to achieve the targets, the following outputs and activities for the NIA and IAs are planned to be undertaken:

Project 1: Outputs and Activities for IA Organizational Strengthening

| | Outputs | Activities |
|-----|--|---|
| NIA | <ol style="list-style-type: none"> 1. Registered and updating master list <ul style="list-style-type: none"> • Updated master list of IA members 2. Practical training schemes and organizational strategies <ul style="list-style-type: none"> • New strategies and procedures on community organization • New training modules to develop the capability of leaders and members 3. Unified IMT policy <ul style="list-style-type: none"> • Policies, procedures and guidelines for the effective implementation of IMT 4. Active System Management Committee (SMC) <ul style="list-style-type: none"> • Functional SMCs in all NISs | <ol style="list-style-type: none"> 1.1 Conduct complete enumeration of potential members. 1.2 Jointly (NIA-IA) update the master list indicating tenure status of each member 2.1 Assess functional structures of IAs and develop participatory and community-based organizational approaches, re: policy formulation, project management, conflict resolution, gender, leader selection, etc. 2.2 Conduct training impact evaluation and training needs analysis (TNA) in coordination with RIOs, NISOs, IAs and other agencies 2.3 Develop improved IA training packages, and conduct trainers' training, 2.4 Establish training teams at the regional and provincial levels to train leaders using improved methodologies 2.5 Establish coordination with other agencies to provide technical assistance to IAs 3. Jointly (NIA-IA) review the existing IMT contracts and draw up a comprehensive policy 4. Establish SMCs in all NISs |
| IA | <ol style="list-style-type: none"> 1. Active membership <ul style="list-style-type: none"> • Updated master list of members • Mandatory membership and registration of all farmers/actual tillers 2. Improved leadership quality and functions <ul style="list-style-type: none"> • Regular meetings of BOD, general assembly and TSAG leaders • Regular election of officers and TSAG leaders • Updated by-laws to suit present conditions • Functional committees 3. Enhanced skills <ul style="list-style-type: none"> • Training of at least 50% of members to become second line leaders 4. Installed systems and procedures <ul style="list-style-type: none"> • Systematic and updated administrative records 5. Established essential coordination mechanism <ul style="list-style-type: none"> • Established/organized linkage with inter-IAs and other support institutions • Established council/federation per NIS and at least one provincial federation 6. Re-organized TSA <ul style="list-style-type: none"> • Re-delineated service area based on hydrological features 7. IA Center Facility <ul style="list-style-type: none"> • Established physical center for office and training purposes | <ol style="list-style-type: none"> 1.1 Conduct BOD meeting to finalize membership criteria and profile of potential members 1.2 Request NIA/DAR to get the data on all potential water users/actual tillers 1.3 Prepare membership recruitment plan through the conduct of pre-membership seminar 1.4 Finalize new master list and submit application to SEC 2.1 Prepare agenda and conduct regular meetings 2.2 Establish proper documentation, provide copies of reports, and facilitate resolution of issues with participation 2.3 Identify potential leaders and implement regular elections 2.4 Conduct regular review and amendment of by-laws and notify members 2.5 Revive and activate all working committees to plan and execute programs and policies 3. Deputize leaders to attend training programs and use them as trainers to train at least 50% of members using improved training modules 4.1 Install logbook system 4.2 Collect, review and consolidate records 4.3 Conduct proper turn-over of documents 4.4 Prepare records of discussion 4.5 Update records 5.1 Conduct regular dialogues with LGUs and other support institutions 5.2 Organize and plan the establishment of councils 5.3 Conduct election of council officers 5.4 Study status of provincial federation 5.5 Execute a strengthening plan for provincial federation 6.1 Study service area and define cost-effective and manageable TSA 6.2 Consolidate TSA based on new hydrological boundaries 7.1 Arrange land and building for IA center 7.2 Request for funding |

8.3.2 Input Requirements

The input requirements for pilot implementation and nationwide replication are summarized as follows:

Project 1 : Inputs for IA Organizational Strengthening

| | Inputs for Pilot NISs | Inputs for Nationwide Replication |
|-----|---|--|
| NIA | <ul style="list-style-type: none"> • Budget for IDP activities • Original master list, parcellary map, and other records • Task force for IA organizational strengthening (central, region and field offices) • IDOs and Farmer Irrigators Organizer (FISs) • Consultation with IAs, RIOs, ISOs, other agencies • Study on organizational weaknesses , and present level of IA management skill • Study on IMT performance and IMT implementation guidelines • <u>Monitoring and evaluation of pilot activities</u> | <ul style="list-style-type: none"> • Nationwide replication program • Fund arrangement • Training program for NIA-IA • Monitoring and evaluation |
| IA | <ul style="list-style-type: none"> • Venues and technical preparatory works for meeting and training • Attendance of IA officers and leaders during meeting and training • Travel expenses for officers and leaders • Members' counterpart for food during meeting and training • Voluntary works of IA members • Fund for record and filing system, and establishment of an IA center • <u>Monitoring and evaluation of pilot activities</u> | <ul style="list-style-type: none"> • NIA-IA working teams at regional level • NIA-IA joint study and implementation for IA organizational strengthening • Monitoring and evaluation |

8.3.3 Program Package for IA Organizational Strengthening

In implementing the action plan for IA organizational strengthening, the following six program packages are proposed:

- (1) Updating of master list
- (2) Election of leaders and officers
- (3) Installing appropriate systems and procedures for IA activities
- (4) Farmland trust management
- (5) Practical training (Live-in training program)
- (6) Legal amendment or change of NIA policy for IA membership (IA Law/Act)

The objective, strategy, implementation process and expected results of the above six program packages are described below.

- (1) Updating of Master List

Objective

The main objective of the updating is to ensure that all farmers (actual tillers) within the service area of the IA will be accounted for and will be the basis for restructuring the organization. The complete enumeration of actual and potential members stems from the low membership rate of about 40%. Of the actual members, only 20-50% are perceived as active.

Strategy

The basic strategy is to conduct complete enumeration of the status of all potential members, including non-members and existing members, as regards tenure, land holding and utilization. This will form the basis for a mandatory membership to replace the existing policy of voluntary membership. The need for mandatory membership stems from the low participation of members in IA activities.

Implementation Process

The updating of the master list will be done in parallel with the updating of the parcellary map. The updated parcellary map, if done properly, will present the correct lot boundaries and land utilization. This will form the basis of the physical area of farmers within the boundary of the IA. It is proposed that the parcellary map should be compared with the recent cadastral and tax mapping maps which are available at the municipal level to confirm existing land utilization.

A complete head count of all farmers will be done per TSA level. With the updated parcellary map, the corresponding lot number and area will be reflected in the master list together with the name of the actual occupants and his/her tenure status. The NISO jointly with the IA will confirm the final master list. The updated master list will now be the basis of the membership restructuring such as selection of TSAG leaders and future core management team of the IAs.

Expected Results

The updated master list will provide a clear profile of existing as well as potential members. This will facilitate reorganization and a better record for planning, especially in the delineation of irrigated and billing areas. Erroneous reporting will be eliminated.

- (2) Election of leaders and officers

Objective

The objective of conducting regular election of officers is to replace incompetent and overstaying leaders whose interests have been parochial to the organization. Most existing officers have been selected from leaders who do not have the knack for planning, execution, and control. Decision-making

is relatively informal, with the exception of the advanced IAs which is not more than 5% of total NIS-IAs. This is the primary consideration why most IAs are akin to de-facto organizations. Leaders and members are paying lip service to the associations' activities.

Strategy

The basic strategy is to conduct regular election of officers in an atmosphere of transparency and democracy. Coercion from influential community leaders should, as far as practicable, be avoided.

Implementation Process

The NISO will supervise the conduct of regular elections. The members will be given enough liberty, preferably during the general assembly at the beginning of the year, to select their leaders without any duress from the NISO and/or other influential people in the community. Elections, to be held in a democratic process, will commence at the TSAG and each TSAG will choose a leader to be represented on the Board of the IA. The NISO will assist in the reproduction of ballots and canvassing of votes. Members in coordination with NISO will decide the frequency of regular elections.

