

“In a good team, partial insights, put together,
can solve the mystery of reality.”

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ABBREVIATIONS

ADP	Annual Development Plan
BWDB	Bangladesh Water Development Board
CDSP	Char Development and Settlement Project
CEGIS	Centre for Environmental and Geographic Information Services
CO	Community Organiser
DDP	Delta Development Project
CPP	Compartmentalization Pilot Project
DOE	Department of Environment
DP-III	Directorate of Planning – III
EIA	Environmental Impact Assessment
EIP	Early Implementation Project
EIP-FDR	Early Implementation Project – Flood Damage Rehabilitation
FAP	Flood Action Plan
FCD	Flood Control and Drainage
FCDI	Flood, Control, Drainage Irrigation
GO	Government Organisation
GoB	Government of Bangladesh
GoN	Government of the Netherlands
GPWM	Guidelines for Participatory Water Management
ICZM	Integrated Coastal Zone Management
IPSWAM	Integrated Planning for Sustainable Water Management
IWRM	Integrated Water Resource Management
KJDRP	Khulna - Jessore Drainage Rehabilitation Project
LCS	Landless Contracting Societies
LGED	Local Government Engineering Department
LGI	Local Government Institution
M&E	Monitoring and Evaluation
NEMAP	National Environmental Management Action Plan
NGO	Non-Government Organisation
NWMP	National Water Management Plan
NWPo	National Water Policy
NWRC	National Water Resources Council
O&M	Operation and Maintenance
PRA	Participatory Rural Appraised
QC	Quality Control
RAC	Regional Accounts Centre
SC/SW	South Centre / South West
SDE	Sub-Divisional Engineer
SE	Superintending Engineer
SPARRSO	Space Research Remote Sensing Organisation
SRP	Systems Rehabilitation Project
SSWRDSP	Small Scale Water Resources Development Sector Project
TA	Technical Assistance
UP	Union Parishad
WARPO	Water Resource Planning Organisation
WMA	Water Management Association
WMC	Water Management Committee
WMF	Water Management Federation
WMG	Water Management Group
WMO	Water Management Organisation
XEN	Executive Engineer

1. INTRODUCTION

This Inception Report is presented in compliance with the Commission Contract¹ which is part of the Netherlands' contribution to the activity "Integrated Planning for Sustainable Water Management (IPSWAM) Programme, Bangladesh", activity no. BD017001, PIR 38. This contract states (Article 1, paragraph 2) that: "Within 4 months of this contract taking effect (2nd November 2003) the Contractor shall submit to the Principal an Inception Report providing a detailed implementation programme for the full period of the project."

This report covers the five year project period, which is 2nd November 2003 to 1st November 2008. Its starting point is the Report of the Committee for Reformulation of the IPSWAM Programme, January 2001 (Project Document), and builds on the Technical Proposal of 13th August 2002, which forms Annex 1a of the Commission Contract.

The Government of the Netherlands (GoN) has a considerable history of support to, and involvement with, water management projects in Bangladesh; for the past two decades it has been the most important bilateral supporter of the Bangladesh Water Development Board (BWDB), with whom it has forged an enduring partnership. Initial engineering projects have evolved and broadened into programmes which include a specific focus on operation and maintenance, stakeholder participation, local level water management, and multi-disciplinary project planning and appraisal.

Starting in the early 1990s lessons learned in the Bangladesh water sector from earlier and continuing projects have led to a gradual policy change reflecting these concerns, and forming a current policy framework articulated in a number of interrelated documents, most notably the:

- National Water Policy (NWPo, 1999);
- Guidelines for Participatory Water Management (GPWM, 2000);
- National Water Management Plan (NWMP).

In particular, the National Water Policy is 'bringing order and discipline in the exploration, management and use of water resources in Bangladesh.' As part of this process, 'BWDB Act 2000' was conceived and enacted.

In this policy context the IPSWAM programme has been conceived, since the new policies, guidelines and plans have ensured that the importance of operation and maintenance, stakeholder participation and multi-disciplinary planning have been widely accepted. Through programmes such as IPSWAM and the much larger Water Management Improvement Project (WMIP), now under preparation, the BWDB is currently undertaking a 'globalisation' of Participatory Water Management.

However, *making these principles operational* has proved to be complex and often difficult, and it is this that the programme has been designed to tackle.

The IPSWAM programme is drawing systematically on the experiences of past projects and its major task is to be a *pathfinder project* to *strengthen institutional capacity* in terms of local water management organisations (WMOs) as well as relevant local government institutions and national bodies such as the Bangladesh Water Development Board.

¹ The Commission Contract has been signed by the Royal Netherlands Embassy, Dhaka and the consultant it has engaged to provide Technical Assistance to the IPSWAM programme, i.e. Arcadis Euroconsult of the Netherlands, which has sub-contracted part of the work to Socioconsult of Bangladesh.

In that context the programme is encouraging and developing a *decentralised approach* which is *fully integrated in the BWDB*, making full use of zonal offices for *multi-disciplinary, participatory planning for long-term operation and maintenance, in a regional and cross-sector context*.

This report explains in detail the project context and how the objectives of the programme are embedded in an overall approach.

It outlines how planning is being strengthened in BWDB, starting with the establishment of an IPSWAM Planning Team in the Directorate of Planning (III) and the establishment of zonal planning teams in the South Western and Southern Zones of the BWDB. It explains how, starting from an institutional analysis, approaches to local level institutional development are being worked out, and how multi-disciplinary participatory planning is being established. Specific plans for the training of planning staff and for the dissemination of these approaches within BWDB are also made clear.

The report also explains how the IPSWAM programme is putting its principles into practice through the planning and implementation of nine sub-projects, starting with sub-project selection. It explains the processes of local institutional development, including BWDB staff training and WMO capacity building, as well as multi-disciplinary participatory planning, as they will be developed in the sub-projects. Plans for the rehabilitation, operation and monitoring of water management infrastructure in the sub-projects are outlined and an approach to the successful transfer and sharing of water management responsibilities is developed.

Finally, the IPSWAM programme management is described and detailed plans presented. A Logical Framework is annexed to the report.

2. OVERALL APPROACH

2.1. Context

2.1.1. National Water Policy

The context in which the IPSWAM programme has been formulated is set by the National Water Policy (NWPo). This states that, “all necessary means and measures will be taken to manage the water resources of the country in a *comprehensive, integrated and equitable* manner” (italics added). The NWPo formulates a number of basic principles. Those particularly relevant to the IPSWAM programme are given in full in Annex I and fall into the following categories:

- Planning and Management of Water Resources
- Public and Private Involvement
- Public Water Investment
- Water and Agriculture
- Water and Fisheries and Wildlife
- Water for the Environment
- Economic and Financial Management
- Stakeholder Participation
- Institutional Policy

2.1.2. Guidelines for Participatory Water Management (GPWM)

Closely related to the NWPo and building upon it, the GPWM elaborate the NWPo provisions and make available harmonized guidelines for field use. These are intended to:

- Increase/improve stakeholder participation/involvement in water management.
- Give the local stakeholders a decisive voice at all stages of water management.
- Raise environmental awareness among the local stakeholders and the implementing agencies involved with participatory water management.
- Develop capacity of the local stakeholders in participatory water management.
- Gradually establish ownership of local stakeholders in water resource management.
- Achieve sustainable participatory water management.

2.2. Objectives

In this context it is envisaged that IPSWAM must *make the basic principles operational*. In doing so, it is drawing on the experiences of projects that have been executed in the past, and it will have to define further the practical role of some of the key players in water management in Bangladesh.² It is therefore established in the Project Document³ that the objective of IPSWAM is to *strengthen the capacity of water sector organisations*, including:

- local level Water Management Organisations (WMOs);
- the different offices of the BWDB (headquarters and regional/local level);
- local government institutions (to a limited extent);

responsibly to assume their roles as specified in the NWPo and GPWM (see above).

The Project Proforma restated these objectives more specifically:

² A number of these projects and key policy documents have been identified (see Annex II) and systematic exchanges of experience have been organised (see Annex III).

³ Report of the Committee for Reformulation of the IPSWAM Programme, revised version May 2002.

- To ensure people's participation in all stages of the project – starting from selection, implementation, operation, maintenance, and evaluation. (Here 'people' means people of all different occupations living within the polder – farmers, fishermen, boatmen, landless, and both men and women.)
- To establish sustainable water management in selected sub-projects with active participation of people and to develop people's skill/capacity in planning and implementing water management in selected sub-projects.
- To transfer the responsibilities of operation and maintenance from Bangladesh Water Development Board to the people.

2.3. Programme Area

The IPSWAM programme area includes the South Central and South West Zones planning zones of the NWMP (see map). Two zones have been selected to give organisational changes in the BWDB increased impetus (see objective above).

2.4. Realisation of Objective

IPSWAM is realising its objective by:

- Establishing and developing one central and two zonal planning cells *capable of planning and implementing water management projects in line with the principles* of the NWPo and GPWM.
- *Developing and disseminating the specific methods and procedures necessary* to make the NWPo and GPWM operational.
- Developing local level water management capability and stimulating the transfer of responsibilities for operation and maintenance to local level water management organisations by *introducing and establishing integrated, sustainable water resources management in nine schemes*.

This means that the IPSWAM programme is contributing to the efforts of the Government of Bangladesh (GoB) to improve the performance of the country's Water Management Sector at three levels:

- It is providing assistance to the GoB in elaborating the institutional and regulatory framework for the decentralisation of water management responsibilities.
- It is enhancing institutional capabilities, especially of the BWDB.
- It is assisting in the identification, design and implementation of rehabilitation measures in nine sub-projects.

This both enhances the planning capacity of BWDB and also prepares the BWDB to implement effectively other projects aimed at putting the NWMP into practice, notably the Water Management Improvement Project (WMIP).⁴ The process will be completed in five years, by late 2008.

2.5. Project Principles and Outline Methodology

⁴ It is envisaged that WMIP will have a 'strong linkage with IPSWAM....in order to incorporate lessons learnedinto the implementation plan for the proposed project.' Currently this linkage is informal and will be institutionalized as WMIP becomes operational.

Experimental nature. IPSWAM is a *pathfinder programme*: it is finding a practical way to introduce integrated water resources management, taking into consideration the constraints imposed by the reality on the ground in Bangladesh. For this reason, execution requires substantial flexibility, allowing learning from experiences on the ground.

Integration in BWDB. IPSWAM is a programme that is entirely integrated in the BWDB organisation, and is using technical assistance in fields where BWDB's capabilities are not yet sufficiently developed in a way which is *fully integrated* into the team. Planning capacity is partly decentralised, including planners at the Zonal level, who are in regular contact with community organisations and who are backed up by a planning support team located in the Directorate of Planning (DP) III in Dhaka.

Integrated approach to planning. Four essential aspects of integrated water resource management are being developed within the BWDB Planning Directorates (with consequences for the BWDB as a whole):

- Multi-disciplinary planning teams.
- Planning in a regional and cross-sector context.
- Participatory Planning.
- Planning for operation and maintenance.

Improved water management. This lies at the core of the programme and is being achieved through careful intervention, using a *cost effective low input high output approach*.

Optimal institutional framework. Effective sustainable water management requires a careful orchestration of different key institutions, including central government (BWDB), local government, water management organisations and civil society.

Strengthening local level water management organisations. Local initiative is the most realistic starting point for effective integration of stakeholders' interests in a formal institutional framework, which is *legitimate and transparent*, and can ensure full and appropriate *people's participation* at all stages giving special attention to gender issues.

Long-term approach to operation and maintenance. This involves the *transfer of responsibilities* for water management, starting during the planning phase and completed 2-3 years after rehabilitation. It also involves *financing operation and maintenance*, using a range of possible resources. An essential part of this approach is that an adequate *maintenance plan* will be made, which specifies the responsibilities of both BWDB and the water management organisations and is realistic and acceptable to both. All of this is essential to achieve long-term, sustainable, participatory and effective arrangements.

High technical standards. It is essential that the rehabilitation and improvement of physical infrastructure involves high quality design and construction, to make long-term operation and maintenance feasible.

Experience exchange: The effective collection and dissemination of knowledge, insight and methods is essential so that the approaches developed and applied by IPSWAM may become widespread and sustainable.

2.6. Poverty Reduction

Poverty reduction is an important priority for both the Bangladesh and Netherlands governments, which are committed to achieving the Millennium Development Goals adopted by the world

community at the Millennium Summit in 2000. Goal 1 is, ‘Eradicate extreme poverty and hunger’; it has two targets:

- Halve, between 1990 and 2015, the proportion of people with income less than US\$ 1/ day.
- Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

In its policy memorandum, ‘Mutual interests, mutual responsibilities: Dutch development cooperation en route to 2015’, the GoN states in section 6.4 ‘Environment and water’ that ‘the link between poverty reduction and environmental policy will be intensified’. This approach is broadly shared by the GOB, and is enshrined in the Poverty Reduction Strategy Paper. Therefore, although it can be seen that poverty reduction is not a specific IPSWAM objective, the programme will adopt a number of measures to contribute to these aspirations (see section 4.6).

2.7. Lessons Learned

Very considerable experience has been drawn on in the preparation of IPSWAM; during the inception period a systematic process of assessing and analysing the lessons of the past was followed, specifically:

- Study of the completion reports and lessons from past projects using the extensive DP-III library built up during the 25 year Early Implementation Project (EIP), and incorporating material from the Systems Rehabilitation Project (SRP).⁵
- Structured meetings with other relevant key projects and institutions (including a field visit to and briefings by leaders of the Khulna-Jessore Water Management Federation).⁶
- Exchange of insights between members of the IPSWAM programme planning team and zonal planning teams, who between them have participated in almost all relevant recent water sector projects in Bangladesh.

Lessons learned fall into a number of categories:

Physical and technical

- In purely flood control/drainage schemes, physical structures do not always require regular operation, which has important implications for the organisation of operation and maintenance.
- The demands of flood control, drainage and irrigation are, to a certain extent, contradictory, i.e. structures which offer protection during one period may become a hindrance later on.

Social

- Flood Control, Drainage and Irrigation (FCDI) schemes do not only concern water users in the narrow sense (farmers, fisherfolk, boatmen and other households using domestic water), but may affect a wider population by creating adverse effects in non-protected areas.
- Even the impact on water users in the narrow sense will be differential (e.g. farmers, fisherfolk and boatmen may not have identical interests).
- Therefore, effective mechanisms for mediating the conflicting interests are an essential part of water management, and differences of power will affect outcomes.
- In addition to the above differences, women have strong specific interests as well, especially in relation to domestic water use, post-harvest processing, housing and

⁵ Notably: *Planning and Management of Water Resource (EIP) and Community Participation for Sustainable Water Management (SRP)*.

⁶ See Annex II for a short inventory of these sources and Annex III for a summary of the outcome of the structured consultations.

employment. In the past they have mostly had extremely limited opportunities to participate in water management decision-making.

Institutional

- Because of the wide range of interests, water management institutions have to facilitate option analysis, mediation between conflicting interests and optimisation of outcomes.
- The large investments and technical skills required for the development of the necessary infrastructure justify public sector involvement. Finding the right combination of local, regional and national institutions to optimise long-term sustainable water management is essential (among other reasons so that infrastructure built by other departments does not interfere with planned water management).

