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Policy Paper No. 10

**Achieving High Productivity
and
Prosperity of Irrigated Agriculture
through
Participatory Management**

IMPSA

IRRIGATION MANAGEMENT POLICY SUPPORT ACTIVITY

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Executive Summary

Objectives

THIS PAPER IS the result of a two-year process of policy analysis, discussion, and paper writing under the Irrigation Management Policy Support Activity (IMPSA).

The proposed participatory management policy is based firmly on previous experience, and existing policy. The programme should have two objectives during the 1990s.

- a. to seek immediate gains in production, profitability and labour absorption using present technologies through the implementation of participatory management, and
- b. to prepare for an agricultural 'takeoff,' to be underway before the year 2000 and to continue beyond, by creating the necessary policy and institutional conditions and by encouraging research and development to provide new technologies and cropping and management systems for the long-term modernization of Sri Lankan agriculture.

The foundations for achieving these objectives have already been established. All that is required is to seize the opportunity and move forward, building on the present capabilities and resources, guided by a positive vision of the future. A productive and technologically sound irrigated agriculture provided the economic basis for the ancient Sri Lankan civilization. It could do so again.

If the proposed programme is implemented, by the year 2000 the small farmers in Sri Lanka's irrigated agriculture sector can make substantial progress in shifting from a state of poverty and under-employment to one of increasing prosperity. They will be providing reasonably priced food to the nation, thus saving foreign exchange, earning foreign exchange through exports, and obtaining higher incomes. Broadly speaking, the irrigated agriculture sector will be dynamic, diversified, efficient, equitable, productive, sustainable, and participatory.

Policy Paper No. 10 embodies the recommendations contained in the first nine papers produced under IMPSA, and proposes policies and strategies that would enable Sri Lanka to achieve the objectives stated above. This Executive Summary contains its major recommendations.

Main Recommendations

THE RECOMMENDATIONS CONTAINED in this paper suggest several new institutional arrangements in order to effectively implement the policies that are being recommended and which are related to participatory management. It should be noted, however, that these are primarily organizational arrangements which do not necessarily involve the creation of new state institutions, the recruitment of a large additional staff or any extensive financial commitments. What is involved is mostly a re-arrangement of existing resources and the institution of effective mechanisms for coordination and monitoring.

1. Farmers' Organizations (FOs)

THE CENTRAL RECOMMENDATION is that Sri Lanka should build on its ancient and more recent experiences to promote strong, democratic, effective, autonomous and sustainable FOs to manage water and other resources related to agricultural development. People should share the benefits and participate in the decision making and implementation.

2. Self- and Joint-Management

THE PRESENT CLASSIFICATION of irrigation schemes based on area irrigated (major and minor) should be replaced by one based on the management system: self- (or farmer-) management, and joint-management.

Self-management means that farmers, through their organizations, will take responsibility for overall policy making and implementation of operation, maintenance, rehabilitation and modernization, and resource mobilization for the whole irrigation system, with guidance and advice from the irrigation agency as needed

Joint-management of irrigation systems means that farmers through their organizations, and the responsible irrigation agency, together co-manage or share management responsibilities. At the distributary and field channel levels, there will be self-management by farmers through their Distributary Channel Organizations and field channel groups. At system level there will be joint decision making through a Project Management Committee, but the government will continue to carry out main system O&M. This form of management will be implemented on larger irrigation schemes, and may be an interim stage on the way toward achieving self-management.

THE OWNERSHIP OF irrigation systems which are presently the property of the state, will continue to be with the state.

3. Improved Operation and Maintenance

FARMERS WILL IMPROVE the planning and implementation of water distribution, system maintenance, and rehabilitation, as FOs become stronger. Through a combination of greater

accountability to FOs and enhanced training, government agencies will improve system management at the main canal level. This will result in more efficient water use and higher production.

4. Rehabilitation and Modernization

THE PRESENT PROCEDURE of rehabilitation and modernization of irrigation projects should be effected in such a way that it is more cost-effective and responsive to farmers' needs (demand-driven), contributes to the development of farmers' sense of commitment to the system, and strengthens FOs. This should be done by integrating the technical and institutional processes, fully involving farmers in the decisions and their implementation, and inducing farmers to share the costs of rehabilitation. By the late 1990s, there will be a strong demand for technologies and management systems to support diversified high value cropping patterns.

5. Resource Mobilization and Financial Management

A LONG-TERM OBJECTIVE of participatory management is to simultaneously mobilize additional resources for improved O&M and reduce the burden on the government. The programme of turning over management with substantial responsibility and authority to FCs offers a feasible alternative to the government's attempt at collecting fees from farmers. The government should provide strong legal support for covering full operation and maintenance costs from farmers, and should be willing to collect these from those farmers who decline to organize themselves and manage their own affairs. But when farmers agree to take over responsibility, they should be exempted from these fees, and the FOs should be empowered to collect fees based on actual O&M costs.

6. Programme Objective for the Year 2000

THE GOVERNMENT'S OBJECTIVE by the year 2000 should be the complete turnover for self-management by FOs of all systems classified as having a command area up to 400 hectares (1,000 acres); and to bring under joint-management all those schemes having more than 400 ha. The government should also encourage turning over systems irrigating more than 400 ha to FOs for complete self-management if the agency and the particular FO agree to that responsibility. Turnover can be achieved through programmes emphasizing improved O&M, institution-building, and rehabilitation of irrigation schemes.

7. Role of the Government

THE SUCCESS OF participatory management will depend on the willingness and capacity of farmers to manage their own affairs, and the support they receive from the government. For long-term success, a significant change is required in the role of the government, from direct control of resources, to the role of facilitator, provider of services, and regulator to ensure justice.

8. Re-orienting Existing Irrigation Agencies

THE EXISTING INSTITUTIONAL framework must be rationalized and simplified through an evolutionary process. The major irrigation agencies must be restructured, and given a new mission emphasizing the need to become management-oriented, and providing support to FOs for irrigation management. They must develop a capacity for assisting FOs; become multi-disciplinary; and decentralize and devolve authority. Each agency will need a planning and performance monitoring evaluation process for both programme and staff, meaningful incentives through increased accountability, promotion and other rewards based on performance, and a culture conducive to high performance. By the end of the decade, the agencies should have converged into a single Irrigation Management Support Agency at the national level, with appropriate institutions emerging at the Provincial Council and local levels.

9. Human Resources Development

HUMAN RESOURCES DEVELOPMENT (HRD) is essential for the success of the participatory management policy at two levels; for strengthening the management capacity of the FOs, and for re-orienting and strengthening the staff of the Irrigation Management Agencies. HRD units should be established in each of the irrigation management agencies. Similarly, each Irrigation Management Agency should establish a strong institutional development unit to train farmers in the new skills they will require.

10. Improved Coordination and Monitoring

TO ACHIEVE EFFECTIVE inter-ministerial planning, coordination, and monitoring, a Central Coordinating Committee on Irrigation Management (CCCIM) is proposed, to be chaired by the Secretary, MLI&MD. The CCCIM should include representatives from the relevant Ministries and Agencies including the Provincial Councils and the FOs. The main purpose of this Committee will be to carry out periodic programme and policy reviews, monitor the progress and problems in implementation, take necessary steps to overcome problems, and re-adjust the policy as necessary based on experience. This Committee will be supported and assisted by a small Secretariat within the M/MI&MD, which would monitor the programme of the irrigation management policy implementation and the progress of the related activities, and encourage and facilitate the process of change.

Each Provincial Council should establish a Provincial Agricultural Committee as the key coordinating mechanism at that level. On jointly managed irrigation systems, the Project Management Committee (PMC), consisting of representatives from the FOs and various agencies, will be institutionalized. On self-managed schemes, the FOs will be responsible for management, with the active assistance of government agencies. All small schemes falling within a hydrological boundary (watershed) will be encouraged to form a cluster and develop coordinating mechanisms.

11. Land Policies

THE GOVERNMENT SHOULD develop a land tenure and productivity research programme implemented through national research organizations and coordinated by the Ministry of Lands, Irrigation and Mahaweli Development. This programme would be responsible for developing and implementing a long-term applied research programme on land tenure and land use issues facing the country.

The government should also complete present efforts to survey the lands under irrigation and those above the commands, and provide settlers with clear title and clearly marked boundaries, within the provisions of the present law.

12. Watershed Management Policies

THE WATERSHEDS ARE extremely critical for ensuring the country's water resources over the long term. It is recommended that a 'Steering Committee on Watershed Management' be initiated in the Ministry of Lands, Irrigation and Mahaweli Development in close association with the Central Environment Authority to coordinate activities in the country's watersheds in an integrated manner.

13. Comprehensive Water Resources Policy

SRI LANKA'S LIMITED water resources have to be conserved, and used most beneficially and equitably for all. A comprehensive water resources policy is required to guide future decisions on water-related investments and water resource allocations.

The government should establish a National Water Resources Council supported by a strong full-time Secretariat. This Council would be a high-level advisory body consisting of representatives of agencies and groups concerned with water resources. It would be responsible for the development of a national water resources policy, water resources law, and a master plan.

It is also recommended that water resources planning and development institutions be established at other levels, such as provincial and river-basin, linked to the National Water Resources Council.

14. Research and Development

THE RECOMMENDATIONS ON research and development have two major thrusts: a) identifying the broad areas and types of research required and b) identifying means to improve research planning, management, implementation and use. Applied and adaptive research to identify appropriate cost-effective water management technologies combined with appropriate cropping patterns and management systems should receive high priority. A Joint Research Committee of Irrigation Management, linked to both the Central Coordinating Committee for Irrigation Management and the Sri Lanka Council for Agricultural Research (CARP), and the establishment of a research planning, management,

and use capability unit in the major irrigation management agencies are proposed. The establishment of the Research Management Unit in the Irrigation Department is one of the key recommendations.

15. Revision of Legal Framework

IN THE SHORT term, the Irrigation Ordinance should be amended to legitimize the participatory management policy, including the recognition of the role of FOs in irrigation management. In the long run, a comprehensive water resources law needs to be developed to provide broad support for rational and effective multiple uses and efficient management of water.