Expected Results

The regular election of officers will promote efficiency in operation. Overstaying and incompetent leaders will be minimized. It makes possible the creation of core management teams, which can start formal decision-making and execution of activities. Competent leaders and officers are expected to set the visions and directions of the IAs.

- (3) Installing appropriate systems and procedures for IA activities

Objective

The main objective of installing appropriate systems and procedures is to facilitate reporting and coordination of activities. Filing and recording appropriate records will be useful in the formulation and review of policies. Appropriate procedures will facilitate effective and efficient working relationships among the working committees, including coordination with other local organizations

Strategy

The basic strategy is to design: (a) a simple and practical format to capture the information required and to designate a permanent custodian officer to handle recording and processing and (b) an operations manual detailing the flow of responsibilities and chain of command within the IA.

Implementation Process

The NISO together with a qualified trainer will assist the IA to set proper systems and procedures in place. This will involve basic record keeping, filing and processing. It is proposed that this subject be part of the training package to be given to IAs, preferably to the constituted core management staff. The process of conducting meetings and decision-making and review will be taught, beginning at the TSAG up to the federation level.

Expected Results

Appropriate systems and procedures will facilitate efficiency in operations.

- (4) Farmland trust management (Ref. Figure 8.2)

Objective

The objective of farmland trust management is to minimize the incidence of absentee landowners. The proportion of absentee landowners is more than 50% in the pilot NISs. This type of land tenure structure affects the quality of participation in most IA activities. Because tenants and caretakers are just proxies to the real owner-cultivators, they seldom participate in IA activities, like canal clearing and attendance at meetings.

Strategy

The basic strategy is to entice absentee landowners to entrust the custody of their properties to tenants, caretakers and other non-owners who have become members of the IAs. An advocacy program is one of the means to convince the absentee landowners to join in this form of land sharing scheme. The scheme does not diminish the landowners' ownership status of the land. The right to cultivate will be delegated to tenants and caretakers (under the trusteeship and stewardship of the IAs). The management transfer will be clothed with ample legal safeguards to protect both parties in the event of infractions.

Implementation Process

The NISO jointly with the IA will initially conduct an advocacy forum among potential landowners detailing the mechanics of farmland trust management. Once there is consensus between the landowners and the IAs, the preparation of contract documents can be initiated. The assistance of the regional office will be needed in the drafting of the contract, including the provision of legal services to the IAs. The IAs jointly with the landowners will select the members who will till the land. The landowners, however, may wish to retain their previous tenants as long as they have become legitimate members of the IAs. It is proposed that the concept be tried first at the TSA of 30-50 ha-level so that logistics support, notably short-term credit, preferably from QUEDANCOR can be secured manageably. The IA will initially select a good farmer-member who can be assigned as farm manager to supervise the operations of the farm.

Expected Results

The expected contribution of farmland trust management is essentially economies of scale in farming operation. With land preparation under the control of the IA, it makes it easier to introduce synchronous planting. Members are assured of the timely procurement of farm inputs, proper planting of variety and on-time delivery of water because decisions are collectively made and implemented. Wasteful water delivery can be prevented. Farm inputs can be provided in bulk, and with the assurance of secured production, deferred payment can be negotiated, especially with established farm input suppliers. Members need not worry about the need for cash to purchase such inputs during land preparation.

The social significance of farmland trust management will be employment security for tenants, caretakers, and landless laborers as cultivators. Since these groups of farmers have become members, the IA will ensure priority for employment in the farms covered by trust agreement.

(5) Practical training (Live-in training program)

Objective

The main objective is to hone the skills of leaders and members in running the day-to-day operations of the associations. One of the crucial issues is how to put in place a core management team in every IA capable of functioning under

sound management with market-driven initiatives.

Strategy

The training will be focused on leadership and organizational discipline directed at leaders and officers. Live-in and role modeling approaches will be emphasized instead of the usual lecture and classroom-type of training. The basic strategies are (a) linking the IAs with financial strengthening programs such as capital build-up, micro credit, etc., and (b) cross posting of technical personnel who can act as role models. The capital build-up (CBU) and micro lending activities can be the catalyst in the bonding of members, especially at TSAG level. The role model trainers will institute proper selection of leaders and a disciplinary code of conduct. Selected role model leaders could eventually form the core staff. Role model leaders have the ability to instill disciplinary action in case of infraction and can overcome the culture of poor discipline among members.

Implementation Process

A roving training task force coordinating team from the region, getting direct orders from the IDD is proposed to assist the NISO in implementing the training program envisioned for organizational strengthening. The NISO will take the lead, given its proximity to the IAs. It is proposed that at least two competent IDOs¹ will be assigned in each NISO to prepare the quarterly program of work and day-to-day ground working with the IAs. Depending on the extent of the workload, more IDOs can be assigned. Hence, assistance from the region may be sought in the dispatch of the IDOs.

Trainers will be drawn from leaders of successfully managed cooperatives, CIS-IAs and/or similar institutions to form the core of the training staff (in case the NIA cannot provide the trainers). IA leaders who have undergone the training should be sent for a cross visit and posting in the mother institutions of the trainers to get hands on experience in running the day-to-day activities of an organization.

The budget is proposed to come directly from the income of the NISO and be augmented with counterpart funds from the central office (management fee). The NISO should thus be given the flexibility to program the utilization of

¹ Assignment of one IDO per 700 to 1,000 ha was proposed by the JICA NIA Study on Strengthening of NIA's Management Systems.

their income, and such flexibility will allow the NISO to strive for a higher collection of ISFs and explore other sources of income. Being a revenue center, the NISO should be given a semi-autonomous status to generate the required funding.

(6) Legal amendment or change of NIA policy for IA membership (IA Law/Act)

Objective

The objective is to review existing policies restricting the development of the IAs, including the promotion of IMT and formulation of changes as required. Two existing policies restrict the development of IAs. First is the voluntary nature of membership. Voluntary membership does not give any distinct advantage to a member over a non-member. Both can use water provided they pay the ISF. Second, the current incentive and other ISF exemptions distort the market in general. The 10% ISF rebate for prompt payment prejudices an IA member vis-à-vis non-member. The latter can keep the 10% rebate, while the former may lose it; if the IA decides that the 10% belongs to the IA as a potential source of polled fund. If the NIA really wants to entice membership, the rebate and exemption should only be applied to members. However, the rebate has not really been effective, and in fact should be abolished to increase ISF revenues. The ISF exemption also breeds corruption. Any NISO water master who is in cahoots with users of water can easily declare erroneous reporting on production, LIPA and billing area.

As regards the promotion of IMT, the NIA has not come up with a unified policy. Donor-funded projects have been implementing different IMT policies according to their own biases. There is actually no legal framework that even binds the IAs to enter into IMT.

Strategy

Intensified consultation with IA members and other stakeholders is the basic strategy to repeal the defective provisions of existing policies. This will ensure objective assessment and contribution from concerned beneficiaries.

Implementation Process

A working committee will be designated to review and formulate new amendments to replace restrictive policies. Preferably, the committee should be chaired by the IDD and co-chaired by the Corplan. The committee will draw its members from concerned departments and draft the policy changes

(subject to the results of intensive consultation) and this will be submitted to the NIA Board for approval. Through the Board, an MC can be prepared. Enforcement of the MC will be delegated to the regions and field offices. The regions in coordination with the IDD will monitor compliance on the enforcement of the policies.

The Board will initiate legislative amendment requiring Congressional Approval. It is recommended that the Board will closely coordinate with the Legislative Executive Development Council to get these amendments conveyed to proper authorities.

Expected Results

The policy/legal changes will remove the legal infirmities that restrict the development of strong and productive IAs. Mandatory membership will ensure compliance to most IA activities and removal of ISF incentives will increase ISF revenue. An IA law will strengthen the juridical status of entering into any contract, especially IMT.