Operational

- Transferring responsibility for scheme operation does not require complicated organisational structures. It should not be done hastily, but should be carried out with an eye for existing informal groups, and should approach the difficult issue of resource mobilisation for maintenance carefully and creatively.
- A careful, multidisciplinary approach is needed for the selection of sub-projects for rehabilitation.
- All affected stake-holders should have opportunities to participate in considering different water management options, which will be carefully worked out, using an in-depth assessment of existing arrangements.
- Water management institutions which protect the interests of poorer sections of society and are able to optimise the interests of a wide group of stakeholders can better be achieved in sub-projects where sharp conflicts of interest (e.g. certain types of shrimp culture) do not occur.
- Good cooperation with other relevant departments (Local Government, Agriculture, Fisheries etc.) at local level is essential to optimise benefits from sub-projects.
- The provision of information to WMOs is crucial. Stakeholders must be fully and transparently aware of overall costs/benefits of schemes so that schemes are not imposed on them.

2.8. Conclusion

Taking into account the many important points made in this chapter, IPSWAM is conceived, not as a five-year, externally assisted project ***but as a long-term, stable, sustainable programme (with, say, a 20 year time horizon) consisting of a partnership between government and local, participatory institutions***, with external assistance only during the first five years.

Therefore, issues of ‘transfer’ or ‘handing-over’ in 2008 will not arise, since sustainable arrangements will have been planned and implemented from the very beginning and technical assistance will be phased out gradually. This principle has important practical implications, which will be dealt with in subsequent chapters.

3. STRENGTHENING PLANNING IN BWDB

From the experience of previous projects it has been found that ‘projects that are designed from an engineering perspective contribute little to achieving broader development objectives.... A multi-disciplinary planning approach enhances the relevance of projects....the involvement of stakeholders in planning is a precondition for a successful project.’⁷

Taking this into account and bearing in mind the IPSWAM programme objective of ‘strengthening water management institutions’, the following approach has been laid out to develop, and then disseminate, the specific, participatory, multidisciplinary planning approach which is now required.

3.1. Establishment of IPSWAM Planning Team in DP-III

In IPSWAM, the programme technical assistance is aimed at supporting programme activities and simultaneously focusing on capacity building, which will mainstream the principles of participatory water management in the BWDB. This is, by its nature a transitory process with an appropriate exit strategy in-built, so that BWDB takes over responsibility during the implementation period. The strategic objective of IPSWAM is to activate fully the BWDB at central and field levels with minimum support from the project. In this way they can effectively internalize the new approach and methods of participatory planning for sustainable water management. BWDB’s zones will play the pivotal role in making participatory decisions and its O&M circles and O&M divisions will implement them and remain responsible for management transfer/joint management and programme sustainability.

Bearing in mind the limitations of previous planning activities in the BWDB, during its final phase the Early Implementation Project (EIP) established a dedicated planning cell in 1995 to improve its approach to project management. After learning from the experience of the Systems Rehabilitation Project (SRP) a Planning Team was formulated in the Third Directorate of Planning (DP-III)⁸ and approved by the BWDB Board in July 1996. From the beginning the designated Planning Team members formed the core of the team but other experts and individuals from BWDB design and field offices were also to be actively involved in its work. The Planning Team makes extensive use of the expertise and experience of DP-III and holds regular structured discussions to share views and obtain feedback throughout the planning process. The Planning Team was constituted as follows:

Executive Engineer	Agronomist
Environmental Engineer	Fishery Expert
Civil Engineer	Economist
Hydraulic Engineer	Sociologist
Computer Engineer	

The Planning Team played an important supporting role in the formulation of IPSWAM and also continued planning activities, carrying out the Water Management Planning Exercise for Polder 43/2A and the Operation and Maintenance studies for Polders 22 and 43/2E. Much of the experience gained by former members of the Planning Team is now being put to use elsewhere in the BWDB, since staff have been promoted or transferred.

⁷ Report of the Committee for the Reformulation of the IPSWAM Programme, Dhaka January 2001, revised May 2002.

⁸ Then DP-IV

With the start of IPSWAM in November 2003 the Planning Team in Dhaka is functioning well.⁹ Of the ten new staff who joined the Planning Team since November 2003 (including TA staff), three (30%) are women. Planning teams are also being established in the South Central and South West Zones under the respective Chief Engineers (see below). It is expected that certain steps may be taken to improve the staffing and effectiveness of multidisciplinary Planning Teams:

- BWDB may be enabled to recruit new graduate professionals in the disciplines required.
- Engineers and other professionals may be posted for at least three years.
- Ad-hoc staffing arrangements may be avoided.

The Planning Team members are being formed and trained to be responsible for all aspects of project formulation and planning through their direct involvement in actual Water Management Planning exercises as well as their implementation and follow up. The roles and responsibilities of Planning Team members can broadly be specified as follows:

- The Director, DP-III provides overall guidance and co-ordination.
- The Executive Engineer is responsible for organizing the Planning Team and is responsible for final outputs.
- The Agronomist provides basic information on land capabilities, existing and potential land use and their relation to water management.
- The Environmental Engineer is responsible for the collection of data for evaluating the environmental impacts of proposed developments/interventions.
- The Hydraulic Engineer and Civil Engineer verify catchment areas, investigate water management potentials and problems and develop preliminary design options.
- The Computer Engineer is responsible for the provision and development of planning and monitoring instruments and software, and for the installation and operation of equipment
- The Economist is responsible for the collection and analysis of data required for the calculation of economic viability.
- The Sociologist is responsible for investigating local initiatives with a focus on water management as well as local social structure, power structure, land ownership, lease arrangements and sharecropping. This forms the basis for identifying and understanding the problems and potential solutions in water management.

Technical Assistance (TA) has been provided under IPSWAM (with special inputs during 2004) to assist in the development of the Planning Team. Figure 3.1 shows the composition of both the BWDB staff and the TA staff¹⁰. The BWDB staff report directly to the Director DP-III; the TA staff report to the Team Leader, and through him to the Director. The TA Team Leader is responsible for assisting the Director, DP-III in implementing the IPSWAM programme and supervising the donor progress and financial monitoring. In particular he is developing and introducing the concept and approach of participatory, multi-disciplinary and gender-sensitive planning, facilitating the transfer of knowledge from DP-III to other planning directorates, other offices of the BWDB and to other organisations, and stimulating collaboration between BWDB and other agencies, both at central and regional/local levels in planning and implementation and in operation and maintenance. All staff are determined to establish a fully integrated team where ideas and insights are freely shared, and have currently formed working groups in: planning, community organization, institutions and monitoring/quality control to facilitate this process.

Figure 3.1: Organisational chart of the IPSWAM Planning Team in DP-III

⁹ Currently there is no provision for a Fisheries Expert and the posts of Sociologist and Environmental Engineer will be filled shortly.

¹⁰ In the Project Document Organisation Chart three TA staff are shown as Socio-economists, and later specified as Socio-economist (Sociologist), Socio-economist (Institutional Specialist), Socio-economist (Gender Expert). Here they have been shown simply as: Sociologist, Institutional Specialist, Gender Expert.

3.2. Establishment of Planning Cells in BWDB Southern and South Western Zones

To provide an effective decentralised planning capability, zonal planning teams are being established in Khulna and Barisal, each headed by an Executive Engineer. Deputy Chief

Extension Officers based in Jessore and Barisal will join these teams (in place of the Assistant Chief, Agriculture originally envisaged) as well as local Sub-Divisional Engineers, and there is also provision for an Economist to join each team. Extension Overseers and support staff will also be deployed. Technical Assistance staff (two socio-economists and a trainer, as well as community organizers) are working with each zonal team; the organization of each team and its office arrangements will be formalized during 2004 (see section 3.3 below).

The roles and responsibilities of the zonal planning team can broadly be specified as supportive to the core Planning Team under DP-III. They will be under the administrative control of the Zonal Chief Engineers and the technical control of the Director DP-III. The TA staff will report to the Team Leader, IPSWAM, and through him to the Director DP-III. The BWDB Operation and Maintenance Division staff along with the Zonal Planning Team will be involved in conducting information/motivation campaigns among the local stakeholders of the pre-selected sub-project concerning the IPSWAM approach. In this drive, awareness building, site visits, and the preparation of inventories of stakeholders interested in taking over management responsibilities will take place. At this stage Zonal Planning Team must have director contact with the concerned LGIs. All field investigations and data collection, according to the approaches developed by the core Planning Team, will be the responsibility of the zonal planning team. Another major task of the zonal planning team will be the formation/re-organization of WMOs and capacity building.

In this context, the office of the Chief, Water Management BWDB must be involved for effective mobilization of stakeholders with all the participatory spirit of IPSWAM. Zonal Planning Teams will also support the BWDB Operation and Maintenance Divisions in conducting trial operations after repair and rehabilitation works are complete.

3.3. Institutional Analysis

It is recognized from BWDB's experience and achievements that an approach which combines 'hard' engineering skills with 'soft' skills in the area of institutional and social development is most effective. It is in this context that the BWDB is 'evolving into a water management and service delivery organization which requires a careful re-focusing'.¹¹ This implies an adjustment in working practices and staffing arrangements made necessary by the involvement of water users in planning, operation and maintenance. It also implies a strengthening of relationships between regional BWDB offices and the offices of other Ministries, as well as a changing role for the BWDB headquarters vis-à-vis the regional and field offices, in the context of increased decentralisation.

3.3.1. Emerging Policy

Since its creation in 1959 the BWDB has been predominantly an institution of civil engineers (and some agronomists). It was basically a construction-oriented organization and was designed accordingly. With completion of more than 500 projects there is a need to change the organization from a construction orientation to a focus on operation and management. In Bangladesh, the water sector as a whole is now in a process of change in order to meet the requirements of the NWPo and the forthcoming National Water Management Plan (NWMP), which reflect the long term vision of the Government and have major implications for future shape and functions of the BWDB.

These implications centre around two basic concepts. Firstly the BWDB must rejuvenate itself to perform new and challenging tasks that will be required of it in the new millennium. Secondly, it must not operate in those areas that need to be decentralized in the interest of efficiency and

¹¹ Report of the Committee for the Reformulation of the IPSWAM Programme.

sustainability. Over time, the BWDB would emerge as a highly professional water management institution dealing with only large-scale issues, leaving the ownership and management of small-scale projects to local bodies and other beneficiary groups. The NWPo made the following concrete stipulations in the drafting and enactment of the new BWDB Act, 2000.

- Emphasis on the separation of policy functions from those of operation and management to bring about greater accountability and transparency.
- Confinement of BWDB’s planning function to sub–regional and local levels by designating the Water Resources Planning Organization (WARPO) as the exclusive agency for macro-level water resources planning.
- Making BWDB responsible for execution of projects above 1000 ha, leaving the development of small-scale projects to the local bodies.
- Proposing the management transfer of small and medium scale projects to beneficiaries.
- Emphasizing the involvement of stakeholders at all stages of the project scheme cycle.

This is reflected in the institutional framework defined by the NWPo:

Organisation	Key responsibilities
Ministry of Water Resources	Overall policy formulation, including institutional reform.
NWRC	Co-ordination of all water resources management activities.
WARPO	Macro-level water resource planning/coordination.
BWDB	Planning/implementation of schemes of more than 1000 ha; development/transfer of operation and maintenance.
LGED	Planning, implementation of schemes of less than 1000 ha.
User groups	Operation and maintenance of schemes

The policy further specifies the ownership and management of water sector projects:

Activity	Less than 1000 ha	1000 – 5000 ha	More than 5000 ha
Construction	LGED	BWDB	BWDB
Ownership	Local Government	BWDB	BWDB
Management	Community Organisation	Community Organisation	Jointly by: BWDB/LGI/Community Organisation

3.3.2. Change Process in BWDB

BWDB is now undergoing a process of change. Various reform initiatives have already been undertaken. During the inception period consideration has been given to the various reform initiatives already undertaken, and to the outcome of the recent study on institutional development carried out by BWDB and WARPO, as follows:

- New BWDB Act, in line with NWPo, enacted in 2000.
- BWDB Reorganization: In parallel with the legal reform, a BWDB Re-organization Plan prepared in 1998 is now being implemented. This is reducing overall staffing levels and developing a skill mix by creating permanent positions for multi-disciplinary professionals.
In line with the BWDB’s future focus on integrated water resource management, project implementation and operation/maintenance functions have now been merged.
- Management transfer of schemes: this is being made operational using the Guidelines for Participatory Water Managements (GPWM).

- Improvement of Administrative and Financial Procedures: the BWDB has recently reviewed a number of instruments for decision making and operation and has issued revised and updated versions.¹²
- Training arrangements: In addition, a twinning Arrangement between the Government of Bangladesh and the Netherlands Ministry of Transport, Public Works and Water Management was signed in 2000, effective up to 2005, with the objective of further strengthening and structuring their co-operation in the field of institutional development for integrated water resources management.
- Task Force: To assist the transformation process, a multi-disciplinary BWDB task force has been constituted, organised into six working groups, one each for aspect of the BWDB Act 2000.¹³ This has been done with the assistance of the Dutch Counterparts (Twinning Mission) and an Action Plan for making improvements in these areas has been prepared.
- Other Studies: the Programme Development Office (PDO) of Integrated Coastal Zone Management (ICZM) has conducted an Institution Review of selected Ministries and Agencies¹⁴. Under the project preparation study of the proposed Water Management Improvement Project (WMIP) a study has also been conducted for identifying institutional development activities for BWDB and WARPO which will be supported by the project.

3.3.3. Institutional Analysis Study

IPSWAM is essentially an institutional development programme that aims to assist the BWDB in implementing the principles defined in the National Water Policy and further specified in other documents such as the new BWDB Act, 2000, and Guidelines for Participatory Water Management (GPWM). On the basis of these documents, and in order to achieve long-term, sustainable, water management, during 2004 IPSWAM will conduct an institutional analysis as an essential preparation for a revision of the BWDB's role in the water sector as well as in its relations with Local Government Institutions, Ministries and Water Management Organisations.

In conducting the institutional analysis, the present position of BWDB's reform programme, role of twinning arrangements, and previous studies will be reviewed in depth. The study team will undertake the assignment as already outlined,¹⁵ with some adjustment and prioritization.

Step 1: Analysis from Existing Documents.

- Analysis of the envisaged role of the various stakeholders in the Water Sector at local, regional and central levels (Local Government Institutions, Water Management Organizations, Line Ministries and the BWDB).

Step 2: Field Assessment of Current Capabilities. (Southern and South Western Zones)

- Assessment of the capacities of the various stakeholders to assume their responsibilities.
- Analysis of existing co-ordination mechanisms at local and regional levels (with proposed measures to strengthen their role, if necessary).

¹² These are: Internal Work Procedure, Delegation of Administrative and Financial Power, Modernization of BWDB's Accounting and Financial System, Regulations for Collection of Service Charges from Irrigation Employees (part).

¹³ Formation of BWDB Five Year Plan; system improvement of procurement and financial management; human resources development; services and revenue; and operation and maintenance (including making operational the GPWM).

¹⁴ PDO-ICZM Paper no. 8, Nov 2001.

¹⁵ Report of the Committee for the Reformulation of the IPSWAM Programme.

- Investigation of current institutional arrangements for the design/fabrication/installation of gates and other mechanisms on sluices and formulation of proposals for improvement.

Step 3: Preparation of Proposed Measures for Institutional Change (S/SW Zones)

- Analysis of the consequences of a new distribution of responsibilities for the BWDB offices at local and regional levels.
- Preparation of a proposal for an organizational structure and staffing pattern for the BWDB at local and regional levels in the two zones where the IPSWAM programme is involved.
- Identification of the action to be undertaken by the management of the BWDB to restructure the BWDB offices at local and regional levels.
- Identification of the necessary action to be undertaken by IPSWAM to strengthen the BWDB offices at local and regional levels in these two zones.

Step 4: Additional Investigations

- Investigation of current best practice and proposals for mechanisms to transfer ownership of water management schemes of less than 1000 ha to the parties indicated in the NWPo.
- Investigation of current best practice and proposals for mechanisms to transfer or share water management responsibilities for schemes above 1000 ha to/with the parties indicated in the NWPo.
- Definition of a provisional regulatory framework for the registration of WMOs.