16. Investment Plan for Implementing Participatory Management

ALTHOUGH THE SHARE of public investment devoted to irrigation has been declining, by re-ordering the priorities and recognizing the synergy among software and hardware investments, it will be possible to achieve very high returns with the presently planned investment levels without allocating additional funds.

The Public Investment Plan (PIP) should be revised to reflect the following investment priorities clearly:

- a. O&M including institutional strengthening on existing systems;
- b. research and development;
- c. completion of on-going projects;
- d. system rehabilitation; and finally,
- e. new projects, both for modernizing existing systems and the construction of new ones.

17. Monitoring and Evaluation

EFFECTIVE PERFORMANCE MONITORING and evaluation are essential features of any successful programme. Therefore, a performance monitoring and evaluation system as part of a larger management information system must be developed at several levels: a) at the national level to monitor policy implementation; b) at the national and provincial management agencies' levels to monitor programme implementation; and c) at the irrigation system level.

Supporting Environment

THE RECOMMENDED PROGRAMME assumes that the basic government policy in support of a liberalized economy will remain in place. Its success will also hinge on having supportive policies and strategies in related sectors. The irrigated agriculture sector cannot develop in isolation from other sectors of the economy and society.

1. Agriculture Sector Policy

IT IS STRONGLY recommended that the government develop a comprehensive, clear and long-term agriculture sector policy. There is a very urgent need to develop and disseminate a clear policy statement on government objectives, investment strategies, and development programmes, and the role of irrigated agriculture within the larger sector. The development of an effective system to coordinate policies affecting the agriculture sector, perhaps through a national steering committee, would also make an important contribution.

2. Trade, Marketing and Private Sector Policy

TRADE AND MARKETING policies of the government have a significant impact on the profitability and growth of agriculture. A national steering committee is proposed, comprising representatives from the Irrigation, Agriculture, Trade and Industrial, Finance, Policy Planning and Implementation Ministries, the private sector, and the FOs. The mandate of this committee will be policy formulation and coordination with respect to agro-industries, and trade and marketing.

The government should continue to create a positive environment for the private sector investment in agricultural enterprises in partnership with the FOs, by supporting efficient and competitive factor and output markets, flexibly and pragmatically solving problems, and by streamlining bureaucratic structures. Finally, it is recommended that the government should facilitate the establishment of a market information system to collect, analyze and disseminate data on supply and demand, prices, etc., on both the national and the relevant international markets.

3. Rural Development

TO MAKE AGRICULTURE profitable and ensure its continued expansion, Sri Lanka must develop a modern infrastructure to support agriculture, including roads, electrification, and market places. Further, to reduce pressure on agricultural land and prevent further land sub-division and also to make rural life attractive and prevent rapid urbanization, the government should encourage the location of agro-industry in rural areas to absorb the excess rural agricultural labour; and support the expansion and upgrading of schools, health facilities, domestic water supplies and other measures to improve the quality of rural life. The educational system should include an attractive agricultural stream for aspiring farmers.

Chapter 1

INTRODUCTION: IRRIGATED AGRICULTURE IN THE 1990S AND BEYOND

SRI LANKA'S IRRIGATED agriculture sector has reached a stage where important choices must be made to obtain the full benefit from past investments. This paper starts with a vision or picture of the future that is ambitious, but realistic and achievable. This vision describes broad goals of the irrigated agriculture sector. The remainder of the paper describes the policies, institutional transformations, implementation strategies and investments required to achieve these objectives. The vision and the means to achieve it are based on lessons learned from recent experiences in Sri Lanka, and build on an existing firm foundation in the sector. It is important to emphasize that these goals are achievable within the presently projected overall level of public investments in irrigation — no additional funds would be required, but a substantial change in how funds are used would be necessary. It is also important to note that the goals are entirely consistent with and supportive of government policy to encourage devolution of authority, people's participation, and liberalization of the economy.

If the programme proposed here is implemented, then by the turn of the century, the small farmers in Sri Lanka's irrigated agriculture sector can make substantial progress in shifting from a state of poverty and underemployment, barely meeting their subsistence needs, to a state of increasing prosperity through profitable irrigated agriculture supplemented by complementary sources of income. They will be providing reasonably priced food to the nation, thus saving foreign exchange through import substitution, as well as earning foreign exchange for the country through exports. The average incomes of farmers and other rural people will be on par with those of the urban industrial sector. Broadly speaking, the irrigated agriculture sector will be dynamic, diversified, efficient, equitable, productive, sustainable, and participatory.

Irrigated agriculture will be dynamic in the sense that it will be characterized by rapid technological innovation, institutional evolution, and generation of increased employment and income. It will be diversified in the sense that a substantial shift will have occurred from mono-cropping of rice to diversified cropping in addition to rice to meet domestic and export markets, there will be a variety of new private and nongovernmental organizations active in the sector, and there will be a variety of new ideas and new management styles in operation. It will be efficient and equitable in the sense that resources will be used more efficiently and productively, there will be broad access to these resources by people who have previously had few such opportunities, and there will be a general improvement in the quality of rural life. It

will be productive in that high yields will be a source of better incomes for farmers, and jobs for people. It will be sustainable because it will have a sound environmental and economic basis, and it will be socially just. And it will be participatory because it will be managed locally by people both individually and through strong local democratic organizations; people will participate in the benefits as well as in decision making and implementation.

In order to achieve the objective of a broadly prosperous and growing irrigated agriculture, a number of transformations must occur. A serious commitment to the overall policy — the guiding principles — is necessary. Further, a major transformation in the implementing institutions must be initiated to bring about a shift from administration to management; from farmers dependent on the State to self-reliant small farmers organized into strong, effective and autonomous organizations with the authority and ability for full management of their resources; decentralization and devolution of authority, control, and coordination to local levels; and a change in the role of the government from control to provision of services and support to farmers' organizations (FOs). The promotion of strong, democratic, effective, autonomous and sustainable FOs managing water and other resources for the benefit of their members and the country at large is the key to the success of the programme.

The proposed changes, supplemented by a strong applied research programme to identify appropriate new cropping patterns and supporting irrigation technologies, would set the stage for moving to the next stage of development of Sri Lanka's irrigated agriculture sector — modernization. The proposed irrigation technologies would enable better control of water, so that the right amount can be delivered at the right time without wastage; it would, therefore, be environmentally friendly, only moderately capital-intensive, and would make water — an increasingly scarce resource — more productive.

In the long run, beginning in the late 1990s, these technological innovations will be required to achieve higher production, to ensure sufficient flexibility to meet changing market demands and food security needs, to generate substantial income, and to improve the efficiency of water use. A strong demand for improved technologies and management systems will be created by the policy and institutional reforms, not imposed by the government and donors anxious for quick and large investments. Farmers will be able and willing to invest their own resources to obtain what they need. Finally, in order both to make irrigated agriculture attractive to the best and brightest and to spread the benefits of prosperity, greater attention to rural development, improving the overall infrastructure as well as the quality of life of the rural poor, is essential.

Thus, the programme will have two broad objectives during the 1990s:

- a. to seek immediate gains in profitability and labour absorption using present technologies through the implementation of participatory management, cost-effective modernization of irrigation schemes, and encouraging farmers' and other private investment.
- b. to prepare for an agricultural "takeoff," to be underway before the year 2000 and to continue beyond this, by creating the policy and institutional conditions that would enable farmers in the irrigated agriculture sector to absorb and use new technology investments profitably; and

by actively encouraging applied research as a basis for identifying and adapting new technologies for the future.

By the end of the decade, the further modernization of Sri Lankan agriculture will involve investments in new technologies, and possibly a process of re-organization of production enterprises, that is demand-driven, and financed by the profits of the sector itself. It could be well underway before the end of the 1990s, if the first phase of the process is successfully implemented. The proposed modernization process can be implemented in a way that contributes to national goals of food security and protection of the environment, while improving the incomes of farmers and the living standards of the rural people.

The proposals in this paper are based on the lessons learned from more than a decade of experimentation in Sri Lanka as well as other countries in Asia. Beginning in the late 1970s, both government departments and nongovernment organizations, working closely with farmers and researchers, have demonstrated that farmers can be organized into effective groups for improving the performance of irrigation systems. This principle is firmly established. In addition, fairly specific forms of organization for farmer-management and joint-management of irrigation schemes by farmers and agency officials have been tested and are being implemented in a number of schemes. Based on these experiences, a consensus was reached between the Ministries of Agriculture and Lands in 1988, who submitted a Cabinet Paper on Participatory Management of Irrigation Systems. This was approved by the Cabinet early in 1989, and is now the accepted government policy.

The vision presented above articulates the broad goals of the sector over the next decade and beyond. In order to achieve these goals, policy makers must clearly specify the sector objectives and basic strategy to achieve them, allocate the necessary resources, ensure that the necessary supporting environment is created, monitor progress, and make necessary corrections. Policies are implemented through institutions, both public and private, and in this case particularly through the FOs; they must be suitably organized, with the appropriate mission, incentives, accountability, and people. People are the real implementors, as well as the beneficiaries; they need appropriate training to ensure they have the necessary skills, attitude, and motivation. Finally, applied research is essential for identifying and removing bottlenecks, and developing and testing new technologies and management practices.

Chapter 2

PARTICIPATORY MANAGEMENT: KEY TO SUCCESS

2.1. Why Participatory Management?

DURING THE PAST few decades, several important trends have led to the consensus that participatory management of irrigation schemes is the most desirable management system not only in Sri Lanka but in many other countries. First, increasing budgetary pressures have forced the government to reduce its allocations for funding operation and maintenance (O&M) of irrigation systems. This has led to a decline in the physical structures, poor performance of systems, increasing dissatisfaction by farmers, and ultimately lost production and income. Donors have generously funded rehabilitation projects, but lack of effective maintenance leads to rapid deterioration of rehabilitated systems. Funds for a second series of rehabilitation are not likely to be available. In this context, attempts to induce farmers to pay irrigation service fees to the government have not been successful, largely because farmers are unwilling to pay for such poor irrigation service. But with its limited resources, the government is unable to improve irrigation services by itself.