8.4 IA O&M Strengthening

8.4.1 Target Outputs and Necessary Activities

Targets were set to be able to achieve the objectives of the O&M strengthening plan. At the end of the project, the following targets are expected to have been achieved: (i) more than 75% of members are effectively implementing O&M policies and plans (Sub-project 2-1: Formulating Rational O&M Policy and Plan); (ii) more than 90% of the IAs are distributing the water equitably (Sub-project 2-2: Implementing Effective O&M), and (iii) more than 90% of members have received appropriate assistance to sustain O&M activities (Sub-project 2-3: Providing Appropriate Assistance for IA’s O&M Strengthening).

In order to achieve the targets it is planned to undertake the following outputs and activities for the NIA and IAs.

Project 2: Outputs and Activities for IA O&M Strengthening

| | Outputs | Activities |
|-----|--|---|
| NIA | 1. Written and practical O&M policies <ul style="list-style-type: none"> • Written, practical and rational O&M policies and plans for each NIS jointly formulated by NIA and IA | 1.1 Deliberate issues affecting implementation of O&M policies and plans 1.2 Settle the issues jointly with IA through consultation with SMC considering equity and practicality in the use of water 1.3 Develop enforcement measures specifying penalties, incentive and responsibilities in NIA |

(table continued)

| | Outputs | Activities |
|-----|---|---|
| | <ul style="list-style-type: none"> • Strict enforcement of O&M policies and plans | 1.4 Obtain LGU ordinance to prevent illegal dumping and squatting along canals 1.5 Adapt the Water Code for illegal water users 1.6 Assist IAs to formulate O&M policies and plans before start of cropping season |
| NIA | 2. Established Coordination System <ul style="list-style-type: none"> • Established and operational mechanisms for resolving conflicts among members and influential people in the community 3. Training package <ul style="list-style-type: none"> • Skilled WRFs for preparation and implementation of O&M plans and policies 4. Enforcement of O&M policies and plans <ul style="list-style-type: none"> • Equitable distribution of water to IAs by NISO • Well maintained irrigation system by NISO • Rehabilitated irrigation facilities and structures • Improved and installed control structures and measuring devices | 2.1 Suggest and recommend strategies on how conflicts could be resolved 2.2 Request TSAG leaders to coordinate with SMC and LGUs to settle conflicts amicably 3.1 Develop improved IA training packages on O&M methodologies and other strategies 3.2 Establish training teams at regional and provincial levels 3.3 Conduct trainers training 3.4 Provide skills training to NISO's O&M staff 3.5 Establish liaison with other public institutions to provide technical assistance to IAs 3.6 Monitor and evaluate progress of training 4.1 Prepare water distribution, and monitoring plan jointly with IAs under assistance from resource persons 4.2 Disseminate water delivery plan and schedule to IAs at accessible places (bulletin boards at every diversion and delivery point) 4.3 Implement operational plan within NIS jurisdiction 4.4 Monitor, record and evaluate water delivery 4.5 Conduct walk through inspection of irrigation facilities jointly with IAs after harvest and calamity 4.6 Implement maintenance plan within NIA jurisdiction 4.7 Develop efficient procedures for identification and prioritization of rehabilitation works through participatory approach 4.8 Rehabilitate and install control structures and measuring devices at intake and head gates 4.9 Modify turn-outs to proper size of pipe diameter for land preparation and provide gates for normal irrigation |
| IA | 1. Written, practical and rational O&M policies and plans <ul style="list-style-type: none"> • Written, practical and rational O&M plans and policies • Integrated cropping calendar • Water delivery and distribution (WDD) • 2. Established coordination system <ul style="list-style-type: none"> • Active participation and awareness of members for O&M activities • Resolution of conflict between upstream and downstream users • Activated TSAG and other standing committees 3. Training package <ul style="list-style-type: none"> • Skilled BOD and TSAG leaders in the preparation and execution of O&M plans • Procedures for technology transfer | 1.1 Conduct O&M orientation workshop for leaders 1.2 Facilitate consultation meetings with members 1.3 Prepare O&M information materials 1.4 Set-up information boards for notification/ratification of O&M policies 1.5 Jointly prepare with members the O&M plans and ratify accordingly through participatory process 2.1 Request NIA to regularly convene the SMCs 2.2 Conduct regular dialogues with members 2.3 Activate service committees and clothe them with powers to resolve conflicts 2.4 Reorganize and mobilize TSAG leaders for intensive information dissemination 3.1 Request NIA to conduct live-in and role modeling training to leaders and members 3.1 Request NIA to conduct regular orientation on the preparation of O&M plans 3.2 Conduct training to at least 50% of members 3.3 Develop a methodology for transferring skills to members |

(table continued)

| | Outputs | Activities |
|----|--|--|
| IA | 4. Enforcement of O&M plans and policies <ul style="list-style-type: none"> • Adopted integrated cropping calendar • Adopted water delivery and distribution schedule • Renewed Type I and II contracts • Maintained irrigation canals and farm ditches • Applied sanctions and penalties on infractions • Supplemental irrigation water from shallow well during dry season | 4.1 Prepare jointly with NIA the cropping calendar and implement 4.2 Prepare WDD jointly with NIA and implement 4.3 Jointly conduct with NIA information dissemination programs about the cropping calendar and WDD 4.4 Request NIA to conduct orientation on contract provisions 4.5 Consult with members about incentive structure 4.6 Finalize Type I and II contracts and renew with NIA 4.7 Activate service committees to disseminate and enforce penalties 4.8 Conduct regular cleaning of canals and farm ditches 4.9 Request NIA to repair and rehabilitate damaged irrigation systems 4.10 Mobilize members for regular maintenance of canals and farm ditches 4.11 Close illegal turnouts and other illegal activities and enforce corresponding penalties 4.12 Request NIA to provide shallow tube wells at cost 4.13 Coordinate with LGU for additional funding support |

8.4.2 Input Requirements

The input requirements for pilot implementation and nationwide replication are summarized as follows:

Project 2: Inputs for IA O&M Strengthening

| | Inputs for Pilot NISs | Inputs for Nationwide Replication |
|-----|---|---|
| NIA | <ul style="list-style-type: none"> • Task force for IA's O&M strengthening • SMC and its meeting at NIS level • Budget for pilot activities including rehabilitation • Study on present level of O&M skills at NISO and IAs • NIA-IA joint study for preparing O&M policy and plans using: master list and parcellary map, layout map of irrigation, meteorological data, hydrological data, water requirement of crops • Study on rehabilitation plans and works jointly with NIA-IAs (hydrological data, map, engineering report, cost estimate) • Trainers training (Regional/provincial) and training packages (IA leaders and members) • Monitoring and evaluation of pilot activities | <ul style="list-style-type: none"> • Nationwide replication program • Fund arrangement • Training program for NIA-IA • Monitoring and evaluation |
| IA | <ul style="list-style-type: none"> • Active participation of IA members • Updated master list • List of potential leaders • Counterpart Resources (food, venue of training/workshop/meetings, etc) • Local materials for repair and maintenance • Voluntary labor for O&M • Small farm tools and equipment • Member training program by IA trainers • Monitoring and evaluation of pilot activities | <ul style="list-style-type: none"> • NIA-IA working teams at regional level • NIA-IA joint study and implementation for IA O&M strengthening • Monitoring and evaluation |

8.4.3 Program Package for IA O&M Strengthening

In implementing the action plan for IA O&M strengthening, the following six program packages are proposed:

- (1) Reactivation of turnout service area group (TSAG);
- (2) Rehabilitation of system (main and lateral);

- (3) Enactment and enforcement of O&M policy
- (4) Operation improvement
- (5) Maintenance improvement
- (6) Practical training (Live-in training)

The objective, strategy, implementation process and expected results of the above six program packages are described below.

- (1) Reactivation of TSAG

Objective

The objective is to rehabilitate the functionality of dormant TSAGs to be the pivotal unit for water request, gate control, foot patrol, walk-through inspection, maintenance and ISF collection. It should be emphasized that the IA will be a lame duck organization in the absence of functional TSAGs.

Strategy

The basic strategy is to activate only those non-functional TSAGs. This will involve assessment of the technical and organizational limitations of each non-functional TSAG. Corresponding solutions will be identified to remedy the problems identified.