During the study the team will consult a wide range of water sector stakeholders within and outside the BWDB. Forming an interagency reference group specifically for the purpose of the study will ensure the necessary balance of inputs. The team will make it a point to inform and consult the newly created BWDB Governing Council.

Organizing a large scale event following the pattern of the 1997 National Conference on Participatory Water Management may be a way to bring the issue to the public domain. The study team will, however, also have to create a platform within the BWDB for proposed changes. Methods for building a support base for the study's recommendations will include:

- Workshops, focus group discussions, and surveys to solicit inputs from policy makers, unions, staff and non-BWDB stakeholders.
- Interim position papers on specific subjects with feedback to be secured in workshops with limited participation.

The present policy framework leaves a number of issues regarding the decentralization of water management open, especially:

- The respective mandates of WMOs, LGIs and the BWDB for operation and maintenance tasks.
- The modalities mobilizing resources for covering operation and maintenance costs.

However, before it can embark on this task the study team's first task will be the preparation of a position paper on the mechanics of the decentralized water sector (Step 1). The position paper will:

- Identify water resources management tasks and indicate how these can be distributed to the lowest possible organizational level.
- Specify corresponding mandates and responsibilities.
- Explore options for resource mobilization.

Once this basic framework has been established, work on the remaining part of the Institutional Analysis Study will follow immediately. The study will indicate conditions and a time path

according to which responsibilities can be transferred to WMOs; it will also define which changes will have to be made in the current regulatory framework to facilitate the transfer of management responsibilities.

The Institutional Analysis Study will refer to other sector policies, e.g., the National Agricultural Policy (1999) and the Coastal Zone Management Plan, to the extent that these are relevant for water sector management reform. Special attention will be given to investigating the actual and potential role played by the Cooperative Department in registering, monitoring and auditing cooperative WMOs also in relation to their potential for supporting complementary savings and micro-credit activities, which can enhance their effectiveness.

3.4. Development of Approaches

In strengthening overall planning, two main approaches will be followed: first a process of local level institutional development will be instituted; at the same time a multi-disciplinary, participatory, approach to planning will be developed. These are outlined below.

3.4.1. Local Level Institutional Development

A number of relevant local level institutions are currently involved in water management:

- BWDB, working through its Division and Sub-Division offices, as well as staff of the Water Management Directorate.
- The Department of Agricultural Extension (DAE), which has a network of extension officers (Block Supervisors), who train farmers in water use, as well as in other agricultural practices.
- Local Government Institutions (LGIs) such as Union Parishads (UPs) and Upazila Parishads (UZPs), which lease out and control various water bodies.
- Existing Water Management Organizations (WMOs), which have been formed at various times in the past, and which have varying degrees of activity at the present time.

However, the roles of these local institutions in water management still tend to be minimal, for various reasons. Over the years, both government officials and community members have learned to expect that the decisions about addressing water management problems will be made by the centre. An important part of the purpose of the IPSWAM Program is to find ways of changing these expectations and assumptions.

A number of activities have to be carried out to achieve a sustainable, effective local water management framework:

- *Figure*

3.4

- Effective Water Management Organizations (WMOs) have to be created and strengthened, and their water management capacities have to be enhanced.
- The capacities of local offices of the BWDB and other local level institutions need to be developed, so they can effectively support participatory water management
- Women stakeholders need to be empowered and their capacities enhanced, to enable them to participate in local institutions in ways which address their needs and interests.
- Appropriate policies for long-term, sustainable operation need to be developed jointly by the different local institutions.

A careful study of previous experiences has identified a number of key issues. Clear programme objectives and a clear definition of the participants are essential. Similarly, initiatives which lack appropriate participation of local stakeholders are not sustainable.

Neglecting existing, often informal, groups is detrimental to success. And there is a need to move away from the previous tendency of favouring high technology solutions, which are usually under centralised direction.

If solutions to water management problems are to be successfully maintained by community members, those community members must be able to participate in all stages of project planning and implementation. In order for that to be possible, local institutions must be developed and empowered. Local level institutions often have more practical wisdom than is generally recognized by officials and their proposed solutions are worth considering carefully, because they tend to be lower in cost and easier to maintain than high technology infrastructure.

There are serious concerns about the excessive costs and bureaucratic delays which often arise when cooperatives try to become registered. There are advantages to registration in terms of transferring local resources to the WMOs. However, there are also disadvantages in terms of the time and money required and frequently perceived lack of benefits.

Water management activities are often hampered by lack of coordination among District, Upazilla and Union level institutions. For example, the ADC Revenue, Upazila Nirbahi Officer (UNO) and UP Chairman each have authority for leasing out different sizes of water bodies. Officially, they are not required to consult each other before making these decisions, but if they do not, this can cause serious complications for water management in the polder. This demonstrates the need for community members, government and technical experts to work together and achieve successful means of communication.

Women and men benefit differently from water management, so they must both be able to influence decision-making within water management organizations. It must not be assumed that leaders of communities, WMOs or even the male heads of families will fairly distribute the benefits of water management, unless there is clear accountability at all times.

Exercising too much pressure on WMOs and handing over responsibilities prematurely can be counterproductive, so appropriate and timely capacity enhancement is important.

Practical, neutral meeting facilities are needed for stakeholder meetings. It is best if such facilities are created with many stakeholders' contributions, in order not to create obligations to a few elite people.

WMOs should be enabled to operate Income Generating Activities (IGAs), in order to have additional sources of income for their members.

Several overall guiding principles have been established as follows.

All members of the central and zonal Planning Teams need to develop a common vision through shared development and training, so that they can work together most effectively. At present, there is still a need to develop horizontal transparency between BWDB and other agencies operating at the local level.

Participation of the stakeholders in the development process, to ensure that their needs are adequately addressed, is a prerequisite in order to foster people's ownership of the programme and to make its benefits sustainable. This will have the following benefits:

- Community participation in the planning process will mean that local preferences and priorities will guide the choice of interventions.
- Participation in the design stage will enable engineers to benefit from local stakeholders' extensive knowledge of local conditions and traditional practices.
- Participation in implementation will enable poor people to have access to employment benefits generated by the project, and will produce increased assurance of high quality work, because of accountability to stakeholders who live on site.
- Participation in operation and maintenance can result in a reduction in Government financial costs and more cost-effective maintenance.
- Participation at all stages will foster a sense of ownership, which is a major factor in ensuring sustainability.

The IPSWAM approach to local level institutional development follows the framework outlined in the GPWM and a legal and regulatory framework for WMOs will be established jointly with local communities using the successful experience of other projects (e.g KJDRP, CDSP etc.). Women's rights to participate equally in decision making is clearly recognized as is their right to gain appropriate amounts of the employment generated by water management activities.

In drainage and flood control schemes, rights to participate will not be directly linked to land ownership, because all residents have a stake in effective water management.

A good working relationship will be established between BWDB and the Cooperative Department, possibly through a memorandum of understanding to clarify methods of collaboration.

A five stage outline methodology has been established.

Stage 1: The experiences of previous and continuing water resources management projects have been reviewed in detail, with lessons learned from the strengths and the weaknesses of their approaches.

Stage 2: Initial meetings are being held with BWDB local officials and relevant LGIs, to learn from their past experiences and agree on how they can appropriately be involved in participatory water management.

Stage 3: Through participatory exercises, local staff of BWDB, LGIs and WMOs, as they are formed, will be enabled to identify and prioritize local water management problems, explore possible solutions, and agree on basic plans of action.

Stage 4: Appropriate training will be provided to BWDB staff, LGIs and community members to enable them to support and work with effective WMOs.¹⁶ Awareness raising meetings and training will be provided to train BWDB staff, LGIs and other stakeholders to encourage women to participate actively in their meetings and other activities. Existing policies in gender, environment and water management and their implications for local people will be clearly explained.

Stage 5: Agreement will be reached among WMOs, BWDB and Local Government Institutions (LGIs) at the Union, Upazila and District levels regarding their distribution of responsibilities, plans for working together and the appropriate means of communication among these stakeholders. Written agreements will be drawn up regarding the rights and responsibilities of all stakeholders in the implementation and monitoring of the agreed water management processes and actions.

Finally, with the experiences of previous water management projects as a background, the lessons learned during the phase of IPSWAM activity will be reviewed in a concept paper. This paper will facilitate preparation of future plans and training modules, as well as serving as a resource to enable other programs and organizations to begin learning from IPSWAM's experience. The concept paper will take into consideration the general (social and resources) environment in Bangladesh, as well as the constraints of the organizations involved, and will be used as a basis for the dissemination of approaches within BWDB discussed in section 3.6.

3.4.2. Multi-disciplinary Participatory Planning

Suitable starting points for considering water resource management planning are the provisions of the NWPo and GPWM, which are clearly multi-disciplinary and participatory in nature. Building on existing experience, the approach includes giving special attention to the poverty alleviation objective of water management,¹⁷ to a comprehensive environmental assessment of the existing water management situation and to the involvement of women and of non-land owning categories of the population (landless farmers, fishermen) in assessment, identification, planning, implementation, operation and maintenance.

IPSWAM's approach embodies environmental aspects in both a participatory and gender sensitive manner. It also makes use of the results of existing analyses and studies already carried out by BWDB for Polders 22, 43/2A and 43/2E. The adaptation of this approach for planning sub-projects is described in section 4.3, below. The approach includes the following for all new sub-projects (polders).

- The provision of zoning strategies based upon ecosystem features and land uses (existing and future) for each polder, through the establishment of a comprehensive, mapped information base to facilitate consensus for establishment of a strategic zoning system. This will safeguard the structure and functioning of the polder ecosystem, sustain multiple uses, and be used for sharing knowledge for participatory planning and implementation. Specifically hydrological units will be identified and institutional arrangements established for their management.
- The preparation of Environmental Impact Assessments (EIAs) and Social Impact Assessments (SIAs) incorporating feasibility studies, as well as Environmental Management Plans (EMPs), which harmonise ecosystem features and land uses (existing

¹⁶ For more detail on WMO institutional development see Chapter 4.

¹⁷ Although poverty alleviation is not specified in the IPSWAM programme objectives, it is nevertheless an important overall policy objectives of GoB and therefore deserves inclusion here (see sections 2.5 and 4.6).

and future) to achieve sustainability. The preparation of guidelines, manuals and training material for participatory planning based upon experience in the Polders 22, 43/2A and 43/2E for adaptation and replication of EIA and EMP for six other polders in particular and for all polders in general.

- The provision of training directed at capacity building in relevant institutions, including BWDB and WMOs, aimed at adequate sharing of responsibility and resources (decentralization of power) to enable implementation of EMPs at the polder level.
- The facilitation of poverty reduction, through increased land and water productivity, as a parallel outcome of environmental management; also support for the organization of landless and marginalized people to safeguard their benefits from this process.

Early marriage is a general feature of the Bangladeshi rural population. In the sub-project polders the average ages are – women: 15 years; men: 20 years. The youthful population could benefit from early introduction to aspects of environmental management of which water is the foundation. The promotion of the participation of teachers and the school-going population in activities linked to environmental management could assist the youths in understanding the integrated nature of ‘water issues’ they would face as adults. Thus, the promotion of the participation of teachers and the school-going population in activities linked to environmental management.

Numerous evaluation reports¹⁸ conclude that participation is key to sustainable management of water resources. Additionally there is a consensus for a shift from ‘water management project planning’, to ‘integrated water resources planning’ incorporating multiple uses and functions of water, and harmonization and integration within a wider regional context. More specific lessons that emerged include the need to:

- Safeguard existing increases in agricultural productivity.
- Reverse the income inequalities that stemmed from previous interventions.
- Improve the quality of engineering interventions by ensuring local participation in planning, operation and maintenance.
- Enhance irrigation potential.
- Minimize conflict among multiple uses of resources by addressing ecology and environment.
- Provide bargaining power (group political power) to disadvantaged and vulnerable members of the local population.
- Strengthen the cascade of institutions from the national level to WMGs to translate the NWPo and associated guidelines into action.
- Establish mechanisms for dissemination of knowledge gained to all participants in integrated water resources management, in order to influence policy and to facilitate institutional ownership.
- Divide responsibilities among the various levels and agencies, redefine mandates and authority and promote mutual accountability.

These are all being taken into account in preparing the planning approach.

Legitimacy will be incorporated in the planning approach by including the following attributes:

¹⁸ For example, those of EIP, SRP, CPP, DDP and KJDRP.

Development opportunity: ensure that optimal use is made of opportunities available at each site to contribute to economic growth and human wellbeing (agriculture, fishery, agro-forestry, irrigation infrastructure, etc.).

Externalities: anticipate and prevent adverse economic and environmental side effects of development activity by ensuring that all costs are borne by the implementation and operation process and that they are not imposed upon members of society who do not directly benefit (pollution by agro-chemicals, depletion of fishery etc.).

Equity: provide a fair share of economic benefit to the poorest and most vulnerable members of the polder community.

The only approach, which enables legitimacy to be provided to a plan, is multi-disciplinary participatory planning. In this approach an opportunity is provided in the relationship between government agencies and WMOs for open and equal access to technical information and knowledge, and for representatives from one discipline to question propositions from others. To support high quality and effective participation, special attention shall be given to the establishment of a uniform information base that can be accessed at all levels of planning, from the central government agency to the WMO.

The three Planning Studies done by DP III provide valuable information for the three Polders 43/2A; 43/2E and 22. For active use in participatory planning, it may be made accessible to all the participants through presentation in maps. Mapped information is the type that is most useful and understandable from an ecological as well as a developmental (land use) standpoint. This information is highly amenable to discussion and analysis with populations familiar with the local terrain. These populations generally operate on the basis of mental maps on which actual experience is superimposed from memory. With appropriate training the gap between mental maps and graphic maps will be bridged. The spatial dimension will be enriched by analysis of changes which have been experienced over time, through facilitated discussion. The training component of IPSWAM shall give particular attention to maps and their relevance to planning.

Initially, polders 22, 43/2A and 43/2E constitute the ecological and economic planning units. Planning shall give consideration to their physical, biological, socio-economic and environmental aspects. These are given in appropriate detail in the guidelines for environmental assessment (under preparation). Planning for the polders shall be subsumed within the greater hydrological units of which they are part, thereby giving consideration to the inter-relationship with upstream activity and downstream impacts. The boundaries and parameters of the regional hydrological units shall be established in consultation with the relevant institutional partners, especially WARPO. The regional hydrological units shall include clusters of interrelated and interacting polders. Planning for the units (polders) will provide adequate consideration to related policies and decisions. This will be achieved through the Chief Planning, BWDB who is in a position to facilitate entry to the regional context. The formalization of regional integration will be achieved by way of the District Coordinating Committee of which the local BWDB Executive Engineer is a member. In this manner the regional/cross sectoral issues such as health, transportation, fisheries, private sector development, agriculture and transportation shall be integrated with IPSWAM's primary focus on participatory water management.

Planning in the polders shall be most meaningful if the land units are defined on the basis of catchments. Participating resource users are generally sensitive to the factors that influence the hydrology of the catchments within which they live. Their economic interests, for instance in regard to agriculture and fishery, are linked to the levels (quantity) and quality of water received. Their interest in participation in water management is also proportionate to the manner in which the land units capture such experience. The meaning and content of transfer of management responsibility for assets from the BWDB to the appropriate WMOs shall therefore take this into

account. The Khulna-Jessore Drainage Rehabilitation Project (KJDRP) revealed that sizeable investments are made by local populations after improving water management. Particularly important is the rapid expansion of the so-called “gher”, a combined rice and fish cultivation system (sometimes also including tree production), which appears to be the most productive and profitable use of the land available to people under certain conditions. The confidence people have gained in controlling water levels is paramount for such a positive and rapid change. This confidence in the KJDRP project area appears to be based on the control the local organisations (WMOs) have over water levels by operating their own system. Their self-confidence is strengthened by the supportive relationship with the BWDB.