On the other hand, there has been a series of experiments in Sri Lanka and other countries that have demonstrated clearly that given proper incentives and assistance, farmers are quite capable of organizing themselves and taking responsibility for managing smaller irrigation systems or sub-systems of larger schemes, and working with agency officials for jointly managing large systems. This should not be surprising, given Sri Lanka's ancient traditions of farmer-managed irrigation systems. With the dependence on irrigation for their livelihoods, farmers obviously have a strong interest in maintaining, operating, and improving their irrigation systems.

The idea of transferring greater responsibility for managing local assets is one that is now an important strategy for development in other sectors as well. Again, this is both an international and a Sri Lankan phenomenon. Promoting self-reliance through local community organizations is now an important policy of the government, and one on which there is broad agreement amongst most people. Thus, the time is ripe for the policy of participatory management of irrigation systems to be implemented.

2.2. Management System as a Basis for Categorizing Irrigation Schemes

THE PRESENT DISTINCTIONS among irrigation schemes as "minor" or "major," based on area irrigated, will be replaced by two new categories, based on the actual or potential management system: "farmer (or "self-) managed," and "jointly managed" systems. Self-managed systems will be fully controlled and managed by locally based FOs; this will include all the schemes presently classified as "minor" and "medium" and some "major" ones having independent water sources or storage facilities. Jointly managed irrigation systems will include very large ones which are inter-provincial or inter-basin, or in which there are technical impediments to local management. On jointly managed systems, the FOs and the designated government irrigation management agency will share responsibility for O&M; on self-managed systems, the FO in charge will control the water supply source (tank sluice or anicut) as well as manage its distribution.

2.3. Promoting and Strengthening Farmers' Organizations

THE SUCCESS OF participatory management will depend on the willingness and capacity of farmers to manage their own affairs. It will be essential to initiate programmes that recognize and build on the unused capabilities and skills of farmers, both technical and organizational. Such programmes should also help build additional capacities among farmers. This can be achieved through the use of trained "catalysts" for assisting farmers to establish and develop their organizations, and through effective training and educational programmes.

2.3.1. *Institutional Organizers*

MANY COUNTRIES INCLUDING Sri Lanka have found that employing specially recruited and trained catalysts, called Institutional Organizers (IOs), is a very effective strategy for introducing participatory management. IOs are not an additional set of government officers; rather, they are people who may be from the community itself, specially trained to work with people to facilitate a change process among both farmers and field officers, to establish a participatory management system. IOs are not intended to be a permanent fixture in the rural community; rather, they are a small cadre working fairly intensively with farmers in the early stages, and on a much reduced scale for a further period of consolidation, more as management consultants and troubleshooters, to assist in the consolidation and stabilization of the new institutional arrangements. It is important to note that transformations are required among both farmers and officials to achieve a viable participatory management system.

The tasks involved in forming and developing FOs are immense and will require a tremendous effort from the irrigation agencies. Each agency will require a separate division with a cadre of trained personnel to implement the programme.

This effort can be assisted by nongovernment organizations (NGOs) specialized and experienced in this field.

2.3.2. *Farmers' Organizations*

ONE KEY OBJECTIVE of employing IOs is to mobilize and enlarge the pool of dedicated trained farmers who can serve as farmer representatives, by communicating the concept of a democratic participatory FO and imparting management, leadership and communication skills. Farmer representatives are the key element in the whole FO effort. In regard to issues such as mode of selection (consensus or secret ballot elections), period of tenure in office, etc., experience has shown that a flexible approach, allowing farmers to make their own decisions, is most effective. Federation of small grassroots groups beginning at field-channel level is very important; each field-channel group is expected to democratically choose a representative.

On larger systems these field-channel groups are the building blocks of the Distributary Channel Organizations (DCO), which are the most important organizations in the early stages. A DCO consists of all the farmers receiving irrigation water from the distributary, while its executive committee is made up of the elected representatives of the field-channel groups. The DCOs are encouraged to federate at sub-project and finally at project level by forming committees of farmer representatives at each level. It is expected that on self-managed systems, there will be an apex FO comprising groups organized at lower levels.

2.4. Self-Management of Irrigation Systems by Farmers' Organizations

IN SELF-MANAGEMENT, FARMERS, through their organizations, will take responsibility for overall policy making, implementation of O&M, rehabilitation and modernization, and resource mobilization for the whole irrigation system, with guidance and advice from the irrigation agency as needed. Self-management does not imply government withdrawal leaving farmers to fend for themselves; rather, it means that the government will assist farmers to develop effective organizations and necessary technical capabilities for them to be able to manage and improve their systems. The government would continue to provide assistance for major repairs or modernization beyond the means of the FOs on a cost-sharing basis. Self-management also does not necessarily mean the farmers will themselves carry out all technical roles; the organizations will be encouraged to engage the services of technical staff to carry out specialized work.

2.5. Joint-Management of Irrigation Systems

JOINT-MANAGEMENT OF IRRIGATION systems means that farmers, through their organizations, and the responsible irrigation agency, together co-manage or share management responsibilities. This has two elements. First, both farmers (through their representatives) and the agency together decide upon overall system policy questions

(operations, maintenance, financial) through a Project Management Committee (PMC). The PMC includes representatives of the irrigation management agency and other departments providing services for irrigated agriculture, as well as representatives of the FOs; the latter will constitute the majority. The PMC is intended to be a legitimate, responsible, decision-making body that will decide on such questions as the cropping season, water issue dates and amounts, cropping pattern, prioritization of maintenance given the funds available, improvements and future modernization of the systems, resource mobilization for operation, maintenance and improvement, and monitoring and evaluation of performance.

The second element is that implementation of the policies is through an agreed-upon division of roles and responsibilities. Usually this division will mean that at the distributary and field-channel levels, the FOs take over full responsibility, including financial, of both maintenance and operations. At this level, the management is basically "self-management" as described in the previous section. The agency will continue to carry out O&M on the headworks and main canals, but based on the decisions and advice of the PMC. For the remainder of the 1990s, the government will continue funding O&M of the headworks and main canals while the FOs take over the distributary sub-system O&M at their own cost.

The FOs will participate actively in the planning, decision making and implementation of the O&M and improvement of the head works, main canals, and structures; in future, with increasing prosperity and management capability, they will take increasing responsibility at this level. The success of joint-management will depend largely on the quality of main system O&M, and on the irrigation agency's ability to provide assistance to FOs whilst encouraging increasing self-reliance and developing their technical and managerial capability.

This form of management will be implemented on larger irrigation schemes, and may be an interim stage on the way toward achieving self-management.

2.6. The Strategy for Turnover to Farmers' Organizations

"TURNOVER" IS THE process by which irrigation management agencies transfer some or all of the system management responsibilities and authority to recognized FOs. The end-result will be a self-managed or jointly managed irrigation system. Turnover implies a reduction and change in the role of the agency, but not a withdrawal, as FOs will continue to require support services. The ownership of irrigation systems which are presently the property of the state, will continue to be with the State.

Implementation of the turnover programme should be in phases: it should not be implemented simultaneously in all systems; and within systems, the shift should be done in stages. In terms of national and provincial planning, turnover should be implemented initially on those systems with adequate resources, both financial and human, and which are physically manageable. Thus, donor-funds should be carefully directed toward supporting the process, to complement local funds.

On a particular system, the turnover process should be implemented in stages, to ensure that both the FO and the agency staff are able to take on new responsibilities effectively. This process would involve institution building, signing of a maintenance agreement between the FO and the agency and joint operation of the system. In the final stage, the FO and agency sign a formal agreement, with the concurrence of the PMC on jointly managed systems, under which the FO takes over full responsibility for O&M. At this point, when the FO has accepted full responsibility for O&M of its system or sub-system, including financial responsibility, the "turnover" process may be considered as completed. Self-management at the system or sub-system level will have been achieved. From this point on, the agency must concentrate on providing technical and management advice and support to the FO as needed and requested.

As a specific programme objective, the government should adopt as its objective the complete turnover for self-management by FOs of all systems classified as having up to 400 hectares (1,000 acres) command area by the year 2000; and to bring under joint-management all those schemes having more than 400 ha. The government should also encourage turning over some systems irrigating more than 400 ha to FOs for complete self-management if the agency and the FOs agree to that responsibility.

2.7. System Operation and Maintenance

AT PRESENT, ON most irrigation systems there is a significant gap between the potential performance of the system, and the actual level. In other words, there is an important opportunity to improve water delivery performance, as well as agricultural production and performance. The proposed programme of reforms is intended as a mechanism for improving irrigation system performance.

On jointly managed systems, the management agency is expected to significantly improve its planning, operation, maintenance, and monitoring and evaluation processes. The agency will be more motivated in this direction because through the PMC, and specific agreements with FOs regarding water deliveries, it will be accountable to its clients, the system users. In order to achieve these improvements, the agency will have to ensure that members of its staff have the technical capability and knowledge necessary to improve system performance, and the leadership skills to work effectively with farmers.

On both self-managed and jointly managed systems, farmer representatives will be accountable to the FO members; they will have the responsibility and authority to deliver water according to a rational plan.

Good maintenance of irrigation systems is essential for water to be delivered efficiently and equitably, according to a plan. It is expected that as FOs become stronger, and come to perceive their stake in the maintenance of their irrigation system, they will generate sufficient resources for adequate maintenance and even for incremental improvements. As FOs take more responsibility, scarce public funds can be concentrated on upgrading and maintaining head works and main canals; in the longer run it is very likely that FOs will

accept an increasing level of responsibility for maintenance even at main system level on jointly managed systems.

2.8. Rehabilitation and Modernization

IN THE 1970S, Sri Lanka initiated a process of irrigation system rehabilitation and improvement which will continue through the 1990s. This programme was made necessarily large, partly because of the past neglect of O&M of irrigation systems, as well as to implement structural improvements to make older irrigation systems more efficient and manageable. The past neglect has been partly the result of both inadequate funding for O&M, and management weaknesses: for various reasons the agencies have become less-effective in O&M, and farmers have not had the organizational capacity or incentives to do their part in O&M.

During the 1990s, the rehabilitation and modernization projects already underway should be completed. Based on the lessons learned in the 1980s, these projects should be implemented in a way that is cost-effective, responsive to the real needs of farmers (i.e., demand-driven), contributing to the development of farmers' commitment and sense of ownership for their systems, and as a vehicle for building and strengthening management capacities of FOs. A process of "pragmatic rehabilitation," involving field-based diagnoses of essential works in consultation with farmers to ensure the safety and manageability of the system should be adopted, rather than attempting to reconstruct systems to ideal designs.