Implementation Process

The reactivation of the TSAG will involve the following processes: (a) updating of master list and parcellary map; (b) re-delineation of boundaries; and (c) review of size, location of turnouts, length and alignment of farm ditches. The boundaries of the TSAG will be re-delineated based on the updated parcellary map. The corresponding size, location of turnouts and alignment of farm ditches will be reviewed and final specifications will be jointly designed by NISO in close coordination with the IA. The NISO, assisted by the region, will draw up a cost-effective and manageable TSAG size that will be initially implemented in the pilot NISs. Replication to other NISs will follow after the pilot tests have confirmed their applicability. From the reactivated TSAG, new leaders will be selected, preferably those with potential to become role models.

Expected Results

With all the illegal turnouts having been corrected and new sizes introduced, the distribution of water among users is expected to be equitable. O&M plans

and policies are expected to be implemented with least resistance because the defects have been corrected.

(2) Rehabilitation of System

Objective

The objective of physical rehabilitation is to rehabilitate the functionality of the facilities to improve irrigation efficiency. Most canals require desilting work to rehabilitate their original function. About 50% of turnout gates are non-operational and not more than 50% of the facilities are functional, nationwide. The worst is San Fabian RIS, with less than 20% of its facilities functional. Clearly, the only way to rehabilitate and regain the original function of these facilities is through rehabilitation.

Strategy

The basic strategy is to employ selective rehabilitation of facilities. Rehabilitation will be prioritized based on ISF collection efficiency. Systems with higher ISF collection efficiency will be preferred. In addition, full rehabilitation will not be a pre-condition to turnover of system management. The IAs will be made to co-share in the responsibility of restoring the system.

The other strategy is to establish a CBU for the IAs to ensure stable funding for maintenance. Under the proposed CBU, part of the compensation to be paid to IAs that have entered into labor contracts (through large rehabilitation works) with the NIA will become the CBUs of the IAs. The NIA jointly with the IA will decide on the amount to be allocated for the CBU.

Implementation Process

The NIA will, jointly with the IAs, conduct a walk through inspection to identify and prioritize the necessary rehabilitation works. Replacement and/or rehabilitation of the discharge measuring facility is one of the important works to be done. The measuring devices will be installed at the intake, headgate of canals and/or at the head of the IAs' lateral canals. This is to determine the accurate volume of water to be delivered to the IAs.

The second important work is to correct the arbitrary practice of turnout gate operation. The turnout is continuously open in the land soaking and preparation period when water is mostly required and during the maintenance period when water is required in normal quantity. There is no control of the

water discharge from the opening range of the gate. Most of the pipes installed are oversized for the assigned service area. Adjusting the opening by slide board is thus recommended. Slide boards with hole sizes to accommodate four types of operation will be prepared, namely: rotation irrigation, land soaking and preparation, maintenance, and closing based on TSA. The slide board will be installed at the turnout based on the type and stage of irrigation. Monitoring of water distribution will be easier and done by all farmers when each slide board has its own identification mark, such as coloring of the board.

The third important work is on-farm development to correct the physical limitations brought about by willful neglect of maintenance by IAs. The direct participation of the IAs in physical improvement using their labor and other materials will minimize dependency on the NIA. The chances of members complying with the law are greater because their own efforts have been expended in the improvement of on-farm structures. This institutional strategy has been proven effective in most CISs, and the same approach will be applied to NIS-IAs.

Taking advantage of these rehabilitation works, the establishment of a CBU for IAs is recommended. Under the capital build-up scheme, part of the compensation to IAs that entered into labor contracts with the NIA will be converted to a CBU, and this will be managed by the NIA. However, the NIA's capability to manage fund investment is negligible, hence it is recommended that a reputable bank (jointly selected by the NIA and IA) will be assigned to handle the CBU for short to medium term investment in securities. The NIA will turn the CBU over to the IA when the latter is prepared to assume its responsibility in IMT activities, and has acquired enough skills to effectively execute O& M practices.

Expected Results

Conflict on the inequity in water distribution will be minimized since most facilities have been rehabilitated to their original function. Overall improved irrigation efficiency is expected.

(3) Enactment and Enforcement of O&M Policy

Objective

The objective is to formulate written and practical O&M policies that are enforceable. The preparation of a cropping calendar and water distribution

plan is commonly observed. However, there is low compliance with implementation by IAs, varying from 20% to 70%. The issue thus pertains to the quality of preparation and enforcement of plans and policies.

Strategy

The basic strategy is to actively involve the leaders and members in the formulation process. This will replace the NISO-driven policies that are mostly disliked by members.

Implementation Process

The operation policy will specify the what, where, when, who and how of plan preparation, implementation, and monitoring. Specific concerns will cover water delivery (to include normal and water crisis cases), gate operation, cropping pattern and maintenance facilities. Penalty will be clearly prescribed in the O&M policy.

Monitoring the compliance by the IAs with policies formulated, including the enforcement of penalties, will be the responsibility of the various groups. The TSAG for instance will be responsible for members within the TSA, IAs for member TSAGs, and the NIA will be responsible for overall monitoring.

The preparation of water distribution and cropping calendar plans is essentially NISO-driven, so it is related to continuous water supply. It hardly incorporates crop-water needs at all. Water conservation is missing and continuous irrigation practice always prevails in the minds of IAs. Given the shortage of irrigation water experienced in many NISs during the dry season and also in the wet season, water saving farming, which is currently under study through the collaborative efforts of the NIA, IRRI, and PHILRICE, will be considered. Rotation irrigation will be recommended to effectively increase irrigated areas. Such methods will be reviewed for inclusion in the preparation of O&M policy.

(4) Operations Improvement

Objective

The objective is to introduce improved water management practices that will minimize wasteful utilization of irrigation water. Water saving measures will be emphasized to improve the cropping areas.

Strategy

As in the formulation of O&M plans, the basic strategy is to actively involve the leaders and members in operations improvement. Role model leaders will impart practical lessons to officers and members, preferably through actual demonstrations on water delivery.

Implementation Process

Operations improvement will focus on water delivery. The process will start from the preparation of water delivery using the water request submitted by the TSAG to the IA and the IA to the NISO. The TSAG will prepare the water request specifying, among other things, canal name, TSA names or assigned number of turnouts, corresponding size of the irrigation area and starting date of irrigation. The water request will also declare completion of canal cleaning and maintenance in the entire assigned canal stretch, commitment for ISF payment by due date, and consent to the penalty for any violation of the O&M policy. For NISs adopting it, this scheme has been effective in increasing ISF collection. In addition, the use of permanent billboards beside each headgate, showing the water delivery schedule, will be introduced. It is recommended that the billboard include a cropping calendar for the monitoring operations' activities of the IAs.

Strict compliance by members will be encouraged by the formation of foot patrol teams. IAs will be encouraged to organize their foot patrol teams to apprehend violations of water distribution. They will be deployed in the evening to prevent stealing of water. The foot patrol team will be composed of the Water Resources Facilities Technician (WRFT) and representatives of TSAGs. The WRFT will arbitrate on any conflict that may arise in cases of unexpected stealing or illegal diversion of water.

Expected Results

With improved operations, cropping intensity is expected to increase. This will translate to a higher irrigated area. Yield of paddy is also likely to increase because water is readily available when needed.

(5) Maintenance Improvement

Objective

The objective of maintenance is to ensure that the systems' facilities are free

from defects. Maintenance work is reinforced through Type I contracts. Indirectly, however, this practice has somehow exacerbated negligence among members from doing their share in maintenance, especially when the NIA fails to pay the IAs on time. The NIA takes two to three cropping seasons to generate funds to pay for services rendered to IAs. This has prompted IAs to abandon their responsibility in canal clearing. The neglected condition of canals and other laterals, including major facilities, is now very evident. Canals and their embankments are being used as a dumping ground for garbage, planting trees and wallowing of carabaos, and even squatting is rampant.

Strategy

The basic strategy is to directly involve the members in maintenance work. Strong advocacy through a communications program will be implemented at the TSAG level. Sense of ownership will be the key message in the communications program.