This example illustrates that present water management problems resulting in damage (either to standing crops, or in the form of lost opportunities), can be turned around by establishing clarity in relations between the BWDB and the organised water users (WMO), and by transferring complete control over the lower level water management system to the water user’s organisations (WMOs).

Present water management problems in the IPSWAM polders may therefore be taken as an opportunity to create institutional arrangements, involving “water user organisations with clear jurisdiction and control over water management at their local level, in interaction with the BWDB (which manages the higher level)”. Problems in water management can also be taken as an opportunity to provide more appropriate infrastructure. For a more detailed analysis see Sections 4.4 and 4.5.

The following methodology is proposed, and is being developed in a specific Technical Report:

Planning shall include socio-economic (power relationship), ecological and land use impact analyses. The output of these analyses shall be expressed in the form of informal and formal maps. The foundation established by an ecological analysis enables progression to the next level, which includes the management of the impact of natural events as well as people’s activity. The power relationship analysis enables identification of the partnerships that need to be formed for dealing with the EIA procedure as well as intended development activity and for identifying beneficiaries. Each planning activity results in specific outputs which contains mapped information. The maps provide a baseline reference for tracking:

- Ecological changes and key linkages.
- Identifying the sources and sites of impacts and inter-relationships.
- Defining the simplest institutional partnership for effective decision making.

The approach of IPSWAM at the polder level for multiple disciplinary participatory planning of sub-projects is given in Section 4.3. The following analyses shall be conducted at the polder level to facilitate participatory planning leading to identification of sub-projects:

- Socio-economic Analysis: Multiple Stakeholders and Diversity of Conflict.
- Ecological (Ecosystem) Analysis.
- Land Use Impact Analysis.
- Fishery Impact Analysis.

Fishery impact analysis shall constitute a significant aspect since fish stocks in the khals and associated wetlands have been severely undermined by polder development resulting in their relative isolation from the rivers from which the early stages immigrated.

The GPWM stipulate that WMOs shall participate in the preparation, operation, monitoring and evaluation of environmental management plans. IPSWAM shall be responsible for capacity building in the WMOs to enable them to fulfill their expected role. Their role in environmental management shall be exercised by way of adherence to appropriate EIA procedure. In this context

the documents recently completed by the Water Management Improvement Project (WMIP), (i) Environmental Management Framework, and (ii) Resettlement Policy Framework shall be given careful consideration.

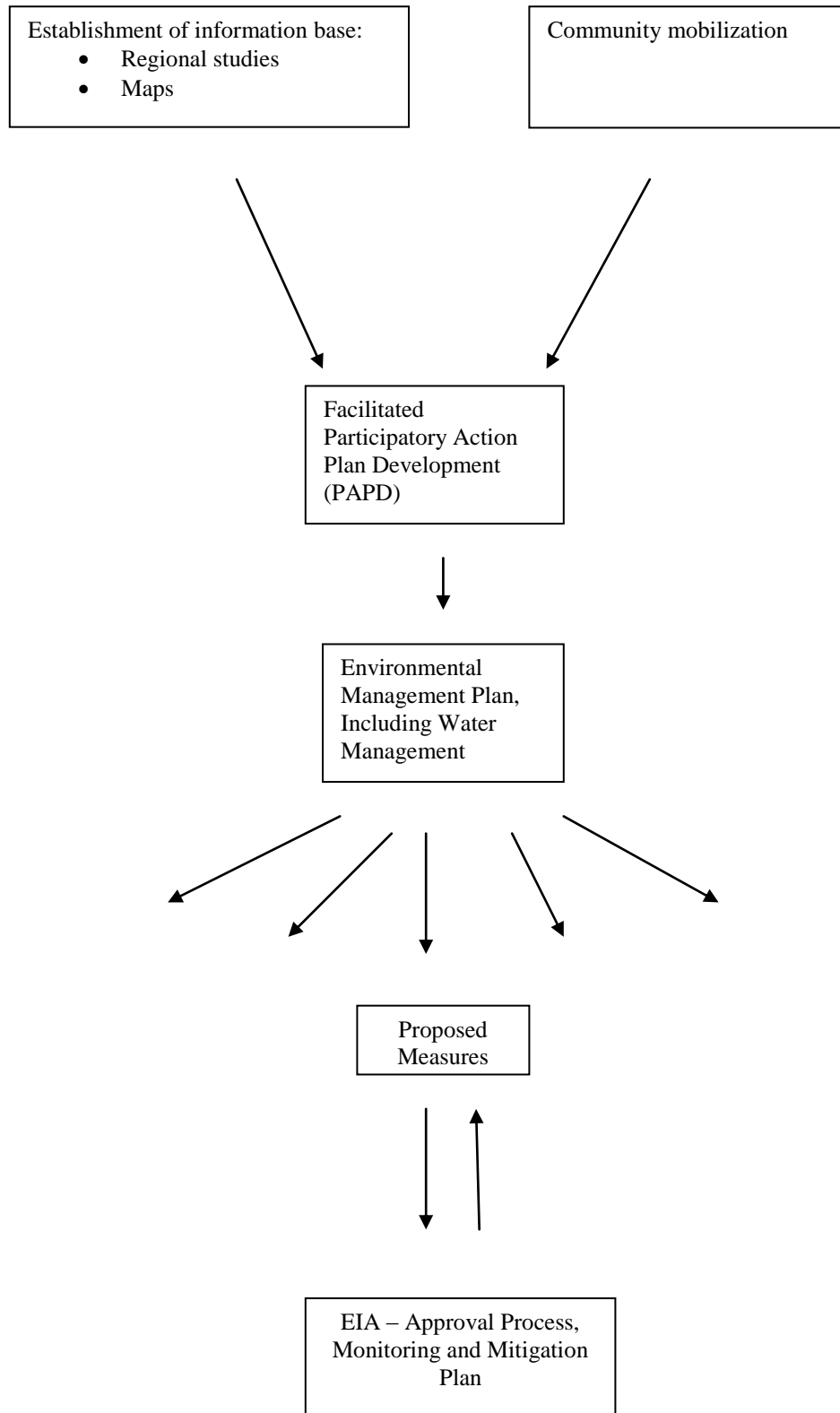
The information brought together by IPSWAM from the studies already done by DP III, preparation of maps and capacity building among stakeholders for participatory water management will result in three plans for environmental management incorporating infrastructure operation and maintenance. It is recognised that a tested methodology for participatory planning: Participatory Action Plan Development (PAPD) is already available with the Center for Natural Resources Study (CNRS). The application of this methodology collaboratively with CNRS is an attractive option. The information base developed by IPSWAM could serve as the foundation for PAPD. The output of PAPD would be a 'Multi-stakeholder Action Plan' for each polder incorporating both the local and regional environmental aspects (figure 3.4.3). The 'participatory action plan' would be an EMP. Other options also shall be considered by IPSWAM.

A range of guidelines for environmental assessment (EA) and environmental impact assessment (EIA) already exist.¹⁹ BWDB/IUCN (2002) prepared guidelines for participatory environmental assessment within the context of the NWPO. These documents are professionally well considered. WARPO/Halcrow (2001) placed their guidelines in the context of the national and international guidelines, the DOE regulatory framework and people's participation as embodied in the GPWM. IPSWAM therefore will adapt and simplify these guidelines in a manner that enables local populations to participate as learning practitioners. Therefore a capacity building component is incorporated, aimed at all categories of stakeholders, both managers and resource users. The overall objective is to enable these stakeholders to share information, knowledge of mutual legal rights and to acquire skill in negotiating adequate compromises to minimize the impact of conflict. This empowerment process is expected eventually to enable the local stakeholders 'to resist imposed change regarded as undesirable and to mobilize resources for bringing about change seen as desirable.'

The difficulty of retaining participation is one of the foremost constraints confronting multi-stakeholder participatory planning. Some participants are paid a monthly salary such as the officers in government agencies. The salary is an incentive proportionate to responsibility, authority and resources placed under the officer's control. The majority in the participatory scenario, however, are compelled to share time among livelihood activity, household duties and participation in a planning process with distant benefits. IPSWAM shall take this into account while encouraging continuous participation, taking of responsibility, authority, and becoming adequately accountable (see Section 4.3).

¹⁹ E.g. BWDB/IUCN; WARPO/Halcrow; DOE; LGED

Figure 3.4.3: Outline of Planning Activities



3.5. Training of Planning Staff

3.5.1. Objectives of the Training

The overall objective of the training is to assist BWDB in its capability building in order to carry out efficiently its defined roles and responsibilities specified in the National Water Policy and the Guidelines for Participatory Water Management. In this context, IPSWAM is working closely with the BWDB's existing training establishment. An important assumption in planning the training is that the BWDB staff who are trained will stay with the programme. Specifically, the training will develop and enhance the knowledge and skills of the planning staff in the:

- Planning and implementation of an integrated water resources management plan using multi-disciplinary approach and participatory methods.
- Organization and strengthening of viable Water Management Organisations for the sustainable operation and maintenance of the polders.
- IPSWAM's objectives, activities, approach and strategies, scope and coverage, and various operational procedures and guidelines;²⁰¹⁹
- Use of various planning tools such as Environmental Impact Assessment, Social Impact Assessment and Gender Mainstreaming;
- Use of Participatory Rapid Appraisal (PRA) or Participatory Action Plan Development (PAPD) tools for the inventory of present water management practices, stakeholder analysis, problem analysis and needs assessment.

3.5.2. Training Needs Assessment

A Training Needs Assessment (TNA) is being conducted in order to develop an appropriate Training Plan for BWDB Planning Staff. Specifically, the functions of the TNA are:

- To provide an opportunity for the Planning Staff to assess their level of competency in relation to their tasks and functions in IPSWAM.
- To identify knowledge and skills gaps which training can help improve.
- To generate realistic data (based on the needs of the planning staff) for the formulation of the Training Plan.
- To provide baseline data for the monitoring and evaluation of training effectiveness and application.

The TNA is being conducted through the administration of a Training Needs Questionnaire (TNQ). Completed TNQs will then be collated and analyzed to identify the types of training

²⁰ Provisional list of IPSWAM procedures and guidelines to be developed is : a) selection of sub-projects for rehabilitation; b) establishment and strengthening of Water Management Organisations; c) establishment of Labor/Landless Contracting Societies and the contracting arrangements; d) formulation and execution of quality control for rehabilitation works; e) formulation and execution of the Implementation Agreement between BWDB and WMOs; f) formulation of operation plans for WMOs; g) By-Laws of WMOs; h) formulation of Annual Maintenance Plan for sub-projects; i) registration procedures for WMOs.

courses needed. The data to be generated from the TNA will help in the formulation of appropriate training design and in the preparation of the Training Plan for IPSWAM.

Another set of TNQs will be administered in early 2005 and 2006 to adjust the Training Plan based on changes and possible shifts in the training needs of the Planning Staff considering their involvement in project implementation during the previous year and the changing demands of the programme. Informal TNAs will be conducted through meetings, observations, discussion with concerned people, and from results of the training monitoring and evaluation system. These will likewise be used in identifying other training needs and in improving training courses to be conducted.

The TNQ will be given to BWDB Planning Staff of DP-III involved in IPSWAM implementation as well as those from the Water Resources Planning Division, Hydrology, Research and Data Base Division and Administrative Branch. Other Staff from DP I and II, as well as staff from the Design Directorates who will be involved in IPSWAM will also complete the TNQ. The results of the TNQ will be analysed and the TNA completed during April 2004.

3.5.3. Training Strategy for Design and Implementation

In designing and conducting the training, the following strategies and guiding principles will be used:

- 1. Formation of a Training Core Group and Training Resource Group at the head office.** Training Core Group (TCG) will be formed within the IPSWAM Planning Team to oversee and decide all matters concerning training. This will be composed of the Project Director, the Team Leader, Executive Engineer, Training Advisor and Training Specialist. To provide a pool of qualified resource speakers and trainers, an inventory of professionals and experts within BWDB, the Technical Assistance Team, relevant institutions within the water resources sector and outside BWDB, is being prepared. This will form the training resource group and will serve as ready reference for training to be conducted.
- 2. Provision of training in support of project activities.** Training will be conducted to prepare the planning staff to perform their roles in relation to the activities to be carried out. Within the project development phases (planning, rehabilitation, and operation and maintenance), specific training courses will be designed to help those involved to performing their tasks efficiently. These training courses can be categorized as technical and non-technical (social, environmental and gender) and will be attended by both technical and non-technical personnel to equip the planning team with a broad understanding of various aspects of water management.
- 3. Training is a continuing process of learning and not a one-shot intervention.** It is built into the implementation phases of the project and will be carried out through formal and informal training, group discussions, focus group discussions, workshops, sharing of experiences, exposure visits, one-to-one discussion and learning by doing.
- 4. Training and application.** The timing of conducting training will take into account that participants need to use and apply what they learned immediately after the training and not several months afterwards when they have already forgotten what they learned. Knowledge and skills gained should be applied and used immediately to maximize the effectiveness of training.
- 5. Training materials** such as manuals, guidelines, hand-outs and visual aids will be developed and improved based on need, usage and effective application. Audio-video

materials, drawings, maps, posters and photographs will be prepared and used for training and awareness raising. These will be archived and kept in the Project library for easy access for other forms of training to be conducted at the head and zonal offices.

Orientation Guidelines for Labour Contracting Societies (LCS) have already been prepared for Zonal Planning Cells, to assist them in training of LCS members for urgent works to be done in the sub-projects (Polders 43/2A and 43/2A).²¹

- 6. Communication and consultation** of IPSWAM training activities will be done with the Chief, Staff Development and Training of BWDB. The capabilities and resources of BWDB Training Directorate will be tapped for the development of training materials and in the conduct of training.
- 7. Use of internal training resources.** To the maximum extent possible, BWDB training centres and facilities, as well as trainers and resource persons from relevant BWDB Directorates and continuing projects will be used for IPSWAM training. Existing training courses, materials, manuals, visual aids will be reviewed for their relevance and application.
- 8. Use of external training institutions.** To address special training needs (such as exposure visits and special courses), coordination will be done with training institutions outside BWDB to further broaden the training resource base.
- 9. Selection of participants** for training will be based on the Institutional Study and the Training Needs Assessment.

3.5.4. Training Methodology

In designing and conducting training courses, appropriate methodologies will be used in order to make the training effective and interesting. Delivery of lectures will be combined with interactive (focus group) discussions and structured learning exercises such as group dynamics, role-playing, simulation and case analysis. Exposure and study visits will be encouraged to learn from actual field experiences and from experiences of other water resources projects. There will also be audio and video presentation, use of drawings, slides, posters, maps and photographs for awareness raising. Drawing contests in primary and secondary schools can be held to disseminate information, create public interest and raise awareness on water related issues.

Training will be done through informal (meetings, group sharing, problem solving exercises) and formal settings (classroom). On-the-job training will be done in the various stages of project implementation as the Planning Team staff acquire knowledge and skills through their involvement in project activities.

Workshops will be organized to share the IPSWAM experience with other Directorates within BWDB, with projects outside BWDB, with other interested government and non-government agencies, with research and training institutions and with representatives from the mass media.

3.5.5. Initial training courses identified

An indicative Training Plan for 5 Years has been prepared but is subject to change, based on the result of Training Needs Assessment and Institutional Analysis Study being conducted. (See

²¹ See section 4.4.3 below for discussion of the urgent works programme.

