Approaches to Sustainable Wetland Resource Management

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Foreword

Sustainable Environment Management Programme (SEMP) is one of the biggest instruments ever implemented in Bangladesh, fulfilling the obligations of the National Environment Management Action Plan (NEMAP). SEMP consists of 26 components among which two components, namely Community Based *Haor* and Floodplain Resource Management (2.2.1/A and 2.2.1/B) are being implemented by IUCN Bangladesh, in association with Center for Natural Resource Studies (CNRS), Nature Conservation Management (NACOM) and Bangladesh Centre for Advanced Studies (BCAS), since October 1998 in two *haors* and three floodplain areas of Bangladesh.

From the design and formulation phase of the SEMP, it was decided that community based approaches should be adopted for the development of action plans, implementation and overall management under the *haor* and floodplain resource management components. The approach used several Participatory Rural Appraisal (PRA) tools and techniques varying with sites, demographics, resource availability and people's interactions. The project focused on the demand and decision of the community undermining the traditional process of planning and implementation that usually follows top-down approach in project management. Within the scope of the approach, the project integrated local knowledge and beliefs as well as the

proven scientific knowledge as the principal tools to promote involvement of community people as well as to ensure popular ownership of the project. Community people were educated, made aware and motivated to be a part of the ecosystem they live in and interact with on a daily basis for their livelihood. Community based approaches thus purposively incorporated people's ideas for restoration of degraded ecosystems through combined efforts of indigenous and modern ecosystem management.

This approach to project piloting also considered sustainability issues for each and every individual activity while ensuring the participation of the Community Based Organizations formed under the project. This book briefly describes the approaches and methodology for planning, implementation and demonstration of various activities in five different wetland areas in the country.

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Dhaka
December 2005

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The community people being the owner, designer and implementer of the project, provided necessary time and labour for prolific demonstration and sustenance of the activities at the field level. We would like to acknowledge all their efforts aimed at ensuring the success of the project.

We gratefully acknowledge the worthy inputs of the concerned government officials who participated in our workshops and trainings sessions as resource persons, providing technical and administrative backstopping from project commencement to implementation of activities. The Department of Lands, Fisheries, Cooperative, Women Affairs, Forest and other relevant local administrations and government bodies at the *upazila* and district levels cooperated with us with their services for promotion of conservation efforts range from management of *khas* lands to CBOs' registration.

We are grateful to all the field staff of Community Based *Haor* and Floodplain Resource Management Projects who gave cordial effort in implementing the project activities. We are also pleased to acknowledge the efforts of Bangladesh Centre for Advanced Studies (BCAS), Center for Natural Resource Studies (CNRS) and Nature Conservation Management (NACOM), who are implementing the field level activities in association with IUCN Bangladesh.

People from project field to national levels have made efforts to compile this book. Each and every activity has been implemented following the proven tools of community based approach that was consulted at peer level and implemented by the field staff. Eric Lundborg and Sheikh Asaduzzaman made considerable efforts to the printing of this book.

IUCN Bangladesh gratefully recognizes the supports of Syed Marghub Murshed, Mahuzul Islam, Sabihuddin Ahmed, Syed Tanveer Hussain and Shoaib Ahmed who had been working with SEMP as the National Programme Director (NPD). We are also pleased to acknowledge the contributions of Jafar Ahmed Chowdhury, the current NPD and Secretary of Ministry of Environment and Forest that make an enabling situation for smooth operation of projects in the fields.

Programme Management Unit (PMU) as the authority of the SEMP has been administering our projects maintaining a very good relation with us. We have been delighted with their one-stop service whenever we expect from them. To this connection, we would like to acknowledge the support of Mahfuzul Haque, former Programme Coordinator of SEMP. Babar N. Kabir, the current Programme Coordinator has been helping us with his valuable inputs through providing technical and financial services as and when we have sought from them. Among others of PMU, Mamunul Hoque Khan and Mizan R. Khan contributed with their technical inputs that helped us a lot to implement the activities in the fields. IUCN Bangladesh is cordially acknowledging the budget allocation service of PMU that they have made since 1998. We are also thankful to Mahiuddin Ahmed and Chinmoy Mutsuddi of PMU of SEMP for their suggestions and advice for improving the contents of this report.