Implementation Process

Maintenance of on-farm facilities will be the responsibility of IAs. Through the reactivation of the TSAGs, the IAs will entrust the maintenance of on-farm facilities to the TSAGs using the “bayanihan” practice. This will instill a sense of ownership to the system and thus enhance the promotion of preventive maintenance. Large maintenance works beyond the capability of the IAs will be done by the NIA. However, the IAs will be given priority in providing the labor, and payment will form part of the CBU of the IAs. The CBU will be a contingent fund of the IAs strictly reserved for maintenance work. Emergency repairs can then be acted on promptly through the CBU.

Expected Results

With maintenance strictly implemented, the vicious cycle of repair and construction will be prevented. This will minimize cost for repairs and rehabilitation, and the NIA as a whole can use the money originally intended for costly repairs to construct new irrigation projects.

- (6) Practical training (Live-in training)

Objective

The objective is to hone the skills of leaders and members in the formulation

and execution of O&M plans and policies. This stems from the poor implementation of water delivery and distribution, and low participation by members in maintenance work. Only 30% to 50% of members participate in system's maintenance.

Strategy

The training strategy will focus on addressing the basic issues in O&M, notably the poor quality of the plans and policies and lax enforcement of such policies and plans. The usual courses on systems management, irrigation management and operations and maintenance will be supported with innovative schemes to permit synchronous planting under farmland trust management.

Conflict resolution will be emphasized and techniques for arbitration will be introduced, particularly in the allocation of water use between the upstream and downstream IAs. It is important that the SMCs are activated so that the conflicts can be resolved rapidly.

Implementation Process

It is proposed that at least two (2) trainers with technical expertise in irrigation and farm management will be appointed per NIS as the core training staff. These trainers will preferably work closely with TSAG leaders. The TSAG leaders are expected to echo whatever approaches have been learned from the trainers. Monitoring and evaluation from the NISO and region's roving task force will be required to evaluate performance.

It is proposed to establish an IMT promotion center under the direct supervision of the NIA Administrator. This will be a technical support and training facility showcasing successful practices of O&M where leaders and members can learn in an expanded laboratory with hands on training on water management and maintenance. The promotion center will be equipped with facilities essential for conducting training and/or seminars. The center will essentially be a technical resource organization that can provide quick and responsive courses, trouble shooting, monitoring and evaluation. The acceleration of IMT will be one of the main concerns, given the complex issues affecting its implementation, among which are legal infirmities, contract sharing, delineation of system maintenance, pricing of water, etc. The center will try to develop practical approaches to address such issues.

Expected Results

With improved skills, it is projected that at least 90% of IAs will be able to formulate O&M plans and polices that can be implemented efficiently and effectively. The skills acquired by leaders and members will permit them to use better water management technologies and indirectly this will improve farm productivity and incomes. Maintenance of system facilities will be ensured and as such O&M cost will decrease.

8.5 IA Financial Strengthening

8.5.1 Target Outputs and Necessary Activities

Targets were set at the end of the project to be able to achieve the objectives of the IA Financial strengthening plan. At the end of the project, the following targets are expected to have been achieved: (i) ISF collection efficiency of 75% to 100% and prompt payment by the NIA of ISF share to IAs (Sub-project 3-1: NIA's Financial Management Strengthening), (ii) ISF collection efficiency of 75% to 100% and 100% collection of membership dues (Sub-project 3-2: Collection Enhancement of IA's Dues and ISF), and (iii) more than 90% of members having received appropriate assistance with financial concerns (Sub-project 3-3: Assistance for IA's Capacity Building on Financial Management and Activities).

In order to achieve the targets, the following outputs and activities for the NIA and IAs are planned to be undertaken.

Project 3: Outputs and Activities for IA Financial Strengthening

| | Outputs | Activities |
|-----|---|--|
| NIA | 1. Improved ISF collection policies and procedures <ul style="list-style-type: none"> • Improved ISF collection policies, strategies and procedural system under respective contract (Type I, II, II JSM etc), I • Timely payment of ISF share to IAs | 1.1 Review and amend, if necessary, existing ISF incentives and exemptions 1.2 Review and amend, if necessary, existing ISF rates using appropriate water pricing strategy 1.3 Develop and implement cost-effective collection policies and strategies 1.4 Conduct dialogues with IAs, DA, DAR, DILG, and other agencies on legal and procedural system 1.5 Implement strictly existing Annotation Program 1.6 Establish institutional arrangement between LRA and NIA to prevent transfer of irrigated lands with ISF arrears 1.7 Design and implement mass media campaign on ISF collection to instill awareness among NIA employees 1.8 Study and modify existing procedures of monthly releases of sub-allotment advice requirements to facilitate timely allocation and processing of payments of IA remuneration and collection incentives 1.9 Study the generation of seed fund out of ISF shares to improve the liquidity of IAs 1.10 Reconcile and update IFRs, master list and parcellary maps to increase billing and collected areas. |

(table continued)

| | Outputs | Activities |
|-----|--|--|
| NIA | 2. Training package <ul style="list-style-type: none"> • Simple and practical training packages on financial management • Custom-service oriented system for integrated financial services (audit, micro-lending, marketing and other livelihood) to be established at national, regional and provincial | 2.1 Review through TNA all existing training on financial matters and design a simple and integrated financial management training for leaders and members 2.2 Establish a training core team on financial management system at the region and provincial levels to conduct hands-on and coaching jobs to leaders and members 2.3 Study and rehabilitate computerized billing system and institute a crash training for adoption of the computerized system 2.4 Institute IA financial auditing system and implement a basic course on audit 2.5 Collaborate and establish liaison with other agencies to get their technical and financial assistance for IAs 2.6 Conduct trainers training and establish training teams at regional and provincial level |
| IA | 1. Internal ISF policies and procedures <ul style="list-style-type: none"> • 1 Defined and written strategies, policies and procedures for IA dues and ISF collection • Timely payment of ISF to NIA 2. Training package <ul style="list-style-type: none"> • Trained officers and leaders on financial management and bookkeeping, audit, etc. 3. Systems and procedures <ul style="list-style-type: none"> • System on financial recording, auditing and budget planning 4. Market-related and income projects <ul style="list-style-type: none"> • Renewed Type 1 and 2 contracts • Fund raising (capital build-up) and income generating policies and programs • Operation of assembly marketing | 1.1 Conduct dialogues and planning sessions with members and solicit ISF and members' dues policy proposals 1.2 Prepare the policies and implementing rules and guidelines and circulate for ratification 1.3 Implement the policies through intensive communications program 1.4 Monitor and evaluate performance 2.1 Coordinate with NIA and present a training proposal 2.2 Design an appropriate financial management training using live-in and role modeling scheme 2.3 Conduct the training to at least 50% of members on financial management, and develop second line IA leaders (by IA trainers) 3.1 Appoint bookkeepers and activate financial record keeping and audit 3.2 Consolidate all financial records, and develop procedural system for transactions and control 4.1 Negotiate with NIA for renewal of Type I and II contract 4.2 Prepare and submit documents to NIA, and install systems and procedures for implementation 4.3 Prepare fund raising and income generating policies and proposal 4.4 Discuss in assembly meeting and ratify for implementation 4.5 Prepare specific project proposal (through assistance from NIA and other agencies) 4.6 Solicit the funding requirement and counterpart fund from members 4.7 Implement and monitor performance 4.8 Prepare a plan of action for assembly marketing program 4.9 Conduct market research and market planning workshop, 4.10 Conduct training to leaders on operations (bulk volume transport and deposit, invitations of potential buyers, pricing, etc. 4.11 Install the market center |

8.5.2 Input Requirements

The input requirements for pilot implementation and nationwide replication are summarized as follows:

Project 3: Inputs for IA Financial Strengthening

| | Inputs for Pilot NISs | Inputs for Nationwide Replication |
|-----|--|--|
| NIA | <ul style="list-style-type: none"> • Task force for ISF collection increase at NIA • Task force for IA financial management strengthening with other agencies • Committee with IAs, DA, DA, DAR, DILG/LGUs, LRA on ISF collection • Budget for IDP activities for training and technical assistance • Skills training, hard ware and software for computerized billing system • Market information network among IAs (NIS/CIS), traders, LGUs, etc. • Fund for IA's other service activities (livelihood, post-harvest facilities) • Post-harvest technician for IAs' marketing activities • Monitoring and evaluation of pilot activities | <ul style="list-style-type: none"> • Nationwide replication program • Fund arrangement • NIA-IA joint study and implementation for IA's financial strengthening • Training program for NIA-IA • Monitoring and evaluation |
| IA | <ul style="list-style-type: none"> • Working teams at concerned region and NISOs • NIA-IA joint study and implementation for ISF collection increase • IA task force per TSA for ISF and membership dues collection • Participation of IA wives in collection members' dues • Attendance of IA officers and leaders during workshops and training program • Member training program by IA trainers • Local counterpart fund or donations for IA projects, training and O&M activities • Financial and technical assistance for IA livelihood projects from other line agencies • Members patronage to IA livelihood projects and business • Voluntary works of IA officers, leaders and members in the implementation of income generating projects • Monitoring and evaluation of pilot activities | <ul style="list-style-type: none"> • NIA-IA working teams at regional level • NIA-IA joint study and implementation for IA's financial strengthening • Monitoring and evaluation |

8.5.3 Program Package for IAs Capacity Building with Financial Management

In implementing the action plan for financial strengthening, the following five program packages are proposed:

- (1) ISF billing and cost-effective collection (NIA);
- (2) Establishment of seed fund for O&M;
- (3) CBU and livelihood activities;
- (4) Assembling market; and
- (5) Basic financial training

The objective, strategy, implementation process and expected results of the above five program packages are described below.

- (1) ISF billing and cost-effective collection

Objective

The main objective is to remove wasteful and unnecessary expenditure in ISF billing and collection, primarily at the NISO level. Most NISOs practically involved all of their staff in the collection of ISFs, starting from the irrigation superintendent down to the clerks, security guards and drivers.

Notwithstanding that this is a matter of survival for every NISO, the practice has unduly perpetuated an institutional disadvantage over O&M activities.

Strategy

The basic strategies are: (a) computerization of the ISF billing so that built-in control can be integrated; (b) regular review of ISF rates so that the appropriate water pricing can be charged; and (c) shift in the responsibility in the collection of ISF-in-kind from NISOs to the IAs.

Implementation Process

The computerization of the billing system will first involve reconciliation of information indicated in the master list, IFR and parcellary map. As soon as the data in these documents has been updated, the integration will follow. The NISO through the assistance of a competent systems engineer/ programmer will integrate the information using card-type data base software. The card-type is being recommended because of its affordability and being user-friendly. A normal PC can bundle the software.

The second step is to develop the program that will automate the billing. Some NISOs are still using the old software for computerized billing. The old software, however, is running on a DOS-based program and is stand alone, and this program has outlived its usefulness because of the introduction of the Windows-based application programs and local area networking.

Collection procedures will be rationalized to minimize wasteful and unnecessary expenditure. It is proposed that the responsibility for collecting ISF-in-kind will be transferred from the NISO to the IAs. The burden of losses and pilferage, which are normally significant, will be removed from of the NISO. The IAs can store the paddy and dispose of it during lean months through the assembling market. Gains from better prices will become additional income for the IAs.

A committee to be chaired by the NIA-Corplan with members from the IDD, SMD and selected representatives from the region and field offices, including the National Confederation of Irrigators Association (NCIA) will be activated to review the ISF rates and make an appropriate recommendation to the Board. The committee will consider past studies and determine the applicability and acceptability of new ISF rates that would increase the financial viability of the NIA and the IAs.

Expected Results

With improved ISF billing and collection, the magnitude of ISF collections is expected to increase. Greater revenues will be realized due to higher collection efficiency.

- (2) Establishment of seed fund for O&M

Objective

The objective is to create a revolving fund for the IA strictly for maintenance activity. The seed fund will ensure availability of funds in case emergency repairs are needed.

Strategy

The basic strategy is to increase the ISF rates and opt for 80% to 100% ISF collection efficiency.

Implementation Process

The seed fund is primarily for emergency rehabilitation works. The NIA will automatically deduct from its ISF share and create a special account for it. The seed fund account can be invested in short to medium term securities (by a designated investment bank) to generate additional earnings, as long as, at any given time, sufficient amounts can be withdrawn for emergency repair. Increasing the present ISF rates will facilitate the practicality of the seed fund. To permit the workability of the seed fund concept, the ADB estimated the ISF rates would need to increase by 6.5 to 7.5 cavans/ha. However, increasing the ISF rates will surely be resisted by farmers, hence it will likely take a longer time to get social acceptability of new ISF rates. In the meantime, increasing collection efficiency will facilitate the realization of the seed fund.

It is proposed that the NISO will give a specific cash allotment to IAs and this will be included in the IMT contract between the NIA and IA. The IAs will be required to produce a statement of expenses incurred and produce official receipts for replenishment. All ISF collections will be first turned over to the NISO for audit, before the IAs can obtain the seed fund.

Expected Results

With the seed fund, systems facilities will be maintained properly, prolonging their economic life. This will greatly enhance attainment of higher cropping

intensity and yields.

(3) CBU and livelihood activities

Objective

The objective is to establish a permanent source of fund that can be used by members to start off livelihood activities. The fund will come from members' contributions, mainly from paddy production every cropping season.

Strategy

The basic strategy is to institute an advocacy program on capital build-up mobilization among members, preferably at the TSAG level. Starting off with smaller groups will be easier to manage and can be a model for the other members to follow.

Implementation Process

The livelihood programs will be introduced in all the pilot NIS-IAs depending on local resources and acceptability. The program will be planned with the participation of members and provision of technical assistance. Each member is requested to contribute one cavan (50kg) of paddy per season. The capital build up will be around Php 0.8 million for three years as follows:

Php 7.5 x 25,000 kg (50 kg x 500 ha) x 1.5 x 3 years = Php 843,750

Where : Price of paddy Php 7.5/kg
IA area 500 ha (medium scale)
Cropping intensity 150%

Proceeds from the CBU can be used to start a micro-lending activity, preferably to members who cannot access their short-term credit from the LBP and/or Quedancor due to existing arrears from previous lending programs (e.g. Masagana 99). Assuming a production loan of Php 10,000/ha, around 20 farmers after the first cropping and 80 farmers after three years could benefit under the proposed lending scheme. The loan assistance is expected to encourage participation of farmers into IA activities and sustain membership for effective execution of O&M activities. The interest rate will be the institutional rate of 14%/year which will be spent for loan handling (cost for IA staff and documentation) and additional capital build up.

Technical assistance for loan lending will be part of the financial training program to be designed by a field financial trainer. Collection of paddy for CBU will be stored in post harvest facilities owned by cooperatives and LGUs

and/or NISO facilities.

The CBU can be rolled over to fund the following projects, especially for women.

(i) High value vegetable production

Through a tie-up with seed distribution companies, a high value vegetable production using home yards and a specific paddy field lot is recommended. The seed distributor will provide technical guidance and marketing of products. The scale of production will be less than 1,000 m² at the beginning and enlarged according to the assured market scale.

(ii) Livestock raising

Through the coordination and support of the provincial agricultural office and Department of Agriculture, backyard livestock raising of poultry and swine is recommended. The concerned agencies will provide the initial stocks of broilers/layers and piglets. Based on the progress of raising technologies, the IAs will invest in a poultry cage and /or piggery for commercial production. The facilities will be located away from canals to prevent pollution of irrigation water. Livestock products will be sold locally.

(iii) Food processing and handicraft

Through the coordination of the provincial agricultural office and other related agencies, a training program for potential food processing and handicraft will be introduced. The training will introduce skills for processing using local resources such as rice straw, vegetables, fruits, fish, livestock for food processing, and wood, bamboo, corn husk, local plants, etc. for handicraft. Women's groups will initiate the processing activity, and production will be for local consumption through direct sales or on an order basis. This will gradually be enlarged to cottage industry level depending on buyers and scale of the market.

Expected Results

Supplementary sources of income will be expanded. Hence, the income of IAs, particularly the members is expected to increase.