Annex VI: Indicative Training Plan for 5 Years, and the table given below showing the Provisional Identification of Training Courses).

Provisional Identification of Training Requirements:

Category	Training Courses	Participants
<ul style="list-style-type: none"> • Planning 	<ol style="list-style-type: none"> 1. Participatory Planning and Decision Making 2. National Water Policy and Guidelines for Participatory Water Management 3. Multi-Disciplinary Planning 4. Planning tools (EIA, SIA, Gender Mainstreaming) 5. Computing cost-benefit ratio and IRR 6. Stakeholder Analysis 7. Participatory O&M Planning 	BWDB (DP III, I & II) and 2 Zonal Planning Cells
<ul style="list-style-type: none"> • Operation and Maintenance 	<ol style="list-style-type: none"> 1. Role of Hydrologic Data in Operation 2. Field Surveys for Water Management 3. Principles of Water Management 4. Operation of Water Control Structures 5. Operation and Maintenance 6. On-farm Water Management 	BWDB (DP-I, II, III) staff
<ul style="list-style-type: none"> • Social/Community Organisation 	<ol style="list-style-type: none"> 1. Social Impact Assessment 2. Community Organising and Formation of WMOs 3. Facilitation of Leadership Training for WMOs 4. Conflict Management 5. Role of WMO and LGIs in Water Mgt. 6. Income Generating Activities (IGAs) 7. Local Resource Mobilisation 8. Rules of Cooperative 	(Sociologist, Socio-Economist, Engineers) from DP III, 2 Zonal Planning Cells, WMOs and LGIs)
<ul style="list-style-type: none"> • Gender and Development 	<ol style="list-style-type: none"> 1. Basic Gender Training for BWDB Staff 2. Gender Awareness/Sensitization and why women should be involved in IPSWAM 3. Gender Mainstreaming for Planning 4. Status and legal rights of women in Bangladesh 	(DP I, II and III, 2 Zonal Planning Cells, WMOs and LGIs)
<ul style="list-style-type: none"> • Environment 	<ol style="list-style-type: none"> 1. Map Preparation (ecosystem, impacts, decisions) 2. Environment Impact Assessment (Procedures & Regulations) 3. Zoning 4. GIS 5. Aquaculture 6. Environment Awareness and Conservation 	(BWDB Planning Team, 2 Zonal Planning Cells, WMOs and LGIs)
<ul style="list-style-type: none"> • Water Management 	<ol style="list-style-type: none"> 1. Learning by doing in Water Management (Control of water levels and Lease Maintenance Agreement) 2. Operation of Water Control Structures 3. Operation and Maintenance 4. Sustainable Water Management 	BWDB (DP III, and Zonal Planning Cells, WMOs and LGIs)
<ul style="list-style-type: none"> • MIS 	<ol style="list-style-type: none"> 1. Management Information System 2. Participatory Monitoring and Quality Control 3. Role of BWDB Planning Staff and WMO in Monitoring and Quality Control 	(DP III, 2 Zonal Planning Cells and WMOs)
<ul style="list-style-type: none"> • Management 	<ol style="list-style-type: none"> 1. Leadership 2. Participatory Decision Making 3. Communication and Motivation 4. Counseling, Mentoring, Coaching 	DP III and 2 Zonal Planning Cells
<ul style="list-style-type: none"> • Other Related 	<ol style="list-style-type: none"> 1. Development Concepts 2. Facilitation Skills 3. Crop Production and Protection 	

3.5.6. Training of BWDB Field Staff

Emphasis is being given to the formation of Training Core Groups (TCG) within the two BWDB Zonal Planning Teams in the Southern and South-Western Zones. Each will consist of the Executive Engineer, Deputy Chief Extension Officer, Socio-Economists and Trainer. The Zonal TCGs will oversee implementation and monitoring of training at the Zonal and polder levels. They will also prepare an inventory of resource speakers at the Zonal level, composed of professionals and experts in water resource management and in community organization.

As the people within the polders participate in project activities and training, a training core group at the polder level may be formed depending on the decision of the WMO. The training core group at the polder level will help in the identification of training needs and in over-seeing the implementation of training. They will also be trained to access local training resources and to form linkages with local institutions. It is envisioned, that after project completion, the polder level TCGs will continue to organize relevant training for the WMO.

Training Needs Assessment (TNA) will be conducted for the two Zonal Planning Teams in early 2004, through the administration of a Training Needs Questionnaire. The result of the TNA will be used in the identification of specific training courses to be developed and in the formulation of the Training Plan.²²

3.5.7. Training Monitoring and Evaluation

A Training Monitoring System will be developed to gather data on the type of training conducted, number of participants, date and place conducted, budget and expenses. The annual training program will be used as a basis in developing the monitoring system which will identify training achievements relative to targets.

For training evaluation and follow-up, baseline data will be generated from the Training Needs Assessment (TNA) in terms of training needs relative to the roles and functions to be performed in IPSWAM, and a pre-training knowledge inventory (structured questionnaire) will be administered before the start of any training to assess the existing knowledge and skills of participants.

A post training knowledge inventory will be established using the same structured questionnaire administered at the end of the training to determine the knowledge and skills gained by participants.

For training evaluation, a format will be developed for each training course to be conducted. It will be administered at the end of the training to get feedback from the participants on their assessment of the resource speakers, topics, methodology, hand-outs and visual aids, training facilities and duration. This will be used in improving future courses and training materials.

Finally a Longitudinal Assessment of Training Effectiveness (LATE) will be developed to monitor the participant's change in knowledge and skills acquired from the training and how it is applied. The LATE will be administered on selected training at a specified time after the training (6 and 12 months). Its objectives are: to assess changes in knowledge, skills and attitude of the trainee and how lessons are applied; and to assess the effectiveness of training in terms of content, methodology and application.

3.6. Gender Focus

3.6.1. Institutionalizing Gender

Making gender an integral part of the Project cycle itself alone does not change anything for women if attention to gender factors does not continue in subsequent phases. The results of gender assessment have to be incorporated into planning, and project design adjusted to ensure women's participation and empowerment at all levels.

²² Training Courses identified for the Zonal Planning Teams have been based on information supplied by them and obtained from meetings with the national Planning Team.

BWDB's role is critical for the success of IPSWAM's gender plans. There are three avenues for making progress: build up sufficient knowledge about gender issues; appoint sufficient female staff especially at the field level to promote better communication with women; tackle any resistance within the organization towards gender issues. The process of developing awareness in this case has to begin from the top. The arguments and importance for inclusion of gender should ideally be generated from within the organization itself.

IPSWAM as a whole will formulate concrete proposals to ensure gender mainstreaming and women's participation. Gender mainstreaming aims to provide women with equal opportunities and access to information and knowledge, so that they can participate in project activities just as men do. Because of the various restrictions which exist preventing women from doing so now, efforts will have to be put in to ensure that this actually happens at the field level.

Power relations between men and women play important roles in economic and social development processes and must be taken into account in planning and implementation. Poverty is increasingly becoming a female phenomenon. The perceptions by men and women of roles, responsibilities, rights and control over properties, resources, their bodies, and offspring are very different. Gender characteristics are based on cultural, legal, social, economic and political relations and further, anchored into family relationships. Gender characteristics are not static and are seen to change over time.

3.6.2. Observations from the Field.

During field visits, women were perturbed that no one really wanted to listen to them. Visitors usually talked to men, maybe in wayside teashops, where women do not frequent much, and major decisions and policies were decided based on such assessments. There were also complaints that usually male staff did such interviews and so did not go to households, or that staff came at unsuitable times when they were all busy. Some expressed reluctance to participate in committees fearing, social ostracism and stigma.

Men were confused about why women were suddenly getting attention; they were being consulted more, preference for work was for women, women had to be included on all the committees. They simply could not understand this sudden focus on women. Perhaps, used as they are to getting preferential treatment this deflection of attention is not so welcome.

When gender became fashionable in development projects, it was accepted that something should be included on this topic; it seems to be basically to please donors and attract funds. However, in the projects where women and gender issues were really taken into consideration there have been considerable successes.

Major findings are:

- There are strong and negative cultural and religious norms that do not allow men and women to interact and speak easily to each other.
- There is little or no information sharing between male and female stakeholders even on common matters.
- Most earlier programmes involving women concentrated more on homestead gardening and such narrow issues, perhaps due to the extremely low status of women, which predisposed against their inclusion in other spheres.
- Women's access to technological information and learning is critically limited, which severely handicaps their meaningful participation.

- Gender roles seem to be rigidly defined, where punitive actions and social ostracism appears to play a strong role in deterrence. Both men and women are critical of women who break out of traditional norms.

3.6.3.Challenges of Gender Organization

Women are assumed to be ignorant. As a consequence they cannot be asked or consulted about any thing, because it is supposed that they do not possess any awareness. Such opinions were expressed by men in the presence of women. In such situations it is a challenge to do three major things:

- Raise the awareness levels, information and knowledge among women regarding the project, their implications, benefits and responsibilities.
- Initiate an ice-breaking process into perceived and real divisions and segregation among the sexes, thereby facilitating healthy discussions between and among men and women about aspects of the environment, water management and employment that concern and affect them all so profoundly.
- Through this process generate awareness among both men and women about the necessity to bring about changes in attitudes.

3.6.4.Mainstreaming Gender: Interventions and Strategies:

In IPSWAM women will be provided with equal opportunities and access to information, knowledge, and opportunities to participate in project activities just as men have. Because of the restrictions existing on women in doing so now, efforts will be made to ensure that this actually happens at the field levels.

Inclusion of women in meetings and committees is a start. Their opinions and views are pointedly solicited and given consideration. Previous experiences elsewhere indicate that the posts held by women initially in various committees are usually unimportant ones. Subsequently it is noted that there is growing confidence and women become more assertive in expressing themselves, and get elected to important posts like those of President, Secretary, and Treasurer. Positive discrimination may need to be continued for some more time given the fact that women have been relegated or suppressed for so long. A simple way to streamline trends on gender will be to:

- Understand the basic issues concerned – like identifying male and female tasks; the relationship between homestead and field tasks; how all these works are connected; how each family member contributes to the general well being and income of the household.
- Relate issues and people: relate tasks to individuals; how information is communicated between people, the importance of providing timely information to those who do the task.
- Target improvements in the conditions of women, understanding how the homestead functions, the constraints on women and how these govern their performance and well-being, the technologies women already use; identification of ways to make the homestead more productive and increase income.
- Identify and select methods and technologies, finding suitable alternative ways of working with and for women, which involve women at field level.
- Identify effective ways to disseminate information, so that women can take part in decisions which affect them. Ignorance is a major hindrance to empowerment and development.

3.6.5.Indicators in Gender

It will be necessary to select gender indicators, techniques for gender assessment, to plan short studies and to analyze gender related data. Key indicators could be related to the amount of the

budget allocated for gender aspects: for training, meetings, cross visits, etc., as well as the percentage of women participating in meetings, on committees, in training, and on study tours. Other indicators are the percentage of women obtaining employment in project related work, and employed within the Water Board and Project.

3.6.6. Gender and Training.

A strategy to focus upon is the training for trainers. A do-and-learn, see-and-learn approach has been found to be the best approach, whereby the learning process stays with learners longer. Instead of focusing on women by having only separate training, it may be worth considering involving men also in some such programmes, particularly after the initial ones, so that they do not remain aloof from the aim and concepts of gender equity.

Everywhere, Union Parishads are found to play important roles and have profound impact on the functioning of WMO. It would be advantageous to extend orientation to the Parishad members, especially to women members.

A special training and orientation is also recommended for the members of the WMA to enlighten them on the legal aspects of the groups' rights to local resources and entities.

3.6.7. Conclusions

Experience has shown that wherever women have been actually involved, the outputs of programmes have been positive and sustainability improved. However, gender is not synonymous with women, and men must be involved whenever possible. Gender is not the concern of women *alone*. It must be everyone's concern.

In this context it is important to look more closely at the experiences gained by different projects and draw up plans to incorporate the positive lessons from them. These lessons are being analysed and the analysis will be presented in a forthcoming project technical note.

Efforts are being made to ensure the convergence of the various components of: participation, capacity building, gender issues, and training, in the process of developing decentralization. Awareness campaigns will be carried out to wean peoples' minds away from the habits of waiting for government to solve all problems, even those concerning the improvement of women's status and circumstances.

A project gender focus will emphasise providing equal opportunities and access to relevant information to both men and women, as well as the systematic provision for enabling women's opinions and concerns to be heard and incorporated, along with those of men. This focus will operate at all levels and systematic initiatives will be taken to ensure its sustainability within the BWDB. A clear conceptual basis concerning gender and mainstreaming activities will be established involving all the relevant staff.

To make this possible, gender training and gender sensitization programmes will be incorporated at all levels, on a regular basis, and will include men. Mass media/meetings will be utilized to create a mass awareness of gender issues and on fair trends and practices, highlighting urgent issues. When appropriate, cross visits will be organized to provide better perceptions about how people live and cope in other places, and networks will be established with other agencies with similar objectives, to pool resources, time and plans.

A sufficient number of female field staff will be recruited²³ and monitoring and evaluation will give adequate attention to gender inputs and analysis. The experiences of providing new skills to women will also be investigated, in the context of the increasing unemployment problems faced by women.

3.7. Dissemination of Approaches within BWDB

In order to implement successfully a participatory planning process, the agency responsible for the programme needs to go through a process of internalization of the value of the participatory method in order to develop a sympathetic culture in the organization. This process of internalization involves the staff who are to implement the participatory method as well as the top management, and requires an institutionalization of the working process within the agency (in this case BWDB) to help promote Integrated Planning for Sustainable Water Management.

It is envisaged that the specific approaches to local level institutional development and to participatory multi-disciplinary planning, formulated during the inception period and tested during the initial 3 years of the project²⁴, will be finalized and adapted by the BWDB as its standard mode of operation. As such IPSWAM proposes strengthening the planning skills of BWDB Planning Directorates and also the adoption of the working procedures developed during implementation as a standard mode of operation in BWDB.

IPSWAM is the right programme at the right time. The BWDB is very much in a transformation process. Relevant projects are on the way, and a core programme, the Water Management Improvement Project (WMIP) has been planned, the implementation of which will be started shortly. IPSWAM is in a position to build bridges and to function as a pathfinder. Transfer of knowledge is an essential element in this process and special liaison arrangements will be made. Transfer of knowledge is a two way process within the IPSWAM programme but also when communicating outside.

The following steps are planned for the dissemination of approaches and transfer of knowledge:

First Step:

Dissemination of approaches for developing a participatory planning process particularly to other Planning Directorates (DP-I and DP-II), senior officers of the two Zonal offices and top management of BWDB. This will help to change existing organizational culture and attitudes and will be done by holding discussion meetings and workshops in the first year of the project.

Second and Subsequent Steps:

During implementation IPSWAM will formulate proposals for new or adapted procedures and guidelines for:

- Selection of sub-projects for rehabilitation.
- Detailed operational procedures for establishment and capacity building of WMOs.
- Establishment of LCSs and contracting work to LCSs as a poverty alleviation measure.
- Annual operation and maintenance planning for sub-projects.
- Mechanisms and procedures for the transfer of management responsibilities to WMOs.

²³ This has required some minor changes in the 2004 Work Plan and Budget

²⁴ See Table 5.2

- Registration of WMOs.

During formulation of these procedures and guidelines, professional planning staff of DP-I and DP-II, and other relevant projects will be invited to take part in discussions held by the Planning Teams at DP-III for transfer of knowledge and experience.

In addition workshops will also be held for concluding the different studies conducted by DP-III for IPSWAM. Participants in the workshops will be professionals from all Planning Directorates, from the concerned Design Directorates in BWDB, senior and mid-level officials of BWDB as well as non-BWDB water sector officials.