IUCN Bangladesh received direct and indirect supports from Shireen Kamal Sayeed, Aminul Islam, Tarik-ul-Islam and Shakil Ahmed Ferdousi of UNDP in the areas of project sustainability, proper utilization of fund, and operationalization of Environment Fund for empowering the poor women in the project areas. They have been found very optimistic during extension of successful cases or activities in the extended areas of *haor* and floodplain. The active cooperation of Jorgen Lissner and David Lockwood of UNDP has strengthened us with the additional budget that helped us to extend project tenure from September 2003 to December 2005, so that we have been able to make an end of these components in a sustainable way.

Finally, IUCN Bangladesh gratefully acknowledges the financial support received from the Sustainable Environment Management Programme (SEMP), Ministry of Environment and Forest, Government of the People's Republic of Bangladesh and the UNDP for implementing the Community Based *Haor* and Floodplain Resource Management Projects and publication of this book.

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December 2005

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Abbreviation, Acronyms and Local Terms

Amon	Rice planted before or during the monsoon beginning in July-August and harvested in November
Aus	Rice planted during March-April and harvested during July and August
Baira	A type of hydroponics (floating garden) made by piling up water hyacinth and other aquatic plants in the form of a platform to raise seedlings and cultivate crops
BCAS	Bangladesh Centre for Advanced Studies
Beel	A saucer-shaped depression, which generally retains water all the year around
Boro	Winter rice planted in December-January and harvested before the onset of monsoon in April-May
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CEM	Commission on Ecosystem Management
CNRS	Center for Natural Resource Studies
ECA	Ecologically Critical Area
Ejmali	Common property resources
FAO	Food and Agriculture Organization of the United Nations
FGD	Focused Group Discussion
FRMC	Floodplain Resource Management Committee
GIS	Geographic Information System
GoB	Government of Bangladesh
Haor	A back swamp or bowl-shaped depression located between the natural levees of rivers and may comprise a number of *beels*
HRMC	*Haor* Resource Management Committee
IPM	Integrated Pest Management
IUCN	The World Conservation Union
Kanda	Ridges that are higher than the *haor* basin but lower than homestead land
Khas	Government owned property
Kua	A deeper site in the flat agricultural fields in the floodplain that continues to carry water during dry periods
MEA	Multilateral Environmental Agreement
MoEF	Ministry of Environment and Forest
Mouza	Lowest revenue collection unit. In the 20th century, *mouza* became popularly synonymous with *gram* or village, which is indeed a social unit

NACOM	Nature Conservation Management
NCS	National Conservation Strategy
NEMAP	National Environment Management Action Plan
NRM	Natural Resource Management
PAPD	Participatory Action Plan Development
PRA	Participatory Rural Appraisal
PRM	Participatory Resource Mapping
RRA	Rapid Rural Appraisal
SEMP	Sustainable Environment Management Programme
Thana	The lowest tier of formal administration; literally a police station
ToT	Training of Trainers
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme
UP	Union Parishad or Union Council; the lowest local government unit
Upazila	Previously known as *Thana*; the lowest tier of formal administration
VG	Village Group; Vulnerable Group
VRMC	Village Resource Management Committee
WCS	World Conservation Strategy
WWF	World Wildlife Fund; World Wide Fund for Nature

CHAPTER 1

INTRODUCTION

1.1 Global Environmental Perspectives

Natural resource management is regarded as a major issue in instituting sustainable development of the earth and its living organisms, where man is an integral part of nature. The 1972 United Nations Conference on the Human Environment held in Stockholm discussed development processes and management of the environment. The Conference declared that humans were both members and moulders of their environment, which would give them physical sustenance and afford them the opportunity for intellectual, moral, social and spiritual growth (IUCN/UNEP/WWF, 1991). Through the rapid advancement of science and technology, man has reached a stage where he has the power to transform his environments in neumerous ways and on an unprecedented scale. Both natural and the man-made aspects of man's environment are essential to his well-being as well as the enjoyment of basic human rights. Thus, it is recognized that the protection and improvement of the human environment is a major issue, which affects the well-being of people and economic development throughout the world.

Subsequent to the Stockholm Conference, the World Conservation Strategy (WCS) was formulated by the IUCN in cooperation with the UNEP, WWF, FAO and UNESCO. The WCS emphasized that humanity existed as a part of nature, and therefore, had no future unless nature and natural resources were conserved effectively. It also stated that conservation could not be achieved without development leading to alleviation of poverty and misery of hundreds of millions of people. Highlighting the interdependence of conservation and

development, the WCS for the first time placed emphasis on the description of 'sustainable development'.