(4) Assembling Market

Objective

Assembling market is essentially matching the segments of supply and demand, the main objective of which is to ensure stability of paddy prices. Farm gate prices of paddy are normally depressed by about 8% to 10% during harvest period. This practice persists because most farmers get their short-term credit from traders, and in return, pay their loans with their own production during harvest period. The consequences are: (a) prohibitive cost of short-term credit (more than 10% per month); and (b) lower prices of paddy, as a result of failure to undertake further processing and storage for better quality.

Strategy

The basic strategy is to minimize investment cost for post-harvest facilities by utilizing existing post-harvest facilities within the community. These facilities established by agricultural cooperatives are normally underutilized. The second strategy is to convince every member to patronize the assembling market operations, by offering a premium price for quality paddy. The third is to establish a market information network capable of releasing farm gate prices accessible to all buyers, hence fair competition will be ensured.

Implementation Process

Assembling a market for paddy will be initiated, specifically in Mal, Pulangui and Bago areas where farm gate prices are artificially low because of price manipulation by local rice cartel. Assembling sites with drying yards will be selected strategically, preferably using the existing post-harvest facilities within the community. This is to ensure minimum cost operation. Through the efforts of leaders, a communication program will be launched convincing the members to bring their paddy to designated assembling sites. The moment the volume is significant for competitive auction, dealers will be invited, usually on market days, to participate in the auction of paddy. The meeting of the dealers and members present an opportunity to get market information in the producing area (ref. Figure 8.3).

Market price information at local and terminal market areas will be provided as one of the activities. Price information collected by the provincial IA federations will be circulated to all participants. At the beginning of price

monitoring and dissemination, the provincial and regional offices of the NIA will be asked to assist the staff of the federations in the collection of price information. Current market prices presented on the boards at the assembling sites will promote fair-trading of paddy among the participating dealers. Variety, purity and desired moisture content of paddy are ensured. This will be reflected in the sale prices. Such concerns will be instilled in the minds of the members and enable them to strive for better quality control.

The IAs will organize a marketing committee to oversee the operations of the assembling market. To compensate for the cost of market operation, appropriate market fees, both from the buyers and seller-farmers, will be excised on a per cavan basis. The market charges (representing the income of the IAs) will be based on the actual cost incurred in providing the activities taking into consideration the affordability level for dealers and farmers. Farmers' charges will be lower than the buyers' charges.

Assembling the market activities of the IAs and the provincial federation will be diversified into processing (mechanical drying, rice milling, etc.) and contract trading with regional dealers, big retailers and consumer groups such as cooperatives. The cooperation among IAs as regards exchange of market information and paddy assembling and minimum direct paddy buying using IA's working capital will ensure successful operation (ref. Figure 8.4).

Expected Results

Greater value added for paddy is expected to be achieved. Higher prices will thus accrue to members, and for services rendered by the IAs, corresponding incomes will also be realized.

(5) Basic financial training

Objective

The objective is to hone the skills of leaders and members in basic financial planning and control.

Strategy

The basic strategy is to employ hands-on training focused on basic financial planning. The features are:

- (a) The trainees will be focused on leaders and officers who have the potential to become the core management team of the IAs. The trainees will

eventually become the core trainers of the IAs following a cascading system of replication to other members.

- (b) The course content, especially accounting concepts, will be taught with visuals instead of the usual complex accounting terminology.
- (c) Resource persons will be drawn from successfully managed-cooperatives or similar institutions who could work closely with the trainees while financial systems and procedures are being established in the IAs.
- (d) The output on any subject will already constitute a financial system that will be used by the IA. For instance, farm record keeping will be one of the systems to be introduced. The design of the farm record keeping should already include information per individual member such as data on land holding, yield, farm income, expenditure, etc. that will permit promotion of synchronous planting and loan processing for the member.

Implementation Process

The NISO will identify potential trainers in accordance with the qualification standards being set. If the NIA has the trainers, they should be deployed. The trainer together with the NISO will evaluate the needs of the IAs and will zero in on the relevant financial systems. Basic accounting and record keeping requires some degree of aptitude in arithmetical operations. The chances of imparting the skills are best absorbed if the trainees have the proper mind conditioning. Sons and daughters of leaders who have acquired tertiary level education will probably have better chances of being trained than the leaders themselves. This will be explored in every IA and will be tested in the pilot NIS.

Expected Results

Acquired skills in financial planning will improve financial prudence of the IAs. This will enhance their access to formal sources of credit; thus potential for productive use of credit will also be enhanced.

8.6 Implementation Schedule and Arrangement for IA Strengthening Action Plans

8.6.1 Implementation Schedule

The implementation schedule for IA strengthening action plans was designed and confirmed on the basis of the Study:

1. Pilot implementation : Year 2002 to 2005 (4 years)
2. Nationwide replication : Year 2006 to 2015 (10 years)

The plan of operations prepared by the pilot IAs at the six pilot NISs was assessed and integrated considering their own strengthening requirements, inter-relations and feedback from different activities, and availability of assistance services from the NIA and other agencies. Based on the assessment, the pilot implementation schedule as shown in Figure 8.5 was prepared for IA organization, operations and maintenance and financial strengthening.

The schedule for nationwide replication, estimated to be ten years, was targeted to cover around **153 NISs involving around 490,000 ha and 1,320 IAs**. The coverage excludes the six pilot NISs, and the 56 completed and on-going NIS projects, i.e. IOSP II (17 NISs), WRDP (18 NISs), ISIP II (9 NISs), and SPISP (4 NISs).

8.6.2 Implementation Arrangement

(1) Pilot Action Plans

The JICA Study covered a part of the initial pilot activities in 2002 and 2003 as follows:

1. IA Organization
 - 1.1 Building Productive IAs
 - Joint NIA-IA master list update covering tenurial condition and identifying potential members (NIA-1, IA-1)
 - Assess IA's functional and participatory structures, develop community organization approaches (NIA-2.1)
 - 1.3 Providing Appropriate Assistance for IA's Organizational Strengthening
 - Review and evaluate IA training program (NIA-2.2)
2. IA O&M Activities
 - 2.3 Providing Appropriate Assistance for IA O&M Activities
 - Develop improved IA training program (NIA-3.1)
 - Develop procedure for identification and prioritization of rehabilitation works (NIA-4.7)
3. IA Financial Performance
 - 3.3 Assistance for IA's Capacity Building on Financial Management and other activities
 - Develop improved IA training program (NIA-2.1)

The succeeding pilot activities at the six pilot NISs are expected to be continued by the NIA-IDD jointly with the relevant regional and NISO offices. The JICA technical assistance program and other donor agencies may cover some of the implementation requirements. For instance, the proposed rehabilitation and

improvement of Bago RIS financed by JBIC could implement the pilot activities planned at Bago RIS with additional funding allocation for the IA strengthening activities.

(2) Nationwide Replication Plan

The nationwide replication for IA strengthening will be planned based on the progress and outcome of the pilot implementation, including applicability of planned approaches, modification of technical assistance provided, and other monitoring and evaluation results. The funding required for the nationwide replication should be sourced locally and be augmented with external funds through multilateral financing. A sector loan for IA strengthening may be recommended for the nationwide replication.

CHAPTER 9 GIS APPLICATION SYSTEM DESIGN AND DEVELOPMENT

9.1 Existing System Design and Utilization

The JICA-assisted Study on “The Strengthening of NIA's Management System” completed in October 2001 created a GIS database containing relevant details on NISs, NIPs and CISs. Each GIS database is composed of ESRI Arcview GIS 3.2 (Single User with Hardware Key), Microsoft Access 2000 and Microsoft Excel 2000. The GIS database is divided into two main systems: (a) System A and (b) System B.

System A's database has as a primary source of geographic information of existing NAMRIA's 1:50,000 scale topographic maps. Approximately 330 of these topographic maps, planimetrically prepared in planimetric and contour data, were digitized to serve as the base data for this GIS system. System A established a uniform structured database (both graphical and tabular data) for all of the existing NISs.