In addition, there will be a systematic exchange of information with the proposed WMIP, involving mutual consultation on studies, proposals and their relevance to each programme. When the planning approach, guidelines and procedures are finalized and adopted by the BWDB, these will be finally disseminated to all the staff of the planning directorates and related field officials through training and field visits.

Supporting Activities:

This process will be strongly supported by the training programme outlined in section 3.5 and by the production of audio-visual materials demonstrating the multi-disciplinary, participatory process, as well as by field visits for senior staff to meet and interact with those participating in the process.

Contact will be established with existing water management institutions in the Southern and South-Western Zones and their effectiveness monitored. In addition, competitions will be organized to find and publicise best practice among WMOs and the government staff working to support them.

It should not be forgotten that IPSWAM will also take strong and coherent initiatives to disseminate its concepts, the results of its activities and its insights and achievements through other institutions in the water sector and not just in the BWDB.

4. PLANNING AND IMPLEMENTATION IN SUB-PROJECTS

The principles used in planning sub-projects are based upon the objective of IPSWAM (see Chapter 2).²⁵ Strengthening of the capacity of the water sector will be achieved by developing local level water management capability, stimulating the transfer of responsibilities for operation and maintenance to local level water management organizations, and enhancing the planning capacity of BWDB.²⁶ The creation of clear and unambiguous responsibilities, for both the BWDB and the local organizations will be vital for this development. The local organizations must therefore gain control and responsibilities over the infrastructure within their catchments. The desired situation is illustrated below.

Representation of the water management system

<i>Physical sub-system</i>	<i>Social sub-system</i>
Primary infrastructure (canals, rivers, large regulators)	Mandate of BWDB
<i>Interface</i>	<i>Interface</i>
Infrastructure serving areas <5,000 ha	Management by WMOs

In this context ***the best possible control of water levels and quality will be achieved at the lowest possible organizational level.*** Provision for this is made in the NWPo, which states: ‘the management of public water schemes, barring municipal schemes, with command area up to 5000 ha will be gradually made over to local and community organizations and their O&M will be financed through local resources.’

4.1. Selection of Sub-Projects

As part of project preparation, five sub-projects have already been identified, of which three have been investigated in detail²⁷. Further development of criteria for sub-project selection will be carried during the course of the project (see section 3.7 above). At present the following criteria have been suggested by the BWDB:

- Proposed sub-projects should be forwarded by Local Government Institutions or existing Water Management Organizations.
- More than 40% of agricultural land in the project area is owned and/or cultivated by landless share croppers or small or marginal farmers.
- The areas should have relatively simple and well-defined problems, with particular reference to environment, fisheries and river morphology.
- Travel time to and within the area should be reasonable.
- There should be a manageable number of Unions/Upazilas/Districts within the project area.
- There should be no local conflicts (shrimp and salt cultivation) and there should be constructive social institutions and leaders.
- There should be a committed attitude on the part of BWDB staff, NGOs and other local organizations in favour of developing the proposed sub-project.
- There should be a good prospect for the sub-project to have significant positive impacts.

²⁵ ‘Sub-project’ is understood as being a hydrological system, including all its elements (canals, flood protection, regulators or open connections to surrounding rivers, culverts, bridges, etc.)

²⁶ Revised Report of the Committee for Reformulation of the IPSWAM Programme.

²⁷ A review of the studies of sub-projects by DP-III is included in Annex VII

Following these criteria a process has been outlined for developing participatory water management sub-projects (see Figure 4.1). This will be reviewed, simplified and documented during the initial stage of IPSWAM. Final selection of sub-projects will be made by the Chief, Planning BWDB.

Sub-projects to be undertaken by IPSWAM will be in the small/medium categories and the highest level of water management organization within each polder would be a Water Management Association. However, at the same time, during the later stages of the project, it may be desirable to gain experience with the development and functioning of Water Management Federations. This could be achieved by selecting new sub-projects in the immediate vicinity of those already selected, thus forming a larger unit, a “cluster” of sub-projects. The federations would be formed by the WMAs of each sub-projects. Thus experience can be gained at all levels.

Through this means, as well as gaining relevant experience in the creation of, and interaction with Water Management Organizations, the BWDB may begin to assume a new role as specified in the National Water Policy: “higher level” water management of the primary infrastructure (see above), and in particular the rivers around and between the polders.

4.2. Local Level Institutional Development

This area has been broadly covered in Chapter 3; detailed provisions for the IPSWAM sub-projects are discussed below. The current situation is that ideas concerning WMOs have been proposed at various times in the past and have been developed in various contexts; since most of these experiences are fairly recent, sustainability is still to be established.

In practice, in many cases, the only existing WMOs are sluice committees which do not represent all interest groups of the area and/or are not really functional. In the three polders already selected for IPSWAM, there have been some previous attempts to form WMOs, but these are not really in line with the procedures established in the GPWM. Progress shown on paper is as follows:

- Polder 22, twelve village level committees, three sluice committees and twenty-two irrigation inlet committees have been formed.
- In Polder 43/2E, thirteen village level committees and seven sluice committees have been formed and attempts made to form two more village committees.
- In Polder 43/2A, sluice committees were formed for three of the sluices.

It is anticipated that, in the other six polders to be included in IPSWAM, WMOs probably do not exist. Therefore, while existing institutions will certainly form the starting point for WMO development, a new programme of development, drawing on previous experience elsewhere²⁸ is being developed and is outlined below.

4.2.1. Capacity Building in WMOs

The process of WMO capacity building includes:

- Facilitation of stakeholder agreement on appropriate types and roles of WMOs.
- Provision of appropriate training to WMOs in each sub-project.
- Enabling of WMOs to fulfill their roles in water management effectively and sustainably well beyond the limited timeframe of IPSWAM facilitation. This will certainly include WMOs taking initiative to identify and address their water management needs.

A careful analysis of WMO experience from other situations reveals the following.

²⁸ E.g. KJDRP, CDSP, SSCWMP etc.

- Establishing local level organizations which are able to play meaningful roles in the planning, operation and maintenance of water management structures and activities is essential and needs to be envisaged as a long-term process, which needs careful planning and implementation. WMOs will need high quality training to be well prepared to take up their roles.
- In order for the participation of local stakeholders in water resources management to be sustainable, it will be necessary for the local stakeholders to gain access to local natural resources for resource mobilization and other essential management activities.
- Because of the poverty-focus of donor aided projects, many projects tend to avoid involving the non-poor in project activities. However, water management is a subject that requires involvement of all possible stakeholders of the area concerned. Therefore, while making every effort to get representation from the weaker sections of the society in WMOs, landowners and local elite should certainly not be excluded.

The following methodology has been planned:

1. An information campaign will be started, with initial meetings will be held with as many stakeholders as possible, in order adequately to understand previous experiences, the current situations and the various stakeholders' perspectives. This will include an analysis of previous water management efforts in these polders.
2. Meetings will be held with sufficiently large groups of women stakeholders in the polders, to ensure that their perspectives are heard and to enable them to participate actively in the formation and operation of the WMOs, as well as other water management plans and activities.
3. As part of the Participatory Action Plan Development (PAPD), needs assessments will be facilitated/conducted. This will include a review of previous WMOs formed in the polders and agreement reached on what should be retained and what should be changed in regards to previous and future WMOs.
4. Through Participatory Rural Appraisal (part of the PAPD), the relevant stakeholders will be enabled to: identify and prioritize their problems, explore possible solutions, and agree on the basic plan of action.
5. Stakeholders who want to form their own water management organizations (WMOs) will be trained and enabled to revise existing WMOs or create new ones. Agreement will be reached on how the stakeholders may apply the pattern recommended in the GPWM of creating WMOs consisting of Water Management Groups (WMGs) at the village level, and Water Management Associations (WMAs) at the polder level.²⁹ WMA sub-committees may be formed within each WMA, to enable members to address specific local concerns, especially for the definition and operation of water management 'blocks'³⁰.
6. The development of practical operational guidelines and by-laws for WMOs will be facilitated, establishing structures and procedures acceptable to the WMO members (in terms of mandate, membership, governance, codes of conduct, flexibility, registration, etc.).
7. The participation of the WMOs will be facilitated in all the remaining phases of activity: planning, design, implementation, operation and maintenance, monitoring and evaluation. As

²⁹ Potentially a Water Management Federation (WMF) may be developed later at a higher level.

³⁰ See section 4.4.2 for more details of the advantages of block operation for water management.

part of this WMOs will meet regularly with relevant BWDB personnel to review the prioritization of problems previously agreed upon in the community meetings and to make plans on how these problems will be addressed.

8. Agreement will be reached among WMOs, BWDB and Local Government Institutions (LGIs) at the union, upazila and district levels regarding their roles, distribution of responsibilities, plans for working together and the appropriate means of communication among these stakeholders.
9. Training needs of the WMOs and other stakeholders will be assessed and met by the provision of appropriate training to WMO members and other stakeholders in order to develop their sense of ownership and to facilitate the enhancement of appropriate skills.
10. IPSWAM will monitor the progress of the WMOs and will provide additional training and/or guidance when necessary.

4.3. Multi-disciplinary, Participatory Planning in Sub-projects

The most important physical water management problems and institutional short comings in Polders 22, 43/2A and 43/2E have already been identified³¹ and can be summarized as follows:

Identified physical problems and institutional deficiencies in the three IPSWAM polders:

	<u>43/2A</u>	<u>43/2E</u>	<u>22</u>
<i>Physical Problems</i>			
Drainage congestion	X	X	X
Siltation of khals	X	X	X
Insufficient water in khals			X
Water scarcity in dry season	X	X	X
River bank erosion threatening embankment			X
Saline water intrusion			X
Flooding			X
Inadequate flushing through regulators for irrigation to T.Aman crops in medium low, and medium high land			X
Inadequate irrigation to T.Aman in high land	X	X	X
Illegal construction in khals	X		
Disrepair of water management structures	X	X	
<i>Institutional Problems</i>			
Weak WMG and Water Management Village Committee (WMVC)		X	X
WMG/WMVC are not very active	X		
Inadequate Sluice Committees/WMVC/Irrigation Inlet Committees		X	X

Multi-disciplinary, participatory planning in sub-projects will include the validation of problems already identified, and building consensus to establish the ecological/environmental foundation for problem analysis. The validation of problems and solutions shall be carried out with the training and community organization components of IPSWAM.

The establishment of a comprehensive, ecology-sensitive information base for planning is the main focus of this section. Much of the information shall be provided in the form of maps. Three types of complementary informal and formal maps will result from field reconnaissance, consultation with individual community members and from facilitated workshops. Training shall

³¹ See revised Report of the Committee for Reformulation of the IPSWAM Programme and the studies for Polders 22, 43/2A and 43/2E.

be provided to enable understanding of the ecosystem-based approach to addressing environmental requirements.

4.3.1. Socio-economic Analysis: Multiple Stakeholders and Diversity of Conflict

The concept of multi-disciplinary participatory planning immediately evokes a diversity of interests, some of which could be compatible and others, which would be conflicting. It also suggests numerous collaborating partners: the different stakeholders. The GPWM identifies the stakeholders in participatory water management as:

- Water management organizations (WMOs).
- Local government institutions (LGIs).
- Non governmental organizations (NGOs)
- Community level self help groups.
- Private sector service providers.
- Implementing agencies.
- Other public sector agencies.

Local stakeholders are defined as ‘inhabitants of an area who are directly or indirectly affected by water management’. ‘Beneficiaries’ are those inhabitants of the area who are favourably influenced by a water management project. Project affected persons (PAPs) are those who are adversely affected. These may be broadly categorized as “natural resource users and managers”. This definition includes the cascade of managers from the BWDB to the WMOs and the land/water users including landowner farmers, landless farmers, fisherfolk, boatmen, aquaculturists and destitute women whose livelihood is indirectly connected to water management.

Comprehensive recognition of stakeholders for participation in sustainable water management will be derived from participatory rural appraisal as part of PAPD, including an analysis of their roles in decision-making (see below). ***Among stakeholders power is a central attribute of knowledge and vice versa.*** Relevant criteria for identification of stakeholders would include:

- The relative power and interest of each stakeholder.
- The importance and influence they have.
- The multiple ‘hats’ they wear.
- The networks and coalitions to which they belong.

Stakeholder analysis requires the parallel assessment of conflict. Here four types of stakeholders may be recognized:

- Those with claims to legal protection (e.g. landowner farmers).
- Those with political clout (elected representatives in LGIs and in Parliament).
- Those with power to block negotiated agreements (bureaucracies with mandated regulatory power).
- Those with moral claims to public sympathy (the population coming within the ambit of poverty alleviation, the landless, destitute women).

Multiple stakeholders and criteria for participation in planning:

<u>Stakeholder</u>	<u>Legal right</u>	<u>Political clout</u>	<u>Obstruction</u>	<u>Moral claimant</u>	<u>Network member</u>	<u>WMO/ LCS</u>	<u>Other</u>
MP		X					
Chairman/Zilla		X					

Chairman/Upazilla	X				
MoWR		X			
BWDB		X			
Farmers	X				
Tenant farmers			X	X	X
Fisherfolk				X	X
Destitute women			X		X
Boat people				X	
Landless			X		
Leaders/school principal					X
NGOs					X
Other					X

Planning acquires relevance to the extent that stakeholder analysis provides all that which participants in the planning process need to understand each other within the decision-making context. Otherwise, conflict which can be constructive may dissipate into frustration, or even escalate into violence.

4.3.2. Ecological (Ecosystem) Analysis

The lands inside the three polders 22, 43/2A and 43/2E have been largely isolated from the hydro-morphological processes that created them, after construction of embankments. Interaction with the surrounding hydrology is restricted to the connections provided by sluices and inlets. Therefore these polders yield themselves to analysis as ecosystems.

An ecosystem is composed of its interacting non-living (physical) and living (biological) components including the human population. Since the parts composing an ecosystem interact, any change in one part produces reverberations through all the other parts. The magnitude of reverberation varies with the nature of the relationship among parts. The ecological analysis of the polders is based upon four features that characterize all systems (including the human body system or an artificial system such as a clock or an automobile) and seeks to define its structure and functioning:

- **Linkages:** Linkages are of two types, external and internal. The polders are linked to the cyclical weather events and the surrounding hydrology. The proper equilibrium maintains the integrity of a polder. Within a polder, land sub-units exist. Internal linkages, including hydrology, connect the sub-units and maintain their role in the polder ecosystem.
- **Structural Complexity:** The polder ecosystem is composed of interacting parts, sluices, culverts, cultivation areas, khals, homesteads, vegetated banks, among others. These parts are not equally important for the functioning of the ecosystem. The analysis provides for their arrangement in a hierarchy of importance in management.
- **Dynamic Stability:** A polder ecosystem is constantly subject to change, both short term and long term. Some changes are induced by natural events and others by people's activity. Cyclical, short term changes include seasonal rainfall. Polder 22 possesses an even more dynamic situation influenced by daily tides. Others show directional trends such as the progressive increase in complexity of vegetation and associated animals. These changes combine to impart a measure of predictable constancy. However, this combination of change and relative stability provide various land use opportunities.
- **Resilience:** A polder ecosystem has the capability to bounce back from imposed change. However, the cumulative effect of change would also push an existing ecosystem or parts of it past a threshold into one with a different ecological status. This aspect is also associated with opportunities for land use.

Analysis of the polder ecosystems based upon the above features would enable mapping leading to land classification and zoning in four categories:

- Protection Zone/s: Land sub-units which need to be accorded an appropriate status for protection based mainly on biodiversity value.
- Management Zone/s: Land sub-units where regular intervention is required in order to maintain the structure and functioning of the ecosystem.
- Restoration Zone/s: Land sub-units whose existing ecological quality has deteriorated and which require reversal.
- Enrichment Zone/s: Land sub-units whose biodiversity status could be increased by interventions such as social forestry.