Since 1980, the WCS has been tested by the preparation of national and sub-national conservation strategies in over 50 countries. The adoption of environmental development approaches for overall sustainable development created mixed impressions and opinions, and even gave rise to conflicts in different countries. The apparent conflict between the interests of economic development and those of environmental protection has created problems all over the world. To mitigate such conflicts, the United Nations set up an international commission to propose strategies for 'sustainable development' in 1983. Gro Harlem Brundtland, the then Norwegian Prime Minister chaired the Commission. The Commission had a series of private consultations with the leaders, experts, governments and the peoples in different regions of the world and published its milestone report 'Our Common Future' in 1987. One popular perspective on sustainable development draws on the Brundtland Commission's report, which defines sustainable development as 'development that meets the need of the present, without compromising the ability of the future generation to meet its own needs'. This perspective warrants a holistic development and accounts for the six dimensions of human welfare: social, economic, ecological, political, cultural and spiritual, without letting any dimension unduly dominate the others (Habito and Antonio, 2000). It recognizes that each of these dimensions impact one another, and together they determine the quality of human lives. This landmark report helped trigger a wide range of actions, including the UN Earth Summits of 1992 and 2002, the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD) and the worldwide Agenda 21 programmes. Apart from these, the Second World Conservation Strategy Project published the book 'Caring for the Earth - A Strategy for Sustainable Living' in 1991, which aimed at helping improve the condition of the world's people by ensuring sustainable living and integrating conservation and development.

In the recent years, a few other major international events have considerably influenced the global trends and efforts towards environment, conservation and development. The World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 placed sustainable development at the center of the international agenda. One major outcome of the summit was the Johannesburg Declaration on Sustainable Development, which is an expression of renewed political commitment to protect the natural resources and the environment, promote human development, and achieve universal prosperity and peace. The WSSD and the 5th meeting of the Conference of the Parties (COP) to the CBD accepted and endorsed the ecosystem approach recommended by the Commission on Ecosystem Management (CEM) as the preferred vehicle for integrated management of both biotic and abiotic resources that promote conservation and sustainable use in an equitable way. Furthermore, back in 2000, the

leaders of over 180 governments had placed sustainable development at the heart of the global agenda when the United Nations Millennium Summit had adopted the Millennium Development Goals (MDGs), setting targets for poverty reduction and addressing environmental degradation.

While more and more international coordination mechanisms and information sharing systems are being put in place with a view to strengthening the linkages between international bodies, UN agencies, and national governments, it is being increasingly realized that the long-term success of all such mechanisms and systems could be ensured only if it is supported by meaningful and strong local action stemming from the involvement of local stakeholders. We have noticed that, since the 1992 Rio Summit, it has been gradually and widely accepted that sustainable development warrants whole-hearted community participation in practice as well as principle. Agenda 21, the principal product of the Rio Summit, also underscores the importance of the communities and their role in natural resource management in most of its pages. However, the success of policies developed at the international and national levels will largely depend on how well they are understood, interpreted and implemented at the local level.

1.2 Environmental Initiatives in Bangladesh

The Government of Bangladesh (GoB) adopted the World Conservation Strategy in the late 1980s, along with many other countries of the world. That environment is an important component of sustainable development was established in Bangladesh through setting up and commissioning the Ministry of Environment and Forest (MoEF) in 1989. Since its inception, several notable initiatives have been taken by the MoEF to address our environmental problems, including the formulation of the National Conservation Strategy (NCS) which again had provided guidelines for conservation and sustainable use of resources, preparation of the National Environment Policy (1992), preparation of the National Environment Management Action Plan (NEMAP) through a participatory process (1995), enacting the Environmental Protection Act (1995), and the declaration of 1990 as the Year of Environment and the 1990s as the Decade of Environment. The success of the MoEF indicates how environmental considerations began to be seriously weighed and looked into while the policy-makers were reshaping the mainstream development policies of the country. Another breakthrough environmental initiative was the Fourth Five Year Plan (1990-95) that identified the major environmental problems faced by the country. The plan reviewed the past performance of the government in this area, and outlined relevant and appropriate strategies and objectives to improve the environmental situation. It started with aims of controlling environmental pollution and degradation of soil, water and air by promoting environment-friendly activities, preserving the natural resource bases, building capacities and awareness of resource users and

the private sectors, and ensuring people's participation during planning and implementation of environmental activities across the country.