The technical processes of feasibility studies, investigations, planning, design and construction should be integrated with the institutional processes of organizing and mobilizing farmers and developing the capabilities of both agency staff and farmers. As part of this process, farmers will be asked to pay a reasonable share of the total cost of rehabilitation projects through their organizations.

If the proposed programme is implemented effectively, including the applied research programme described in section 5.2, below, by the late 1990s there will be a strong demand for modern irrigation technologies to support diversified high value cropping patterns. FOs will be able to mobilize significant resources to begin this new generation of investments to modernize irrigated agriculture, with the assistance of the government.

2.9. Resource Mobilization and Financial Management

IN ADDITION TO improving performance and productivity, another important long-term objective of the proposed programme is to simultaneously mobilize additional resources for O&M and to reduce the direct burden on the government's resources. Past efforts to induce farmers to pay irrigation service fees directly to the government have not been successful. The proposed programme of turning over substantial O&M responsibility and authority to FOs offers an implementable alternative approach. By the end of the 1990s, farmers will be responsible for the O&M costs on the portions of irrigation systems under their management. As they become more prosperous, in the long term they may begin to pay for

some of the services provided by the State agencies, including O&M of main system and technical and management services.

The government should establish strong legal support for the principle of farmers' responsibility for covering the full cost of O&M on irrigation systems (see section 3.6). On those systems and sub-systems which are not turned over to FOs, and where the government is presently spending funds for O&M, the government should collect appropriate fees based on actual O&M costs. However, when farmers agree to take over O&M of their system, or sub-system of jointly managed systems, they should be exempted from having to pay fees to the government. But in this case, the FOs should be empowered to collect fees based on actual O&M costs, in cash or kind, from their members. On those systems with beneficiaries other than farmers, they should be liable to contribute a reasonable amount for system O&M.

On jointly managed systems, the government should commit itself to providing sufficient funds for effective O&M at the headworks and main canals under its operational control. This would not preclude encouraging farmers through the PMC and the FOs from contributing resources for main system improvement.

In order for the turnover programme to be successful, there must be a clear and open budgeting and accounting system at scheme level, operated jointly by the agency and FO representatives through the PMC. A system for budgeting and accounting must be established by the management agency for each scheme. There must be a clear set of principles for allocating government funds among schemes, though this should remain an agency and Ministry decision. The funds available for O&M of each scheme will include government contributions, irrigation service fees, and other farmers' contributions, plus any additional earnings of the FO such as profits from contract work or other business.

Decisions on expenditure of the funds including those provided by the government will be made by the PMC, subject to clear criteria that would be developed and agreed upon for establishing priorities, particularly headworks, main canals, main drains, and safety requirement. The PMC will also receive regular and full reports on expenditures against the agreed budget, and may arrange for independent accounting of the funds.

Funds raised by FOs will be controlled by the FOs themselves. But these must also be open accounts, duly recorded and reported. For all funds, both those controlled by the PMC and those controlled by the FOs, regular auditing will be essential.

2.10. Other Functions of Farmers' Organizations

BEING AUTONOMOUS AND independent, FOs will themselves decide on what functions they wish to take on. Experience to date suggests that organizations formed for irrigation management purposes should normally tackle this issue first. As irrigation problems get resolved, other issues often assume more importance for farmers; sometimes these other issues may be more serious than irrigation problems from the beginning. As FOs develop

their capabilities, they will often wish to take on additional functions. These functions may include (but are not limited to) the following: bulk purchase of inputs for members; sale of produce on behalf of members; contract farming; obtaining group credit; contract construction work; operation of warehouses for storing produce; agro-businesses such as processing; and encouraging youth and women's income-generating activities. Some organizations may distribute their profits while others may use them to build a capital fund for further investment in irrigation improvements or other assets. Farmers' Organizations should be encouraged and assisted to work for their members' welfare by taking on such additional activities based on their own wishes and capabilities.

2.11. Role of the Government in Participatory Management

UNDER A PARTICIPATORY management system, the government will continue to play an important role, but it will be very different from its traditional one. Water and the irrigation systems conveying and delivering water will be firmly controlled by strong, effective, active FOs. While the State agencies will share with FOs overall control of large macro-level systems through joint-management, small and medium-sized independent systems and major sub-systems of large irrigation systems will be managed by locally based water users' organizations. Coordination of necessary inputs will also be decentralized, and thus under the control of the people most in need of them.

Following from this devolution of control, the role of the government will shift from direct control to facilitator, provider of services to local organizations, and regulator to ensure overall justice and fair play. Its role in regard to irrigation management will be primarily to create the legal conditions and provide incentives to induce the development of responsible strong FOs. These would manage irrigation systems and much of the input supply and sale of produce as well. The government will also provide technical services and training to local organizations; and act as a referee to ensure that the rules are followed, and exploitation minimized. In order to play this new role successfully, government institutions must be substantially transformed; this is the topic of the next chapter.

Chapter 3

INSTITUTIONAL TRANSFORMATIONS TO SUPPORT PARTICIPATORY MANAGEMENT

3.1. Objectives

THE NATURE OF the most important actions required in the 1990s to achieve the goal of a re-vitalized irrigated agriculture sector is institutional. Indeed, a new and vibrant institutional landscape is a key goal in itself, because the major weaknesses in the irrigated agriculture sector at present are managerial and organizational. Although Sri Lanka is a relatively small country, it has an elaborate and complex set of institutions directly involved in irrigation management, complemented by others involved in irrigated agriculture. This fragmented and overlapping institutional framework makes it difficult to develop and implement coherent and consistent policies. In addition, most of the existing organizations were developed to achieve quite different objectives than the present ones; understandably their organizational structures, values, missions and expertise were more appropriate to the earlier objectives. The picture is further complicated by the recent establishment of Provincial Councils, whose roles and management capacities are still evolving.

A major recommendation from IMPSA is that the government should rationalize and simplify the existing institutional framework, as well as reform and re-vitalize the agencies to enable them to carry out their new roles in implementing the participatory management principle.

This would involve restructuring existing agencies, strongly emphasizing human resources development, and establishing systems of incentives and accountability for performance. The basic approach proposed is that the government should foster an evolutionary process in existing institutions, rather than doing radical surgery, building on their strengths and assets, that will facilitate their eventual convergence into a single irrigation management support agency at the National level, and appropriate institutional arrangements at the Provincial Council and local levels. Effective and dynamic leadership as well as full participation of professional agency staff will be required for successful institutional transformation.

3.2. Re-Orienting Existing Irrigation Agencies

THE MAJOR NATIONAL irrigation agencies presently operating are: the Irrigation Department, the Irrigation Management Division, and the Mahaweli Authority of Sri Lanka within the Ministry of Lands, Irrigation and Mahaweli Development; and the Department of Agrarian Services in the Ministry of Agricultural Development and Research. The Irrigation Department has a long history of restoring ancient irrigation schemes, constructing new irrigation and drainage schemes, operating and maintaining schemes, and fulfilling other water resource planning, monitoring and development functions. The Irrigation Management Division of the MLI&MD works closely with the Irrigation Department on about 40 major irrigation schemes to develop and implement an integrated management policy with the participation of the farmers; it has played an important role in testing, validating and publicizing participatory management. The Mahaweli Authority was established to develop the Mahaweli River Basin quickly for multiple purposes; its construction and settlement functions have largely been completed, but it continues to operate schemes. The Department of Agrarian Services has had a long involvement in the management and rehabilitation of village irrigation schemes, a role now challenged by the emergence of the Provincial Councils. Its mandate to implement the Agrarian Services Act, especially with the recent amendments to enable farmers to register their organizations, remains very important.

3.2.1. Re-structuring of the Irrigation Agencies

THE FIRST STEP in bringing about any organizational change program, is to define the mission of the organization and its broad objectives very clearly. What should be the main business of the organization, what should it be trying to achieve, and who are its clients? In the case of an old established agency like the Irrigation Department, this will involve a major change in focus; in the case of a multi-functional agency like the Mahaweli Authority, it will involve prioritizing and focussing.

Once the mission and objectives are clear, it is important to examine whether the current organizational structure, including lines of authority and communication, staffing patterns, performance monitoring and evaluation system, and incentive system are consistent with the mission and objectives. The proposed new mission, to become management-oriented and to develop and support a participatory management system, is not achievable without major re-organization and re-structuring of the existing irrigation agencies. The following are the broad structural changes required for success:

- a.* It will be important to re-structure the agencies by establishing specific units responsible for institutional development and training, linked closely to the units responsible for operation and maintenance, rehabilitation and modernization, agricultural services, and research and development. These

units will require adequate human and financial resources to do their jobs. At the same time, particularly for the Mahaweli Authority, it will be important to consider amalgamating and unifying certain units to avoid fragmentation and contradictions in policy implementation. For the Irrigation Department, it is proposed to establish, under a Director General, two sub-departments, each headed by a Director. One will be Director for Irrigation Management, the other Director for Technical Services. As its capability develops, the former would incorporate most of the functions and staff of the Irrigation Management Division.

- b.* As part of this re-structuring, it will be essential to recognize the multi-disciplinary nature of irrigation management by establishing positions and recruiting staff, as necessary, for non-engineering as well as engineering tasks. To make such positions attractive, it will be essential to ensure there are attractive career prospects. The Mahaweli Authority is already multi-disciplinary to a considerable degree (though skills in forming FOs need strengthening); for the Irrigation Department this would involve a major shift, from a relatively "closed" civil engineering department, to a far more "open" department able to attract the skills needed to supplement its civil engineering capability.
- c.* Another essential principle is decentralization and devolution of authority commensurate with responsibilities. In the case of the Mahaweli Authority, for example, there is considerable scope for devolving authority and responsibility to regional, system, and block levels. In the case of the Irrigation Department, it will be important to strengthen the range management unit, as well as scheme or division-level units. For the Department of Agrarian Services, its function should be very explicitly to support the development of local-level management capabilities, including the devolution of many of its own functions.
- d.* In order to re-vitalize the irrigation management agencies, an important step will be to introduce measures that orient them to be more strongly oriented to outputs as measures of their performance. This can be done by developing effective planning processes, with the active participation of staff, and performance monitoring and evaluation procedures for the various units and tasks. In addition, an effective system for objectively and fairly evaluating the performance of individual staff should not only provide rewards (including non-monetary ones such as awards and priority for training opportunities) for good performance, but modify the present seniority system to base promotions to higher positions on performance.