Demarcation of restoration and enrichment zones creates an opportunity for local community members to acquire income by participating in appropriate sub-projects.

4.3.3.Land Use Impact Analysis

Environmental management practically involves identification of compromises between human activity and ecological quality. Land use impact analysis has as its initial objective the mapping of land uses in the polders, based upon existing interests and future expectation. This requires consultation with every category of stakeholder relevant to planning.

- Existing Land Use: All existing land uses shall be mapped in keeping with standard criteria. These will include both formal and informal land use practices.
- Impacts: Land uses may provide numerous direct benefits. However, they may at the same time produce adverse consequences. The impact maps will seek to produce an inventory of ‘winners’ and ‘losers’.
- Expectation: The communities in the three polders having lived there for many years would be in a position to identify what they would recognize as desirable changes in their environment with regard to future land use. These changes may occur during short or long time frames. These can be placed on a map (grid map) which the community members would be trained to recognize in reference to known landmarks.

4.3.4.Types of Interventions

Interventions identified by way of multi-disciplinary, participatory planning would include those directly related to water management as well as those that are indirectly linked. This would be the unavoidable consequence of giving consideration to the views of multiple stakeholders. Some sub-projects may be supported by funds from IPSWAM. Financing of others may require exploration of other potential sources, in which case efforts will be made to guide the communities toward alternative sources of funding to support interventions that are indirectly related to water management, in order to avoid the creation of a category of ‘losers’.

4.3.5.Implementation

The implementation of interventions that are directly related to water management, together with the transfer of assets belonging to the BWDB shall be based upon mutually accepted agreements. IPSWAM shall search for available options for encouraging continuous participation, the taking of responsibility, and accountability. Generally, in common property resources management as in the case of participatory water management, the following five aspects will be emphasised:

- **Code of conduct:** a set of explicit rules or by-laws for WMOs.
- **Democratic process:** office bearers and representatives elected at regular intervals.
- **Enforceable penalties:** provisions for enforcing the by-laws.
- **Barrier to free riders:** mechanisms prevent manipulation by persons from outside.

- ***Equalization of benefit:*** mechanisms for ensuring that all groups of water users benefit in a similar manner.

4.3.6. Monitoring and Evaluation, Validation and Policy Implications

Monitoring, evaluation and validation shall be carried out regularly by the WMOs using participatory methodologies. Validation may also be done also by communities in polders which are candidates for replication of IPSWAM's multi-disciplinary, participatory planning approach. The results of such monitoring, evaluation and validation shall be made available to the government agencies for evaluation and adoption of policy implications.

4.4. Plan for Rehabilitation, Operation and Maintenance

4.4.1. Integration and Clarification

During the development of the approach outlined above, a number of specific advantages of an integrated approach have become clear:

The processes of participatory multi-disciplinary planning (including the generation of baseline data) and of WMO formation are closely related and can be carried out simultaneously. At the end of this combined initial process, agreement will be reached between the WMO and BWDB on the details of infrastructure rehabilitation/improvement, and on a long-term operation and maintenance process.

As soon as this agreement is reached, rehabilitation/improvement of infrastructure, as well as arrangements for the establishment of operation and maintenance by the WMOs, should start immediately, and be completed as soon as possible. WMOs should start to take responsibility for water management at the earliest possible stage. It is anticipated that, with the exception of the construction of new sluices (if required), infrastructure rehabilitation/improvement in each sub-project may be completed within one season.

Experience from other relevant projects has shown that resource mobilisation for WMO maintenance of infrastructure may be possible through some or all of the following:

- Mobilisation of voluntary labour of WMO members: often effective for excavating blocked channels, filling gaps in embankments and for regular village level maintenance.
- Cash contributions by WMO members: can be effective if irrigation is involved and the land and farmers benefited are clearly definable.
- Use of common property such as embankments, channels, borrow-pits and acquired land to generate funds for maintenance; such property may be leased to WMOs by BWDB (or other GoB agencies) in return for a commitment to maintain the infrastructure.
- Funds made available by Local Government Institutions (LGIs).

IPSWAM will work with local government, local BWDB staff and with the WMOs to find the most appropriate combination of these measures for each specific sub-project.

It is highly desirable to be able to give WMOs adequate support, in the form of advice and training, and to monitor their effectiveness in the initial period of operation and maintenance. Therefore it is proposed to carry out the multi-disciplinary planning (including the generation of baseline data) and WMO formation in three sub-projects (rather than two) during 2004 and in the remaining three during 2005, thus providing more time for follow-up and monitoring in each area during 2006-8.

4.4.2. Key Issues in Rehabilitation/Improvement, Operation and Maintenance

Careful consideration may be given to the relationship between these three essential activities. It is often assumed that implementation/rehabilitation always should come first, and once construction is complete, maintenance becomes the major concern. Operation rarely appears to be an issue and is perceived of as being very simple: gates should be opened and closed.

Taking a twenty year time perspective (see Chapter 2 above), another approach may be more attractive. This starts from a number of questions:

- What are the water levels?
- Are there people who suffer from drainage problems?
- How much damage is done and can it be prevented?
- How can these water levels be controlled?

To answer these questions it is necessary to look at how the system works, so as to be able to control water levels. Such a 'systems' approach is closely related to the methodology for multi-disciplinary participatory planning described in sections 3.4 and 4.3. People suffer or benefit directly from water levels and not from the presence or absence of construction or O&M budgets. Therefore the water management system may be approached from that perspective: managing water levels, rather than from the perspective of managing construction and maintenance budgets. This means that the conceptual order of priority would be (1) operation, (2) maintenance, (3) implementation.

Operation is defined as: consciously influencing the flow of water to obtain the desired water levels and water quality in a water management system.

The most important instruments in operation are regulators and canal excavation; such instruments can and must be used to manage water levels in the polder.³²

At present effective operation is not possible because:

- All polders are designed with an interconnecting canal network. Influencing water levels in such a flat system is very complex. Actions in any part of the canal network and at any one of the regulators influence the water level of the entire system. Water management could hardly be more difficult. The results are often uncontrolled water levels inside the polder (water logging and shortages).
- Essential water management instruments are lacking. Water levels in the far reaches of the canal network in flat areas, as in the polders, cannot be compared with water levels close to the outlet, or elsewhere, as there are no gauges. This means that it is hardly possible to find the obstructions to the flow of water. It is even harder to find out which would be the easiest and cheapest one to remove, as several alternative solutions would need to be found to do that.³³

Changes to the water management systems are necessary if WMO's are to operate them:

³² It is often assumed that only the regulator and other structures (gated culverts, etc.) are instruments for influencing water levels. However, it is evident that removing or placing an obstruction in a canal also influences the water flow, and especially in flat areas, water levels. Such "canal operation" is therefore to be considered as an instrument in water management.

³³ Significantly, water congestion is often confused with 'low land'. Areas without drainage problems are defined as 'high land'; this is not necessarily the case.

- The water management system should be less complex than the current interconnected polder system.
- WMO's need instruments to monitor the behavior of their system and to locate obstructions.

DP-III has already proposed how the water management system should be made less complex: by creating independent water management blocks³⁴ (units which have only one outlet: an existing regulator). The precise boundaries of such a unit need to be established by the WMO and their size will depend on the capacity of the outlet (the regulator). It is very desirable that the boundaries be made 'water tight', which is important for easy management of the system, so that the water levels can be decided by the people living within each block.

To make it possible for WMOs to manage their water, gauges connected to a standard reference plane, may be installed inside the polder at a number of key locations (to be determined by the WMOs, on the basis of a detailed understanding of why such instruments are needed). In addition to the standard markings, clear reference levels can be painted on each gauge in a block and at the regulator. The difference between a particular reference level and the actual water level can be compared at different gauges so everyone can check if the level at their location is higher (or lower) than the agreed one, and so clearly understand that the situation can be rectified by actions such as removing obstructions, changing sluice operation etc. Another important instrument is a map of the canal network, checked and modified (if necessary by the WMOs).

The organization of WMOs, demarcation of blocks, establishment and gauges, and production of the canal map will all be done as part of the multi-disciplinary planning process (see sections 3.4 and 4.3) and can be followed immediately by improved operation of the system by the WMO. Even if a regulator gate is broken, and rehabilitation is not yet complete, it is probably possible to control the flow of water (by taking out or placing stop logs, or an earthen bund, or by opening or closing the gate). Operation can start from the day the water flow can be influenced through understanding its causes and effects.

The WMOs may find that their worst water management problems can be solved by clearing some obstructions in (one of) their canal(s). Such an obstruction must be removed. It may be all that was needed to provide the required levels throughout the block. Excavating more would not solve any problem, and would therefore be wastage of resources. Bringing all canals back to a design section, therefore may not always be necessary.

WMOs should not only manage water but also silt, which is carried in large amounts by the water in the rivers around the polder. Once constructed, the regulator constricts the flow of water. This implies that the canals will silt up rapidly if tidal water is allowed to flow in and out. Silt management is part of the "water management" responsibility of the WMOs. Certain forms of erosion are related to the way regulators are operated. The tell-tale signs can be seen at each regulator of the polders visited: scour holes at the river and country sides of the regulators. These can become so wide and deep that they can even threaten the stability of the whole structure and are caused by water gushing through the regulator, which is operated in such a way that water can flow in and out with the tide. This form of operation also contributes to siltation in the channels. Preventing erosion is also part of the water management responsibility of the WMOs, and may be much reduced by improved operation of the regulator. However, some people (e.g. fishermen) may have an interest in creating strong currents, and so resolving this issue in an optimal way may be more of an institutional than a technical matter.

³⁴ See the Operation and Maintenance Planning Studies of Polder 22 and Polder 43/2E, 2001.

Maintenance is required to prevent small problems from growing into serious ones. Specifically this involves gauges, regulators, channels and embankment. Self-sustaining participatory embankment maintenance methodologies such as those used in Operation and Maintenance in Bhola (Lease-maintenance) and in KJDRP may be considered. In contrast with some embankment and channel maintenance strategies which perceive embankment and channels as a liability, the lease-maintenance methodology perceives them as assets.

Specific approaches are being developed, to learning from past and continuing experience on these types of arrangements, in order to formulate a sustainable maintenance programme to be implemented under IPSWAM.

Implementation

Planning of implementation will be a participatory process, and its success will depend heavily on the information available to local people, and their understanding of system functioning. These are all core issues for IPSWAM. Ideas and proposals may change and develop with new tools and insights, which reinforces the need to begin effective operation at the earliest possible moment.

4.4.3. Urgent Implementation of Rehabilitation Works

Urgent works are those needed to keep the sub-projects running and/or prevent further deterioration of the system elements before the start of the main rehabilitation in the pre-selected sub-projects (22, 43/2A and 43/2E). These works are being carried out during the inception period and are covered by the Annual Development Plan (ADP) for the financial year 2003-2004. These works include:

- Repair/re-sectioning of badly damaged embankment reaches.
- Prevention of seepage/piping by the side of the structures.
- Repair/rehabilitation of gates.

The urgent works also includes the installation of four water level gauges around polder 43/2A as a part of local level hydrological data collection for converting polder 43/2A from a flood control and drainage sub-project to a flood control, drainage and irrigation sub-project.

4.4.4. Regular Implementation of Rehabilitation Works

The regular implementation works in the sub-projects will include repair, reconstruction and construction of the critical and non-critical system elements and removal/inactivation of the redundant elements. Critical system elements are those elements that are vital for proper functioning of the sub-projects. These elements include:

- Embankments.
- Sluices and Regulators.
- Irrigation Inlets.
- Drainage Outlets.
- Khals.
- Dykes separating high and low lands.
- Drainage culverts in the interior roads.

Non-critical system elements are those elements that are not vital for functioning of the sub-projects but are supplementary or catalytic to the achievement of the overall sub-project objectives. Non-critical system elements include:

- Internal road links.

- Foot bridges/culverts.
- Hand tube-wells/rainwater collectors.
- Ramps on the embankment slopes.
- Ghats/steps on the embankment slopes.
- Boat landings/crossings.

Redundant system elements are those elements that are not necessary for functioning of the sub-project or have subsequently become non-functional and are involving unnecessary rehabilitation and or operation, maintenance costs without providing any benefit to the sub-project.

4.4.5.Implementation planning process.

The implementation planning is the process of selection, prioritization, scheduling, budgeting, contracting and implementation of the system elements. This will include:

- Consultation with the people/WMOs.
- Separation of low and high areas based on land contours and incorporation of measures for efficient water management,
- Joint identification of critical, non-critical and redundant system elements.
- Joint definition of service/catchment areas for each system element.
- Joint selection and finalization of implementation of critical system elements.
- Justifying implementation of the non-critical system elements.
- Justifying removal/inactivation of the redundant elements.
- Scheduling implementation works, preparation of tentative budgets and ADP.

4.4.6.Implementation of selected works

After completion of the participatory multi-disciplinary planning (including the generation of baseline data) and of WMO formation, the implementation of selected works will include:

- Hydrologic, Hydraulic and Engineering design of selected works by Design Circle-2 and Design Circle-5 (as required).
- Consultation with local people via WMOs and modification, if necessary, to accommodate their concerns within technically and economically appropriate designs.
- Preparation of final designs, drawings.
- Preparation of estimates by the field offices and approval by the relevant authorities, including relevant Chief Engineers and Superintending Engineers.
- Selection of contractors/LCS and work award.
- Fund placement to the field RAC offices.
- Technical training for the WMOs, contractors, LCSs and IPSWAM field team by the IPSWAM planning team and the respective design offices.
- Checking pre-work measurement by the field technical staff and endorsement by IPSWAM Planning Team staff.
- Implementation of works, participatory monitoring and quality control by the WMOs, IPSWAM monitoring group and engineers from the design offices.
- Engineers of respective Design Circles to make field visits during design, implementation, monitoring and quality control phases.
- Post work checking by the IPSWAM planning team.
- Bill payment by the BWDB field offices,
- Submission of bills, including measurement sheets, to the TA Team Leader, IPSWAM, for reimbursement processing.

- Random field checking of measurement sheets, preparation of re-imburement document by IPSWAM planning team and re-imburement by the Team Leader in consultation with the project Director.

4.4.7. Monitoring and Quality Control of Implementation Works.

Monitoring and Quality Control of implementation works is planned to ensure a shift from a traditional, purely technical approach to a participatory one. The people, through their WMOs and LGIs will be involved in the direct on site monitoring and quality control of implementation. The IPSWAM monitoring groups in the field and in Dhaka will provide the necessary technical and administrative support. In this approach contractors and LCSs will also be treated as active members of the implementation team and be provided with necessary support and training with a view to encouraging them to develop a self-motivated urge to achieve a high standard of quality.

The WMOs will be an active part of the monitoring sub-team: if an anomaly is found and not corrected, it will be reported through the Zonal Planning Team to the IPSWAM Planning Team in Dhaka. The Monitoring and Quality Control group in Dhaka will take corrective measures in consultation with the Team Leader and the Project Director.

The IPSWAM Monitoring and Quality Control group in the field will be responsible for regular on site monitoring and quality control and the IPSWAM monitoring group in Dhaka will make occasional field visits to check randomly the progress and quality of implementation work. They shall initiate corrective measures if anomalies are found.

If contractors or LCSs do not respond to the corrective measures initiated by the IPSWAM Dhaka monitoring sub-team, the Dhaka monitoring sub-team, in consultation with the Team Leader and the Project Director, will request the relevant BWDB Division to stop the work.