System B's database was also based on the 1:50,000 scale topographic maps, including a 1:4,000 scale topographic and parcellary map covering a pilot area of 1,000 ha located in UPRIIS Division 3. The pilot area, covering detailed information on five IAs, was designed to monitor water management activities through ISF collection data.

The GIS database was essentially meant to provide a centralized storage system for all relevant information pertaining to existing NIS projects. The GIS database contains the General Layout Maps (GLM) of each system, and relevant tabular data stored in one “MS Access” file. This single GIS database minimized non-uniformity of maps, redundant plans and reports from the different systems and regional offices.

The appropriate training resource and the final GIS databases (hardware and software) were distributed to four NIA departments. These are Corplan, SMD, PDD and the UPRIIS Regional Office.

9.2 Current Utilization of Database and GIS Application Systems and Results from the NIA-GIS Working Committee

9.2.1 Current Utilization of Database and GIS Application Systems

The four departments were given the needed software, but are not fully utilizing the system. The end-user was supposed to use the GIS database on a regular basis for updating system information. This updated GIS database could then be used to generate the necessary reports. Based on present information, no updating activities were performed due to the following:

- 1) The NIA's reporting system does not rely on the "MS Access" database software.

The present GIS database is built around the "MS Access" database software. The NIA's reports are generally prepared using "MS Excel" and "Word" and, therefore, the staff are not familiar with the operation of "Access". This difference in software system results in minimal usage of the GIS database.

- 2) The departments do not need the full GIS database for their day-to-day functions.

The four departments on their own do not need all the functions present in the GIS database. Even with the given training, the present system is still complicated for the common user. This results in irregular usage of the GIS database.

- 3) Insufficient number of software licenses

The system is dependent on the Arcview software. A hardware key locks each piece of software. At any given time only four people can use the GIS database.

- 4) Insufficient number of personnel assigned to operate the system

A database administrator is needed to maintain and update each of the four separate systems on a regular basis. At present, none of the four departments have a specific person to perform this task.

- 5) Not fully utilizing the existing Local Area Network (LAN) for the GIS database

The efficient use of a LAN would help in the regular updating and maintenance of the 4 systems. By placing the different reports generated by the different departments in a central file server, redundant copies of the same report can be eliminated thereby guaranteeing data integrity across the four systems.

9.2.2 Results from GIS Committee Workshop

The workshop held on October 2, 2002 confirmed the incompatibility of the present GIS database with the software packages being used by the four departments. Database systems in the NIA are not strictly databases. Tabular data is stored using “Excel”, but it is used only for visual presentation of the data.

In order for the NIA to fully use the GIS database on a daily basis, the system must be made simple and the software costs must be minimal. ArcExplorer was thus recommended to the four departments. The software is free of cost and the viewer was developed by a software company named ESRI.

9.3 GIS Application System Design

The following additional data was integrated into the existing system:

- 1) *IA Inventory Matrix* – contains general data on the existing 2,047 IAs nationwide.
- 2) *Facilities Status Survey* – contains information on the general status of canals and structures in each NIS.

Additional customization features were developed to properly access and analyze this data.

9.3.1 Process of GIS Construction

1) Flow of database construction

The GIS application system is built from two databases, a figure database and an attribute database.

a) Construction of a figure database

In order to draw the boundary line of an IA, the NIS map covering the IA is printed on paper using existing digital map data. This drawing is distributed to the concerned NIS. Revisions and additions on the drawings to IA boundaries were digitized to create the necessary digital data.

b) Construction of attribute database

Two new sets of data (IA inventory matrix and facilities status survey) were added to the existing database. Any revisions are encoded into the database.

2) Construction of a GIS application system

New functions were added to the existing system to display and query data concerning IA boundaries and the two new attribute tables, i.e. IA Inventory Matrix and Facilities Status Survey. The creation procedure is as follows:

- a) The outline of the design, the flow of data processing and the logical relationships between data structures were drawn up.
- b) Based on an outline design, the detailed design for human interface such as a screen design, a list design, etc., was created.
- c) Based on the design specifications, the program was subdivided into layer structures.
- d) Based on the program design specifications, a new program was created.
- e) The program function was verified.

3) Outline of updating.

SYSTEM A is composed of the figure and attribute databases. The Arcview, a GIS software, manages the figure database. Data in this GIS is separated into layers based on its type and attribute. Updating can be done using built-in deleting and editing functions in the Arcview. The attribute database is managed by "ACCESS", which is database software. Updating can be done using built-in deleting and editing functions in "Access". Every IA item in the Inventory Matrix table can be updated using these functions. However, the use of batch processing to update this table is also possible. Updating can be done using the IMPORT and EXPORT functions found in "Access".

9.3.2 Display Function from Database (IA Inventory Matrix and Facilities Status)

Existing functions in System A were integrated with the new database. These new functions can display the relationship between IA and the canal structures within its service area. The outline of the new functions is as follows:

- a) After specifying the region from the whole of the Philippines, all related general layout maps (GLM) are displayed.
- b) After specifying an IA name from a list of IAs, the GLM covering the selected IA is displayed together with other related IAs.

- c) After selecting an IA figure or canal structure from the GLM, the relevant information is displayed in the form of an “MS Excel” file.
- d) Based on an IA’s characteristic, a color-coded thematic map is created and displayed.
- e) Other relevant IA data is queried and displayed.

9.4 Prototype of GIS Application Outputs

The ArcExplorer was recommended to maximize the utilization of the present GIS Database. The ArcExplorer viewer has the following basic capabilities:

- Print function;
- Thematic legend classification;
- Simple search capability (i.e. IA Name, Canal Name, NIS Name, etc.);
- On screen distance measurement (i.e. actual ground distance between map features using mouse clicks); and
- Export to image function (jpg format).

These functions will immediately eliminate the software problem, which currently hampers the GIS Database usage. The print function will enable NIA staff to print new and updated maps and distribute them to the regional and NIS level offices. Coming from a single source, these maps will eliminate the previous problem of non-unified map specifications. The export to image function will also enable NIA staff to include data and map images in their daily reporting procedures that rely heavily on “MS Word” or “MS Excel”.

9.5 NIA Organizational Arrangements and Action Plan

To improve the NIA’s information management system, the following are recommended:

- a) Each of the four departments will assign a database manager to file and manage the different reports and maps that their departments produce on a regular basis. This will help eliminate a duplicate copy that often leads to data integrity questions.
- b) Encourage the shift from manual record keeping to computer-based systems. Each department will have a policy to encourage the use of computer systems as against manual procedures. The two methods can be

used in parallel in the beginning to help the users understand the benefits of the computer-based system over their usual routines.

Daily use of a new system will lead to better understanding of its functions. The initial training for the system is only intended to give the user a view of its capabilities. The users will only learn the system if they use it regularly, even for very simple tasks. To use the existing GIS database, the following are recommended:

- a) Provide an alternative to the more expensive ESRI Arcview software.
Most users of the GIS database will only need to view the existing maps that are provided in the system. However, due to the limited number of Arcview software licenses, only a few users will be able to access. An alternative is to use the free Arcexplorer viewer. This viewer has the basic capability to view, export and print NIS related maps from both systems A and B. Analytical functions, however, are very limited.
- b) Teach NIA staff a simpler way to update the GIS Database.
The existing GIS Database has not been updated since its introduction in 2001. It was only during the course of this follow-up study that new data was added and revised. One reason given was that NIA staff are not familiar in using “MS Access” in their reporting procedures. “MS Access” is the main database system behind the GIS. The majority use “MS Excel” in their daily routines. Reviewing the digital copy of their records revealed that formats were not uniform. The users were only interested in the visual presentation of the data. Everything in the database has to follow a certain format i.e., cell location, width, number, value, etc.

Notwithstanding the existing problem, the NIA will have to use the “Access” format even if the editing of data was done in “Excel”. “Access” provides a built-in Export-Import function to “Excel”. All tables can be exported to several versions of “Excel”. It is recommended that NIA staff use this exported “Excel” file to edit and add their new data. The exported Excel file is properly formatted following the “Access” table format. This will therefore eliminate format compatibility problems between the two sets of software. The edited “Excel” file can be imported into “Access”.