- e. All effective modern organizations, including public ones, place great emphasis on human resources development. This is discussed in more detail in section 5.1. The point here is to note that each agency needs to establish a Human Resources Development (HRD) unit, through modifications in the present personnel units, charged with the responsibility for planning and implementing programmes to ensure the agencies maximize the professional development of their staff and maintain and develop the range of skills and expertise required to fulfil their missions.

3.2.2. *Strategies for Implementing Organizational Reforms*

THIS SUB-SECTION BRIEFLY outlines some of the methodologies and actions required for successful implementation of organizational reforms (see also section 5.1). There are very complex relationships between organizational-level change and individual-level change. To be sustainable and effective, change must be carried out at both levels simultaneously. Introducing a new organizational structure without attention to the human dimension will not result in successful change in overall performance. Training individuals without also changing the organizational context within which they work is equally futile.

a. *Guiding principles for organizational change*

There are four key principles important to the success of implementing organizational change. These are leadership, participation, values, and specificity.

Effective leadership is essential for implementing a successful organizational change programme. This involves articulating the mission, objectives, principles, values, and "vision" of the future, and how each individual can contribute to achieving this vision; setting an example; being consistent in applying the basic principles; and in a sense "creating" the new organizational values and culture. When managers try to impose changes through authoritarian means, particularly in well-established organizations, the result often is a greater degree of resistance to the changes. Thus, it will be important for senior management to ensure the active participation of the agency staff, at all levels, in the effort to bring about organizational changes. The basic values to be developed and inculcated include: a value on participatory decision making and team work; openness to new ideas; an orientation toward experimentation and innovativeness; a strong orientation to providing service to FOs; a performance, i.e., output, orientation; and commitment to the mission and objectives of the agencies, i.e., to implementation of the participatory management policy. Finally, for effective implementation, it is important to move from general principles, values and goals, to specific tasks, objectives, expectations from people,

criteria for evaluation, etc. People must know exactly what is expected of them, what they are to do, and how they will be judged and rewarded. A key component of success will be the development of detailed job descriptions, detailed plans, and detailed performance evaluation criteria, through a participatory interactive group process, not imposed from above.

b. Methodologies for changing organizations

There are five important methodologies for implementing change successfully: training, workshops, performance incentives and accountability, periodic programme and policy review, and the use of professional assistance.

The skills required for implementing a participatory management policy go beyond the usual technical skills (though these are important), and include specific skills in management, leadership, and human relations. Training should become an important activity at all levels of the organizations. As part of the re-organization process, detailed training needs assessments should be carried out, and training programmes designed to fulfil these needs. A long-term training programme, tied both to the agencies' mission and to the career development needs of the staff should be planned and initiated. Workshops provide an opportunity to go beyond simply "giving" and "receiving" knowledge and facilitate active participation in the generation and shaping of new ideas, thereby ensuring sharing of new ideas and the creation of team spirit and consensus.

Given the importance of planning and performance monitoring and evaluation, the agencies must think in terms of longer-term plans, and annual plans keyed to the longer-term plans. These plans developed through a participatory process should state specific goals and objectives, resources available, and specify who will be responsible for what. Management would then monitor performance, and intervene where problems arise. This is no more than what is called "Management By Objectives," MBO. To be successful, incentives for achieving a high level of performance, and accountability for one's performance are also necessary. Frequent and effective monitoring and reviews are required to guide an organizational change process and make necessary adjustments. Such reviews should be done at Ministry level, as well as at departmental, regional and project levels, with full participation of the key personnel.

There is now a large body of expertise understanding and assisting organizational change. Given the ambitious nature of the changes contemplated, and the complexity of planning and implementing such a programme effectively, the agencies should obtain professional assistance for

objective analysis of organizational problems, planning and implementing changes, and the use of modern methods for adult training and change facilitation.

3.3. Role of Provincial Councils

DEVOLUTION OF GOVERNMENTAL power and administrative authority to Provincial Councils and local authorities through the 13th Amendment to the Constitution is a fundamental change and constitutes a landmark in the evolution of political and administrative institutions in Sri Lanka. It affords a unique opportunity to reform and re-structure the planning and management of development activities. The devolution of authority as envisaged under the Provincial Council setup puts together a new framework of decentralization moving upward from the village level. It strengthens the democratic nature of the decision-making processes by bringing people into the very center of the development management process. With all the advantages of devolution, the transition phase from centralized to decentralized administration can present many problems and requires careful handling.

Subject matters assigned to Provincial Councils in respect of irrigation and irrigated agriculture include:

- a. The planning, designing, implementation, supervision and maintenance of all irrigation works, other than irrigation schemes classified as either "inter-provincial" or "land development projects," including the maintenance and rehabilitation of "minor irrigation works" which were earlier the responsibility of the Department of Agrarian Services;
- b. Agriculture, including agricultural extension, promotion and education for provincial purposes and agricultural services, other than in inter-provincial irrigation and land development schemes, State land and plantation agriculture;
- c. Land, that is to say rights in or over land, land tenure, transfer and alienation of land, land use, land settlement and land improvement, subject to certain conditions related to State land, inter-provincial irrigation and land development projects, and the National Land Commission.

Each Provincial Council should enact an irrigation statute to provide for the management of irrigation, consistent with the government policy of participatory management. This statute should provide for the following:

- a. the appointment of a Provincial Director of Irrigation to function under the Secretary of the Ministry of Irrigation and Agriculture of the Council;
- b. specific involvement of the Council in the formation and development of FOs within irrigation schemes falling within its jurisdiction in consultation with the Commissioner of Agrarian Services, who has statutory powers for registering such organizations;

- c. the setting up of Provincial Agricultural Committees to be chaired by the Chief Minister or Minister of Agriculture and Irrigation. In view of the large number of small schemes that will fall under Provincial Council jurisdiction, this would enable improved coordination and monitoring of the implementation of government policy, at provincial level. Each Provincial Agricultural Committee should be represented in the Central Coordinating Committee for Irrigation Management (see section 3.5).

Irrigation schemes not relating to inter-provincial rivers fall within the jurisdiction of the Provincial Councils irrespective of scheme size. Schemes relating to inter-provincial rivers, including large numbers of small and medium-sized schemes located within these basins, presently fall under government control. But as Provincial Irrigation Departments get established for handling provincial schemes, the same administrative arrangement could be extended to these nominally "inter-provincial" schemes. Such authority could be delegated to the Provincial Council through mutual agreement.

3.4. Role of the Ministry of Lands, Irrigation and Mahaweli Development

HOW TO COORDINATE water and land resources policies, irrigation management, and agricultural support services is a problem few countries have solved completely. This paper does not propose re-organizing Ministries, but does make suggestions for improving their effectiveness. Given the planned devolution of control and shift in the government's role, the most basic principle is that Ministries will focus on planning and policy making, and broad supervision of the overall performance of implementing agencies, avoiding implementation details. This will include encouraging and facilitating the organizational changes in irrigation agencies discussed in section 3.2.

A key question is the future role of the Irrigation Management Division (IMD) and how policy planning and monitoring will be done in the irrigated agriculture sector. The IMD has been a pioneer in developing and testing approaches to implementing the participatory management policy. Its very success is a major reason why a process like IMPSA has been possible, to consolidate the gains made. It was always the intention of the government that the IMD would be a temporary division, and in the long run, the implementation functions should be transferred to the Irrigation Department. It, therefore, seems logical to use this opportunity for incorporating the IMD's implementation functions, and much of its staff, into a newly re-organized Irrigation Department. Therefore, a phased programme to integrate the two organizations has been recommended, in order to ensure satisfactory integration.

3.5. Coordination Mechanisms

IRRIGATED AGRICULTURAL SYSTEMS are large, complex and multi-functional systems, with a variety of organizations involved at different levels. This complexity is increased by the need to implement a fundamental re-organization. Therefore, effective coordination is essential at different levels. The following coordination mechanisms are proposed.

3.5.1. National Level

TO ENSURE EFFECTIVE inter-ministerial planning, coordination, and monitoring, a "Central Coordinating Committee on Irrigation Management" is proposed. This Committee would be chaired by the Secretary, MLI&MD, and will include the Secretary, Ministry of Agricultural Development and Research, as well as representatives from the following: the Ministry of Planning and Plan Implementation; the major irrigation and agricultural agencies; the Provincial Councils, the Provincial Agricultural Committees (section 3.3); FOs; and the proposed National Water Resources Council (see section 4.6). The main purpose of this Committee will be to carry out a periodic programme and policy review, monitor the progress and problems in implementation, take necessary steps to overcome problems, and re-adjust the policy as necessary, based on experience. This Committee should meet quarterly.

It will be important to establish a small unit within the Ministry of Lands, Irrigation and Mahaweli Development to monitor the performance of the irrigation management policy implementation, including the re-organization of the key irrigation management agencies, the implementation of the participatory management programme, and the progress of other supporting activities, to continue to re-evaluate and refine the policies based on lessons learned, and to encourage and facilitate the whole process. This unit would also act as the Secretariat of the Central Coordinating Committee on Irrigation Management.

Finally, a "Joint Research Committees" is proposed to plan and coordinate the research and development programme necessary to support the overall long-term programme. This would be a sub-committee of the Central Coordinating Committee on Irrigation Management. This is discussed further in section 5.0, below.

3.5.2. Other Levels

THE PROVINCIAL AGRICULTURAL Committees proposed in section 3.3 would constitute the key coordinating mechanism at that level. On jointly managed irrigation systems, the Project Management Committee (PMC), consisting of farmer representatives and representatives from various agencies, will be institutionalized as the key coordinating mechanism. On self-managed schemes, FOs will be responsible for management, with the active assistance of government agencies. All small schemes falling within a hydrological boundary (a watershed, or micro-watershed) will be encouraged to form a cluster and develop coordinating mechanisms through a joint committee consisting of representatives from all schemes, together with government officials as appropriate.