The Team Leader and the Project Director will also make field visits to ensure the desired progress and quality of works. If anomalies are found, they will instantly stop the work and may ultimately recommend non-reimbursement of bills, if any, paid to the contractor or LCS.

All implementation works shall conform to the BWDB design and technical specifications. Non-conformity or partial conformity may not qualify for reimbursement.

After completion of the implementation works in each sub-project, there will be an evaluation report identifying the strengths and weaknesses of the specific participatory monitoring and quality control process, and recommend measures for improvement. The whole process of implementation monitoring and quality control is discussed in more detail in Annex VI.

4.4.8. Technical Training

Technical training programs will be designed and organized for:

- WMOs.
- Contractors and LCSs.
- IPSWAM Monitoring and Quality Sub-team,

They will cover the following topics:

- Implementation techniques.
- Participatory Monitoring and Quality Control.
- Participatory Operation and Maintenance.
- Reporting on progress and quality of works.
- Evaluation techniques.

4.4.9. Design and installation of gates.

When discussing technical problems faced in Flood Control/Drainage Improvement/Irrigation projects, the malfunctioning of gates and the problems faced with downstream protection of sluices are mentioned over and over again. Not only are the flap and slide gates, with their lifting devices, a permanent source of problems in most of the sluices in Bangladesh, but also the protection of launching aprons which, particularly in the tidal areas, give continuous problems. Although both these elements comprise a relatively small part of the construction costs of sluices, and a negligible part in the overall construction costs of schemes, the malfunctioning of gates can have an enormously negative effect on the hydrologic conditions and agricultural production inside a scheme; the failure of downstream protection may be a threat to structures and does lead to relatively high annual maintenance costs. Some of the reasons are as follows:

Gates:

- Deviation from design during manufacturing.
- Lack of craftsmanship (MEO workshops may be better than private manufacturers).
- Quality of material not up to prescribed standard (plate, bolts, seal, paint) and limited quality control (seals).
- Delayed or no maintenance (greasing, painting).
- Mode of installation.
- Less than optimal design (possibilities for improvement include the use of other materials, “embedding” of flap gates, other devices, protection measures (galvanization) and seals).

Protection work:

- Deviation from the design during construction (improper or no filter; too high levels due to problems faced during construction (lack of, or improper dewatering system); improper building materials (cement; bricks); improper compaction of the foundation base).
- Easily eroding material.
- Difficult construction circumstances.
- Delayed repair after minor damage.
- Scope for improvement of the design.
- ‘Extreme’ regulator operation practices.

Before initiating any regular implementation of rehabilitation works under IPSWAM, an investigation will be carried out covering these issues to label and quantify the shortcomings faced (technical and non-technical, i.e. institutional)³⁵, to analyze the underlying reasons and to propose improvements.³⁶

4.5. Transfer of Water Management Responsibilities

Procedures to transfer operation and maintenance responsibilities to the WMOs as outlined in the NWPo and GPWM will be initiated after carrying out the participatory multi-disciplinary planning and of WMO formation, and will be completed after implementation works are finished.

These include:

Since the WMOs will have been involved in the planning, selection, monitoring and quality control of the implementation works, they will have already shared responsibility for the appropriateness and quality of the work and, therefore, will be in a good position to take up responsibility for operation and maintenance.

³⁵ See also section 3.3 above.

³⁶ See IPSWAM Technical Note No. 1 for detailed discussion.

Nevertheless, BWDB will continue to provide the necessary technical support and monitoring in line with national policy guidelines, and IPSWAM will actively facilitate this.

4.5.1. Transfer Approach Objectives

- To facilitate agreement among stakeholders on the desired distribution of water management responsibilities (in terms of both activities and financial inputs).
- To enable relevant stakeholders to gain the skills and access to resources necessary to carry out their agreed responsibilities.
- To facilitate the execution of those responsibilities in ways which are optimal for the residents of the polders.
- To ensure that activities carried out within this programme are environmentally friendly.

4.5.2. Current Situation

People believe that the government is the owner of the infrastructure and is therefore essentially solely responsible for maintenance of the system and for water management.

Continuing maintenance of structures is a major problem. Some of the structures were not properly designed or built, while other structures have simply deteriorated over time. In either case, because there is no continuous local involvement, operation and maintenance is expensive and often is not done for long periods of time. As a result, many water management structures are now not operating satisfactorily.

Local stakeholders have generally not been adequately trained on how to operate the water control structures. One result of this has been that the structures are often mishandled and damaged. Water resources within polders are sometimes leased out by ADC Revenue, UNO and UP Chairmen and water management is often hampered by a lack of coordination among development agencies.

Polders were designed as complex interconnected multi-outlet systems, which are difficult for WMos to operate, even after training.

In the absence of an agreed community plan or process of local accountability, influential people have often been able to occupy canals and other public resources for their own personal gain, to the detriment of the larger community. In some cases, people with vested personal interests have taken the initiative to operate the water control structures in ways which serve their own interests, but not the interests of the majority of the local stakeholders.

Finally there is a lack of local resource mobilization for maintenance and improvement.

4.5.3. Proposed Methodology

Arrangements to transfer operation and maintenance responsibilities will be guided by the following overall principles:

- Traditional local level initiatives should be carefully assessed, in a participatory manner, so that constructive lessons can be learned and so that their strong points can be built upon.
- Participation of stakeholders in the planning of water management can result in their agreement to assume gradually increasing responsibilities.
- The establishment of blocks for easier operation will be encouraged.

A systematic process will be followed, including:

- Initial orientation meetings and training needs assessments will be held with the local stakeholders to initiate the process of their forming their own WMOs.
- Local stakeholders will be trained/oriented that may become lease-holders of the local infrastructure.
- Agreement will be reached with these WMOs regarding the condition to which any existing structures, canals or embankments must be restored or modified before they will take over responsibility for them.
- The embankments and structures will then be restored or modified to the agreed upon functioning condition.
- The WMOs will be enabled to: identify their rights and responsibilities with respect to water management, confirm their own by-laws, elect their own leaders, identify their own training needs, develop their own action plans, develop appropriate decision-making procedures, jointly agree with BWDB when they will accept responsibility for which aspects of operation and maintenance for which structures and then assume the agreed rights and responsibilities.
- In order to take over the responsibilities of operation and maintenance, the WMOs will:
 - Formulate their own annual operation plans.
 - Develop and implement an appropriate and consistent means of covering, in kind and/or in cash, the required costs (see section 4.4.1 above).
 - Implement these operation plans.
 - Monitor and evaluate the newly built and recently transferred water management structures and processes.

4.6. Poverty Reduction

As explained in section 2.6, the IPSWAM programme will contribute to realizing aspirations for poverty reduction in line with GoB and GoN policies, as follows:

- Improving the operation (and maintenance) of water management infrastructure will protect the gains in agricultural production made by the initial development of the polder infrastructure and make possible further gains through using it more flexibly and productively.
- Organising infrastructure operation through democratic and transparent water management institutions will encourage the development of land-uses which are not only more productive, but also beneficial to the majority of the local population (e.g. paddy-cum-fish, rather than brackish-water prawn monoculture).
- These two factors, taken together, will safeguard and to some extent increase production gains which also increase agricultural labour requirement, thus maintaining or increasing rural employment, which has a direct impact on poverty.
- Measures taken up by WMOs to generate funds for infrastructure maintenance and to improve the environment, such as embankment tree plantation, will be carried out in such a way as to generate employment and income for poorer members of the community.
- Further, the rehabilitation of water management infrastructure will involve considerable employment for the rural poor in different polders during the project period. By channeling as much work as possible to Landless Contracting Societies (LCSs) of both women and men, incomes will be approximately double those of labourers working for contractors.
- LCS members will be encouraged to save, and training will be provided to support them in using these savings for micro-credit and income generating activities. If appropriate, links will be developed with local NGOs able and willing to cooperate with these groups after project completion. These specific activities are targeted on the poorest sections of the sub-project populations.
- WMOs will be encouraged to develop links with other relevant development projects and government departments, to gain access to a range of development initiatives to improve

incomes and living conditions, which will also have a positive impact on poverty reduction.

4.7. Monitoring

An integrated monitoring system will be established for each sub-project, and will be operated jointly by the Zonal Planning Team and the WMO, with active participation from the O&M subdivision and the BWDB Water Management staff. The Dhaka Planning Team will facilitate and provide training for developing the monitoring system and will receive the outputs. The system will include:

- Baseline physical, ecological and social data collected during the planning process.
- Regular updates of simple physical, ecological and social indicators.
- Regular feed-back from the WMO on membership, income, expenditure, problems and activities, especially in relation to operation and maintenance.

A simple Geographical Information System (GIS) will be adapted by the Planning Team for this purpose and the Zonal Planning Teams and WMOs trained in its use. This participatory approach to monitoring will be undertaken with care and detailed provisions for the establishment of the monitoring system will be incorporated in the approach to local level institutional development.

5. PROJECT MANAGEMENT

IPSWAM will be managed jointly by the Director DP-III and the team leader of the TA team.

Although IPSWAM is organisationally situated in DP-III, it will be closely integrated in the broader BWDB organisation. For the execution of the activities in the sub-projects, IPSWAM will work together with the Zonal Offices of the Chief Engineers in the Southern and South-West Zones. At the Headquarter level co-operation will be established with the Design Office and the Chief Staff Development and Training. BWDB management undertakes to assure that effective co-operation will be established between IPSWAM/DP-III and the BWDB offices mentioned in this programme document.

Taking into account the complications of this arrangement and the explicit need to involve other Planning Directorates, Design Directorates, Water Management Directorate, O&M Zones/Circles, MEO etc. in IPSWAM activities, in order to ensure effective coordination, it is strongly recommended to follow the examples of the Coastal Rehabilitation Project (CRP) and WMIP, where the Project Director has been assigned the designation of Additional Chief Engineer.

5.1. Steering Committee and Annual Review Mission.

Because of the wider implications of IPSWAM for the BWDB in the longer term, a Joint Steering Committee will be established, which will be chaired by the Secretary MOWR. Members are:

- High level representatives of the BWDB:
(DG BWDB, ADG Planning, ADG O&M 1, ADG O&M 2).
- DG WARPO.
- Project Director WMIP.
- Representative of Taskforce GPWM
- Chief Engineer LGED.
- A representative of an independent research organization.

Because IPSWAM is a “pathfinder” project, drawing lessons from experience is an important element of project supervision and management. For this purpose Joint Annual Review Missions will be conducted. The missions will review the achievements of the past year, thoroughly appraise the plan of operations for the coming year, and if necessary propose changes in project activities beyond the one year period. The review missions will report to the Joint Steering Committee. The first Annual Review Mission is expected at the end of 2004, and the first meeting of the Joint Steering Committee is planned for mid-2004.

5.2. Implementation Programme

The IPSWAM implementation programme is derived from the logical framework.³⁷ Table 5.1 shows the IPSWAM Outline Plan for 2004-8. Tables 5.2 and 5.3 show detailed plans for:

- Strengthening Planning in BWDB.
- Planning and implementation in selected sub-projects.

³⁷ Defined in the Report of the Committee for Reformulation of the IPSWAM Programme, see Annex IX.

5.3. Project Resources

5.3.1. Contribution of GoB

The contribution of GOB includes:

- the salaries of the staff of DP-III.
- the salaries of the staff of the Zonal Planning Cells.
- part of the operating costs of the DP's and the Zonal Planning Cells.
- a lump sum contribution for purchases.
- a lump sum contribution (of about 16%) for the rehabilitation of each of the 9 sub-projects.
- all maintenance costs, which will be provided from the GOB budget.

The total GoB Contribution will be Tk 25,25,00,000.³⁸

5.3.2. Contribution of GoN

The total GON contribution for the IPSWAM programme includes:

International technical assistance:

- International long-term technical assistance is concentrated in the first two years of the project. From year 3 onwards long term technical assistance will be scaled down.
- International short-term technical assistance includes the expertise required for the institutional study, and for other expertise, such as cost recovery, specific planning techniques, engineering issues, curriculum development and others.

Bangladeshi technical assistance:

- Local short term expertise will be required to assist the expatriate short term experts and for developing and delivering staff training.
- The additional community organisers at scheme level will complement BWDB community organizers (extension overseers) from the Water Management Directorate.
- The remaining costs for the rehabilitation of the 9 sub-projects.

Training, purchase and operation costs.

- Training of stakeholders is based on a training needs estimate of 2 groups for each of the projects, with 3 training sessions per group spread over 3 years.
- The operational costs for DP-III are based on actual data of DP-III.

The total GoN contribution includes:

- A maximum Technical Assistance contribution of EUR 6,619,767.
- A Financial Assistance contribution of EUR 4,541,000.³⁹
- An amount of EUR 204,200 budgeted for Mid-Term and Annual Review Missions.

5.3.3. Contribution of stakeholders

Contributions of the stakeholders in terms of operation and maintenance cannot be quantified as yet. Contributions in labour, materials and/or cash will be quantified as long-term operation and maintenance agreements are developed for each polder.

5.3.4. Disbursement and reimbursement procedures

³⁸ See the Report of the Committee for Reformulation of the IPSWAM Programme for a breakdown.

³⁹ Finalisation of the Financial Assistance agreement is expected shortly.

The following procedures will be followed:

- Tendering and other activities related to implementation⁴⁰ will only start after the:
 - Approval of the implementation plan by the Project Director and TA Team Leader.
 - BWDB budget and work authorization approval.
 - Agreement between BWDB and WMOs on the works to be implemented, and agreement for the WMOs to take management responsibility after completion.
- All BWDB standing procedures on payments, certification of bills and disbursement to contractors will be followed.
- Financial and quality control of reimbursement on behalf of the donor will take place under the responsibility of the TA Team Leader who will report to the Director, DP-III. Copies of the sanctioned estimates will be supplied to the TA Team Leader for review and comment before tendering, and changes in the estimates will require his approval.
- Any increase over the total contractual amount has to be justified by the disbursement officer to the satisfaction of the Director DP-III and the Team Leader before these can be reimbursed.
- For the final bill the TA Team Leader will certify completion of works only after consultation with the stakeholders.⁴¹ After certification of completion the final bill will be returned to the disbursement officer for final payment, with a request to apply for reimbursement after final payment.
- The disbursement officer will request the concerned Regional Accounting Centre (RAC) to prepare the reimbursement bill and submit it to the Director, DP-III, who will send it to the TA Team Leader for endorsement.⁴² The TA Team Leader will scrutinize the claim and return it to the Director DP-III, either endorsing the claimed amount or rejecting the claim with a specification of the reason.
- The endorsed claim will be sent to the Director Finance, BWDB by the Director DP-III for further processing for reimbursement from the GoN.
- The Technical Assistance (TA) budget falls under the responsibility of the TA consultants. An annual external auditing of the TA expenditures is to be agreed upon by GOB and GON. This auditing will be executed by an outside auditing firm approved by the Netherlands Embassy and financed from the TA budget.

5.4. Staffing Schedule

Staffing of the IPSWAM Planning Team and Zonal Planning Teams is given in Table 5.4.⁴³

5.5. Management Cycle

Annual Plans and Budgets are prepared and submitted on the basis of calendar years and reports prepared and submitted every six months. A final report will be submitted on completion of the work. Plans and reports for 2003 have already been submitted and an Annual Plan and Budget for 2004 has been submitted and approved.

⁴⁰ With the exception of the urgent works programme 2003/4, financed by GOB via BWDB and agreed with local people after field consultations.

⁴¹ See Annex VIII for procedures for participatory quality control.

⁴² In line with current practice, VAT will not be reimbursed.

⁴³ In addition to the central Planning Team and Zonal Planning Teams, since the jurisdiction area of one Extension Overseer should be 2500 ha, accordingly the required number of extension overseers will be posted in each polder (as will one male and one female community organizer).