3.6. Revision of Legal Framework

THE EXISTING LAWS relating to irrigation management are outdated and do not provide support for the participatory management policy of the government. For the long-term development of the irrigated agriculture sector, and the development, efficient use and conservation of the country's water resources, a new legal framework will be essential. A two-stage approach is recommended, to address the urgent requirements for implementation of the participatory management policy, and to ensure that an appropriate comprehensive legal framework is developed for the future.

3.6.1. Interim Changes Required in the Legal Framework

IT IS ESSENTIAL to provide legal recognition of FOs and give them the necessary authority to implement their responsibilities effectively under the participatory management policy on irrigation schemes. The required legislation should be sufficiently flexible to accommodate improvements in strategy and local variations in management practices and organizational designs. The Agrarian Services Act was recently amended to provide a mechanism for registration and legal recognition of FOs. As an interim measure what is required now is the enactment of amendments to the Irrigation Ordinance that are presently awaiting approval.

The urgent issues that need to be addressed are:

- a. Delegation to FOs of management authority for self-managed systems or portions of systems;
- b. Amendments regarding the recovery of irrigation service fees from farmers, including exemption from payment of fees to the government on self-managed schemes and transferring the right to collect fees to FOs that have agreed to take O&M responsibility;
- c. Amendments to the procedures for "kanna" meetings;
- d. Institutionalization of the Project Management Committees and Sub-Project Management Committees on jointly managed irrigation schemes.

These proposed amendments are based on field-level experiences and would strengthen present efforts to implement the participatory management policy.

3.6.2. Proposed Comprehensive Water Resources Law

IMPSA HAS BEEN reviewing the present legislative provisions for water resources, the question of whether a more comprehensive approach is required, and if so, what should be the approach. The conclusion is that Sri Lanka should formulate a comprehensive water resources law with provision for relevant government agencies to frame regulations for various sectoral uses. Such a law should provide broad

support for rational and effective multiple uses and efficient management of water and include provisions on the following issues:

- a. Water rights, including ownership, use rights, licensing, limits of rights, and priorities in terms of water allocations;
- b. Financing, including service charges, user fees, and public financing;
- c. Management system, including roles and types of public organizations, roles of the private sector including water users' organizations, guiding principles for decision-making, and regulatory mechanisms;
- d. Conservation, including the protection of water and water works and the maintenance of water quality; and
- e. Conflict resolution, including penalties for offences, settlement of disputes, appeals and enforcement.

3.7. Role of the Private Sector

ALL ORGANIZATIONS AND individuals whose activities are not administered by the government have de facto "private" status. The formal private sector includes all companies and other organizations having recognized legal status, majority ownership by private shareholders, autonomy in acquisition and allocation of resources, and engaged in commercial enterprises. The informal private sector in relation to irrigated agriculture includes both farmers and individual businessmen controlling input delivery, marketing, or produce and provision of other services. Farmers' organizations, and those cooperatives not controlled by the government, are also part of the private sector.

A basic principle, consistent with the present government policy, is that while there must be a close partnership between the public and private sectors, the government should have no direct commercial role in competition with private firms, except when necessary to stabilize prices and supply basic goods and to ensure fair competition. This is the essence of a competitive market-based economy. In such an economy, the government's primary roles are: a) to provide basic infrastructure and services beyond the means of private firms or which are common goods; and b) to ensure and promote competitive markets through appropriate regulation.

Agricultural productivity, the prosperity of farmers, and the contribution of the irrigated agriculture sector to the country's development will depend to a large degree on the vigour of the private sector, both formal and informal. The private sector has an important role to play in irrigation management itself, in the provision of services to agricultural producers, and in the development of agro-industry. What is needed is an active partnership and collaboration among the government, the farmers and FOs, and private firms, both

formal and informal. Government policies to encourage vigorous private sector involvement are discussed further in sections 4.0 and 5.0.

Chapter 4

OTHER SUPPORTING POLICIES AND STRATEGIES

THIS CHAPTER DESCRIBES several supporting policies and strategies that are essential for successful implementation of the overall participatory management policy. Strong programmes will be necessary to ensure the availability of the necessary human resources; research-based technologies and management systems; and investment funds. A strong monitoring and evaluation system at several levels to control and guide as well as to learn lessons from the implementation process is also necessary for success.

4.1. Human Resources Development

HUMAN RESOURCES ARE Sri Lanka's greatest strength. Investments in developing the human resources to the full potential will have extremely high returns. Human resources development (HRD) is the key to success of the participatory management policy. HRD is important at two broad levels: for building the capacities of FOs, and for re-orienting and strengthening the staff of the irrigation management agencies so they can fulfil their new functions effectively. This paper emphasizes the importance of training, workshops, performance incentives and accountability, using catalysts for assisting farmers to get organized, and for leadership at all levels.

4.1.1. *Human Resources Development Units in Irrigation Agencies*

AS AN INTEGRAL part of the re-structuring of the irrigation management agencies, it is strongly recommended that a separate HRD division be established in each agency, by expanding and upgrading the present personnel management units (see section 3.2). The head of this unit should report directly to the head of the agency. The HRD unit will be responsible for an overall human resource development programme, designed to ensure that the agency develops and maintains the range of skills and expertise required to fulfil its mission, and that there is a long-term career development process to enable professional staff to develop to their full potential within the Department. The HRD unit would provide overall policy and planning guidelines to ensure that the human resources are available to implement the Department's programme effectively in the long run; it would also manage the administration of personnel. This recommendation applies to the provincial as well as national agencies.

Another important role of the HRD unit will be the management of the agency transformation process itself, through the services (in-house and from external sources) of professionals in organizational development and training, running workshops, and management of the proposed personnel evaluation system. HRD programmes should promote interdisciplinary team work and participatory management styles within the agency itself.

4.1.2. *Human Resources Development for Farmers' Organizations*

JUST AS IMPORTANT will be efforts to strengthen the capacities of farmers, and field-level staff, to manage their irrigation systems and agricultural enterprises through the FOs. It is strongly recommended that each of the irrigation management agencies build up a core group of master trainers to impart the necessary managerial and technical skills to farmers and field-level officials. This core training capacity should be located within the Institutional Development Unit proposed in Section 3.2. In order to be effective, the core group of trainers must receive enhanced professional recognition, and incentives that make it attractive to make a career of training. Other staff must be encouraged to learn training skills, and to participate in training programmes under the overall guidance of the master trainers. Trainers need to have close linkages with the researchers in order to continuously update training programmes and modules.

Training and education form a vital component of the proposed FO programme, and should be given very high priority. This training should be needs-based, responsive to the demands of FOs and field staff, and should go far beyond the technical aspects of irrigation and agriculture. For example, as FOs develop, they will need training in such areas as finances and accounting, contracting, and other management skills. Field training should be coordinated at the project level through the PMC. NGOs and private sector institutions could be encouraged to offer training.

4.2. Research and Development

AT INDEPENDENCE SRI Lanka was importing more than half of its rice requirement. Today, Sri Lanka produces 85-90 percent of this requirement. Two major reasons for this remarkable achievement are the investments made in irrigation, and the success of Sri Lanka's rice research programme. Experience around the world has demonstrated clearly that a modest but sustained investment in research and development yields very high returns. In all the IMPSA policy papers, the importance of further research, especially applied research to solve problems and adapt existing technologies to Sri Lanka's environment, has been repeatedly emphasized. A basic premise of the proposed programme is that while in the short run the major actions required relate to policy, organizations and management, an effective research and development programme is required for the long-term modernization of irrigated agriculture. Another point that has emerged clearly is that despite the dramatic

impact of certain research programmes such as rice breeding, on the whole, the capacity to do applied research on irrigation management problems, and to absorb and use research findings, is quite inadequate.

Therefore, the recommendations on research and development have two major thrusts: a) identifying the broad areas and types of research required; and b) identifying means to improve research planning, management and use, as well as to improve the capacity for doing research.

4.2.1. Research Needs and Priorities

THE OVERALL GOAL of irrigated agricultural research is to produce technologies and management practices that can be adopted in the field, leading to greater crop productivity, farmers' profitability and sustainability. The clients for the research results include farmers, irrigation system managers and designers, consultants, policy makers, investors and consumers. Applied and adaptive research is required to identify irrigation technologies that will increase the efficiency, flexibility and reliability of water delivery and use; to identify cropping patterns (varieties, cultivation practices, cropping rotations, etc.) that will lead to higher production and incomes in response to market demands; and organizational forms and management practices that would ensure the most effective use of technologies. Most of this research must be carried out in farmers' fields and in existing irrigation systems, in close collaboration with the clients. The research must be oriented to identifying practical solutions, and much of it must be interdisciplinary. Research is also required on such complementary topics as land tenure and management issues, watershed management and sustainability, rural markets, and environmental and health issues related to irrigation.

4.2.2. Research Planning and Management

AT PRESENT THERE is very little coordination among the agricultural and irrigation agencies, research organizations, and farmers for identifying research needs, planning research, diffusing the results, and allocating resources. The Sri Lanka Council for Agricultural Research (CARP) is a step in the right direction, but irrigation and water resources-related research are presently not part of its programme. The irrigation management agencies do not have a well-developed capacity to absorb and use research results; and there is a significant gap in terms of diffusing research results on irrigation issues to farmers. Therefore, the following steps are recommended:

a. Research Management Unit

As part of the proposed re-organization of the Irrigation Department (section 3.2), a Research Management Unit (RMU) will be established within the Department. The main objective will be to strengthen the capacity of

irrigation agencies and FOs to identify and prioritize research needs, get needed research done through contracting and other arrangements, evaluate the results, and adopt and disseminate them. Through the RMU it will be possible to build partnerships with national and international research institutions including private sector firms, ensure that the key issues faced are being systematically addressed, and make the irrigation agencies and FOs more innovative through involvement in applied research activities. The RMU will be a multi-disciplinary unit addressing a wide range of issues, headed by a senior officer of the Department. There will be close linkages established with the training units of irrigation agencies, and with FOs; much of the research will be implemented in collaboration with field staff and FOs, which will build their capacity to identify research needs and make use of research results.

b. Joint Research Committee for Irrigation Management

To guide and coordinate the irrigation management research programme, and the work of the RMU, a Joint Research Committee (JRC) for Irrigation Management has been proposed as a sub-committee of the Central Coordinating Committee for Irrigation Management (see section 3.5). The JRC will ensure that the research programme is addressing priority issues in the sector, ensure there is good coordination among the various agencies involved, ensure the results are disseminated and used, and assist in mobilizing resources to support the research programme. It will include a representative of CARP and explore other mechanisms for linkages with the broader agricultural research programme of the country.

4.3. Monitoring and Evaluation of Performance

EFFECTIVE PERFORMANCE MONITORING and evaluation are essential features of any successful programme. Therefore, a performance monitoring and evaluation system as part of a larger management information system must be developed at several levels: a) at the national level to monitor policy implementation; b) national and provincial management agencies level to monitor the implementation of their programmes; and c) at irrigation system level. Performance monitoring is also required for complementary areas such as watershed management, and agricultural support services.

The performance monitoring and evaluation system for the participatory irrigation management programme should have the following characteristics:

- a. Be cost-effective, so that it is sustainable and manageable within existing resources and capacities;
- b. Be simple and straightforward with routine measures and indicators having minimal data requirements, which can be supplemented by special studies as needed;

- c. Be participatory, i.e., including the involvement of agency staff and FOs that can use a "self-evaluating" process for improving their own performance and capabilities. It is envisioned that at lower levels of irrigation systems, FOs will monitor and evaluate their own performance, and pass data to higher levels, for aggregation, analysis and use by system managers, programme managers, and policy makers;
- d. Be focused on critical issues, which are the institutional development and strengthening processes at various levels; the performance of individuals and organizational units in terms of their planned outputs; irrigation system performance; and agricultural performance.

As part of the process of re-organizing, re-orienting and strengthening irrigation agencies, a system for staff performance monitoring and evaluation, with built-in incentives and accountability, has been recommended in section 3.2.

Chapter 5

MACRO-POLICY FRAMEWORK FOR SUSTAINABLE PRODUCTIVITY AND PROSPERITY

5.1. Introduction

MANY OF THE POLICY measures required for the success of the participatory management policy are outside the irrigation sub-sector. Although the major focus of this paper is on irrigation management, this must be seen within the context of irrigated agriculture, which is in turn part of the larger agriculture sector. And the agriculture sector is embedded in the macro-economy of Sri Lanka, which in turn has its place within the world economy. This chapter briefly identifies a few key policy areas requiring attention in order to support the overall thrust of the programme.

5.2. Macro-Economic Policies

THIS PROGRAMME ASSUMES the government will continue its present efforts to implement a set of consistent macro-economic policies, emphasizing economic growth with equity, avoiding an overvalued currency, and lowering inflation. It would be important to promote an investment pattern that encourages efficient use of existing irrigation infrastructure while expanding other critical infrastructure such as rural roads, telecommunications, education, etc. The programme also assumes that the government will continue to encourage private investment to increase production for both local and overseas markets, and to increase employment opportunities and rural incomes. The agriculture sector is expected to develop and modernize within this overall policy framework.

5.3. Agriculture Sector Policies

IT IS STRONGLY recommended that the government develop a comprehensive, clear, long-term agriculture sector policy, following a methodology similar to IMPSA's. There is a very urgent need to develop and disseminate a clear comprehensive policy statement on government objectives, investment strategies, and development programmes, and the role of the irrigated agriculture within the larger sector. The development of an effective system to coordinate policies affecting the agriculture sector, perhaps through a national steering committee, would make an important contribution.

As part of this policy, the government should create a positive environment for private sector investment in agricultural enterprises, in partnership with FOs, by supporting the development of efficient and competitive markets. The government should also streamline its bureaucratic structures to help solve the related problems in a flexible and pragmatic manner. An "investment incentive package" and a "one-stop investor service" for rural agro-based industries would also be very useful.

Lack of good up-to-date market information has been identified as a serious impediment in the agriculture sector. The government should establish a market information system to collect and analyze supply and demand, prices, etc., on both the national and relevant international markets. This information, in a properly analyzed form, would be very useful to farmers and traders in their decision making as well as for planners and policy makers; it could be disseminated using newspapers and electronic media on a daily basis.

5.4. Trade and Marketing Policies

TRADE AND MARKETING policies of the government will have a significant impact on the profitability and growth of agriculture. A steering committee is proposed at the national level, comprising representatives from the Irrigation, Agriculture, Trade and Industrial, Finance and Policy Planning and Implementation Ministries, private-sector representatives, and representatives of FOs. The mandate of this committee will be overall policy formulation and coordination with respect to agro-industries, and trade and marketing. There is also a need for an effective system of production planning taking into consideration the demand and supply position of basic food commodities. Import requirements for basic items could then be assessed based on this information, to ensure a reasonable balance of supply and demand.

Finally, more effective strategies are needed for ensuring the availability at reasonable prices of basic agricultural support services. These include the provision of credit, lower tariffs on spare parts for agricultural machinery, and encouragement of low-cost environmentally friendly inputs such as organic fertilizer and integrated pest management.

5.5. Rural Development

IN THE LONG run, modernizing the agriculture sector cannot be separated from rural development and improving human settlements. In order to make agriculture profitable and ensure its continued expansion, the government, working with local and provincial authorities, must develop a modern infrastructure to support agriculture, including roads, electrification, and market places. But this alone is not enough. To reduce pressure on agricultural land and prevent further land subdivision, and also to make rural life attractive and prevent overly rapid urbanization, the government should encourage the location of agro-industry in rural areas and support the expansion and improvement of schools, health facilities, domestic water supplies and other measures to improve the quality of rural life.

The educational system should include an attractive agricultural stream for aspiring farmers. The school laboratories can be used to provide not only soil testing and other services to farmers, but service and training for students.

5.6. Land and Water Resources Policies

BECAUSE OF THEIR critical importance, and the lack of previous work in this area, IMPSA has devoted considerable attention to land and water resources policies. Some of the recommendations go beyond simply supporting irrigated agriculture, while others are directly relevant. They are divided into three categories: land policies; watershed management policies; and water resources policies.

5.6.1. Land Policies

BECAUSE OF THE complexity of land tenure issues, and the lack of an applied research basis for proposing solutions, it is not practical to recommend radical changes. The following are recommended measures in the short term, which could pave the way for more effective long-term policies.

a. Research

The government should seek donor assistance for developing a land tenure and productivity research programme implemented through national research organizations, and coordinated by the Ministry of Lands, Irrigation and Mahaweli Development. This programme would be responsible for developing and implementing a long-term applied research programme on land tenure and land use issues facing the country and for identifying lessons from other countries that would be relevant to Sri Lanka. By the late 1990s there would be a firm basis for further modernizing the land policies of the country.

b. Irrigation settlement land issues

The government should make a concerted effort to complete present efforts to survey the lands under irrigation and those above the command, and provide settlers with clear title and clearly marked boundaries, within the provisions of the present law. It should attempt to regularize encroachments to the extent possible.

c. Experiment with consolidation of production

Farmers' Organizations can play a very important role in increasing the productivity of small holdings, through support for obtaining credit, facilitating marketing of inputs and outputs, involvement in processing to increase the farmers' share of agricultural profits, arranging for cooperation

in planning and implementing agricultural production, and facilitating crop diversification. In other words, even with the present small land holdings, there are possibilities of increasing farmers' incomes.

Nevertheless, consolidation of production, for example on an irrigation turnout or cluster of turnouts, would, in principle, enable a more profitable agriculture through economies of scale. Farmers' Organizations could form production companies that go beyond coordination among small holdings. It is, therefore, suggested that the idea of Small Farmers' Companies be explored and elaborated further, in consultation with interested farmers, for the purpose of experimenting with this idea. This should be done in a way that would be reversible if farmers find it unprofitable.

5.6.2. Watershed Management Policies

THE WATERSHEDS OR "catchments" are extremely critical for ensuring the country's water resources over the long term. Thus, they must be viewed in a holistic manner, as part of the larger ecosystem of the country. Action should be taken now to preserve their condition and prevent further deterioration, as restoration of degraded watersheds in future may prove extremely difficult and expensive.

a. Integrated approach

An integrated approach to watershed management in specific geographic areas is needed, with a national policy planning group taking the lead in identifying priority sites and giving direction to line agencies implementing watershed management in the field. Eventually, all upland watershed areas in the country need to be mapped for land use, slope and erosion susceptibility, through existing institutions.

It is recommended that a "Steering Committee on Watershed Management" be initiated through the Central Environmental Authority of the Ministry of Lands, Irrigation and Mahaweli Development. This proposed Committee would be similar to the Steering Committee on the Environment. Planning should combine upstream and downstream areas, both in terms of budget and agency personnel.

There is no necessity for new legislation or any other new watershed management institutions at this time. Existing legislation needs to be used effectively to identify critical sites and implement interdisciplinary programmes through the above Steering Committee at the national level.

b. Planning watershed projects

Economic analysis of the costs and benefits of upland watershed conservation for both upstream and downstream beneficiaries should be an important part of the watershed project planning process, to be undertaken in the project identification stage. Technical, economic and social studies need to be done to assess the severity of watershed degradation and to quantify the linkages between upstream watershed conservation and downstream benefits.

It has been shown that interactive village planning in micro-watersheds is much more successful than top-down approach in planning for watershed conservation. While the watershed is the natural unit for planning, the village should be considered the basic unit where implementation takes place.

c. Incentives for local involvement

Farmers with secure land tenure will be more likely to participate in a watershed conservation programme whose benefits may only accrue in the medium or long term. Land tenure needs to be evaluated in the planning phase of watershed management. Also important is the evaluation of communal land as an important resource for increased productivity and watershed conservation.

In addition, the probability of a profitable result from watershed conservation is a powerful incentive for farmer participation. Farmers' Organizations could be instrumental in providing an infrastructure to capitalize investments in catchment conservation, as they have done in downstream command areas. Subsidy schemes should be carefully considered before implementing them because they can lead to an overemphasis on the construction of structures and the neglect of maintenance, thus serving as a disincentive to less-expensive measures that would otherwise be adopted by farmers on their own.

Finally, training and education are key components of a successful watershed management programme, both for extension staff and for farmers at the village level.

5.6.3. Water Resources Policies

SRI LANKA'S WATER resources are limited and fixed; but population and human activities increase rapidly over time. Therefore, per capita water resources are decreasing. Water has to be conserved, and used most beneficially and equitably for all. This needs a comprehensive water policy that looks at water in a holistic way, to put water to the most beneficial use at the least cost, and to conserve it without degrading the environment, sustaining it for future generations as well.

Four important advantages of having a well-thought-out rational policy for development and management of water resources are: a) decisions regarding the allocation of water resources can be made consistent with long-term broad, social, objectives; b) decisions regarding the allocation of water resources, and investments in their development, can be based on basic values and principles, rather than on ad hoc short-term pressures; c) a clear policy could increase the likelihood that scarce funds are invested wisely and cost-effectively; and d) with the creation of the Provincial Councils and the devolution of significant responsibilities for water and land resource management to these Councils, interprovincial allocations of water will become an important issue, for which agreed-upon procedures and principles will be required.

This section proposes some broad principles and guidelines for water resources policy.

a. *Human welfare*

First priority should go to ensuring basic human welfare, in terms of the provision of safe and adequate water for drinking and other domestic uses. This also means that the highest quality water available should be reserved for domestic purposes. Another corollary is that where domestic water quality is not very good, the country should invest in its purification to make it potable. The third corollary is that any activity which will endanger the quality of drinking water should receive the immediate attention of the government.

There are clear linkages between water supply and diarrheal diseases, and less clear but probably real linkages between irrigation development and malaria as well as encephalitis. Future policies should ensure the inclusion of these negative interests for remedial action.

b. *Economic value of water*

The economic value of water should normally be a major consideration for decisions on water resources investments. This principle would apply to allocations among sectors (agriculture, industry, power-generation, recreation, etc.) and to decisions among potential investments within sectors (for example, returns to improving existing irrigation systems versus construction of new ones). Decisions are often made based on political, social and other criteria as well, but the decision makers, at a minimum, must be given information on the economic implications of the choices made. In calculating the highest economic value of water, conserving the country's natural resources should be given a very high valuation, and not discounted at the normal rates for man-made infrastructure.

c. *Efficient use of water*

As a matter of principle, the country should strive to achieve a system where cost-recovery is done in a manner that would give strong incentives for efficient use of water resources, and their conservation. This principle recognizes that in the immediate future, full cost-recovery from direct beneficiaries for water resources investments may not be possible in every case. The focus suggested is on incentives for efficient use, not necessarily full cost recovery.

Where improved efficiency of water use would make scarce water supplies more widely available for other uses, investments should be focussed on increasing efficiency. This will tend to favour research and development for planning, testing and adapting improved technologies, investments in tested efficient technologies, measures to encourage users to shift from high and inefficient uses to more efficient and cost-effective uses, and institutional development to ensure equitable and efficient use.

d. *Participatory planning and management*

Water resources planning should be primarily a "bottom up" process beginning at small watersheds or river basins, and aggregating upward to large river basins, adjacent small basins, agro-climatic regions or zones, and finally, to the national level.

A participatory approach should be used as the basis for planning decision making on investment priorities, and to the extent possible, in operation and maintenance of water resources projects. This should build on local community mechanisms for planning, including development of mechanisms such as public hearings as used in other countries to maximize the opportunity for interested citizens and relevant organizations to express their views, provide inputs, and to develop a consensus on projects, including very large ones.

e. *Institutions*

Appropriate institutions need to be developed at various levels for water resources planning, prioritizing, monitoring and operations. At present there is no institutional mechanism for water resource-planning and development or monitoring and evaluation.

It is strongly recommended that the government establish a National Water Resources Council supported by a strong Secretariat. This Council would be a high-level advisory body consisting of representatives of the various government and nongovernment agencies and interest groups concerned with

water resources. The exact membership is to be determined, but the irrigation, groundwater, environmental, agricultural, industrial, domestic water supply, and public health interests, Provincial Councils, and FOs should be represented. Its Secretariat should be located within one Ministry — MLI&MD may be most appropriate. It should also have a formal linkage with the National Land Commission and be represented on the "National Steering Committee for Watersheds" (see section 4.6.3). The Council's role would be advisory — major policy decisions would be made at the political level. The Council would also be responsible for the development and refinement of a national water resources policy, water resources law, and master plan.

The Secretariat would develop and maintain an integrated data base as a management information system; would monitor trends in terms of water availability, water uses, and water quality, generally using data provided by other agencies, and make these available to the Council and to the various agencies; would contract for necessary research and consultancy services; and would have the capacity for data analysis and planning in order to provide policy makers with clear options. It would also be responsible for planning, reviewing, approving, and monitoring new projects as well as the performance of existing systems. This Secretariat would provide its analyses and proposals to the Council for formal approval and action.

It is also recommended that water resources planning and development institutions be established at other levels, such as provincial and river-basin, linked to the National Water Resources Council.

f. Water rights

Sri Lanka needs to examine her own and other countries' experiences with defining clear water rights, and consider such questions as the desirable degree of privatization versus state control of water, whether to encourage a market in water rights, how to clearly define and enforce water rights, and how to ensure equity and efficiency in the use of water resources. In general, a clear policy of specifying and allocating water rights would be a pre-requisite for determining the economic value of water and encouraging private investment. These rights would be defined in the proposed comprehensive water resources law (see section 3.6).

Chapter 6

INVESTMENT STRATEGY TO SUPPORT THE PARTICIPATORY MANAGEMENT PROGRAMME

6.1. Introduction: Investment Principles

THE IRRIGATED AGRICULTURE sector in the past has received the lion's share of public investments of the country. In 1984, these investments peaked at about 43 percent of the total public investment, and 84 percent of the public investments in agriculture. Since that time it has been declining, as the irrigated agriculture sector has shifted from a "construction" to a "management" phase. The share of the Public Investment Plan (PIP) for 1989 devoted to agriculture and irrigation was about 20 percent, and this is expected to continue declining to 10-13 percent over the next few years.

The macro-economic policy framework of the government and its investment principles and priorities provide a broad guide for determining the investment policies in the irrigated agriculture sector. Several other principles underlay the investment strategy recommended here. First, investment should be seen as a continuum ranging from "expenditure," which is expected to produce present benefits, and "investment," which is supposed to yield future benefits. The concept of investment followed here includes both types of investment. Second, a bias toward capital projects should be avoided; investment in "software" can be more productive than investment in "hardware," especially when there has been a previous bias toward hardware at the expense of software. Third, it is important to recognize the synergy among investments, so that investments should be thought of in terms of optimizing packages that capitalize on mutually reinforcing effects, rather than considering isolated components for investment. Fourth, investment should not be thought of as the exclusive role of the government; due recognition should be given to the role of the private sector as well as to a strategy developed that induces maximum private investment.

This paper focusses on direct investments to support the development of irrigated agriculture. But it must be made clear that there is a synergy between these investments and others that affect the productivity of irrigated agriculture, such as education, health, rural infrastructure, watershed conservation, and land improvement.

6.2. Public Investment Priorities

RESEARCH IN SRI Lanka and elsewhere have demonstrated clearly that investments in water management improvement, with modest expenditure on those capital structures that are essential, yield very attractive economic (as well as social and environmental) returns. Such water management improvement efforts have been directed to forming and strengthening FOs for participatory management and for training of both farmers and officials. Another finding is that when the government invests in a way that induces some additional investment from the beneficiaries, not only are the returns higher, but the sustainability of the investment is enhanced. International research has also shown that investment in research and development yields very high returns.

Based on these findings, and Sri Lanka's experiences in irrigation management, the following investment priorities are recommended:

- * First priority should be given to funding operation and maintenance (O&M) including institutional strengthening of existing irrigation systems through training, agency re-organization, and supporting FOs, as these aspects reinforce each other.
- * Second priority should be given to funding research and development.
- * Third priority should be given to the completion of on-going projects so that returns on sunk investments could begin flowing as soon as possible. This investment category will decline rapidly as projects are completed.
- * Fourth priority should be given to formulating and implementing demand-driven irrigation system rehabilitation, which would include institution-building as part of the planning and implementation process. The investment in rehabilitation could be further reduced as improved maintenance begins lengthening the life of rehabilitated projects.
- * Fifth priority should be given to new projects, both for the modernization of existing systems and for the development of new areas using new designs based on research information. This would include the introduction of modern appropriate technologies, new practices, and institutional support for a more profitable agriculture. This category is likely to grow quickly once the participatory management policy has led to stronger FOs, supportive agencies, and more profitable agriculture.

An important supporting activity will be human resources development, which should be an integral part of the investment under each of the above categories. Special projects and programmes to help institutionalize the new policies and strategies should be given special emphasis and included in the PIP. Some donor agencies may be prepared to provide extra support for this.

IMPSA Policy Paper No 9 suggests some indicative levels of investment for the above categories. It is important to note that this investment plan fits well within the planned

overall investment levels for the 1990s. No additional funds above those already planned are required to achieve the goals recommended by IMPSA. What is required is a re-allocation of the available funds in accordance with the proposed priorities, as well as ensuring the necessary complementary investments in rural development including roads, telecommunication, housing, public health, and education. Equally important, the allocation of public funds for irrigated agriculture in the PIP should be clearly itemized in terms of the priorities, such as O&M, institutional strengthening, human resources development, research and development, and modernization rather than following the present practice of "including" these in project estimates.

6.3. Role of Private Investment

THE GOVERNMENT NEEDS to take some important steps to encourage a higher level of private investment in irrigated agriculture, and more broadly in water resources development. It should create appropriate conditions in terms of its macro-economic and agricultural sector and trade and fiscal policies. It should also articulate a clear plan for the long-term development of the agriculture sector. It should encourage the development of free and competitive markets and remove the remaining impediments to investment by private sector parties, including FOs.

The government should focus its own investments on the development of supporting infrastructure that cannot be financed by private parties. The major options available for the private sector investments are: provision of goods and services that directly support agricultural production enterprises; processing of agricultural products; agricultural diversification; research and development; O&M and modernization of irrigation schemes; and human resources development. Farmers' Organizations should be encouraged both to make their own investments, and to establish partnerships with larger firms to gain access to new technologies, new markets, and capital for modernizing irrigated agriculture.