The NEMAP, a driving force for implementing the NCS, evolved as a tool for identifying the key environmental issues, conserving and improving natural resources, checking or reducing environmental degradation, as necessary and possible, promoting sustainable development and generally raising the quality of human life as an integral part of the national poverty alleviation strategy. The NEMAP also emerged as an instrument for achieving the goals described in the GoB's development plans, through identifying the environmental problems and actions for reducing and thwarting the environmental degradation trends. The process also intended benefiting the grassroots, particularly women and ultimately, the entire nation. The United Nations Development Programme (UNDP) as a donor has taken the major role to implement NEMAP, where Canadian International Development Agency (CIDA), the World Bank, United States Agency for International Development (USAID), Asian Development Bank (ADB) and Norwegian Assistance for Development (NORAD) act as the major partners. The MoEF is the supervising agency in the development and implementation of all NEMAP activities.

Following the course of the NEMAP, the MoEF along with the UNDP developed an umbrella programme in 1996 for achieving sustainable development, which was called Sustainable Environment Management Programme (SEMP). Other major follow-up projects of the NEMAP include Bangladesh Environment Management Project (BEMP), project for Strengthening the Department of Environment and preparation of environmental guidelines for Local Government and Engineering Department (LGED) for its development projects. The Ministry of Health and Family Welfare also finalized Bangladesh Health and Environment Action Plan (BHEAP), following the NEMAP process.

1.3 Environmental Concerns in Bangladesh: A Wetland Perspective

Bangladesh boasts enormous and globally famous wetlands. According to the Ramsar definition of wetlands, wetlands comprise about two-third of the country (Khan, 1993). About, 6.7% of the country's total area remains always under water, 21% is deeply flooded (to a height of more than 90 cm) and around 35% experiences shallow inundation (FAO, 1988, in Khan, 1993). The average discharge of water in Bangladesh delta in the flooding season is more than 5 million cusec which actually has helped form rivers, creeks, seasonally inundated floodplains, *haors, beels,* freshwater lakes and estuarine systems including the mangroves.

In the past, the wetlands of the country were considered 'wasteland' as these lands were difficult to use for agricultural or urbanization purposes. It is only during the last 20-25 years

that such popular perspectives have been changing after communities started realizing the enormous benefits of wetlands, that they accommodated huge biological resources, ultimately helping in livelihoods. Wetlands are unique for their rich biological diversity and cultural heritage. Fisheries in Bangladesh provide about 80% of the dietary protein for people, rich or poor. People harvest food, fuel, fibre, fodder, building material and water for irrigation and domestic uses from the wetlands. Various recreational activities such as boat races, swimming, and monsoon folk cultural activities also require wetlands. Wetlands have economic functions for both commercial and non-commercial uses-for people to grow flood tolerant rice paddies, rear fish, collect mollusks, shells, fruits and vegetables from the wetland plants, harvest fodder for their cattle, cultivate winter crops, raise ducks, hunt turtles, collect dried weeds for fuel, trap water birds and navigate. Being a deltaic country, Bangladesh experiences floods quite frequently-during the monsoon, before the monsoon and so on. Healthy wetland ecosystems act as a buffer for floods and reduce livelihood vulnerabilities. The above mentioned benefits play a great role in national revenue earning, accelerate commercial and non-commercial activities, control disasters and reduce poverty.

Though the wetlands seem static, inert and unchanging, they are, in reality, self-destructive ecosystems, which experience a process of transition from being permanently wet to a generally dry environment. Most of the wetlands are doomed to die in the long run. The natural process of change takes place so slowly over such great periods of time that it may seem that nothing much is happening (Khan, 1993). In the recent years, however, degeneration of wetlands has been accelerated due to human interventions. The population of Bangladesh has doubled over the last 35 years and this increasing population has been exerting enormous pressure on the available land mass. Because the population has exceeded the carrying capacity of the ecosystems, the resources are being over-exploited, exacerbating poverty. Poor engineering interventions for irrigation, flood protection, controlling riverbank erosion, and river management led to the degradation of wetlands across the country. Extension of roads as well as new bridges and culverts often impede water flow, aggravate the siltation process and eventually disrupts fish passes for fisheries migration. Bangladesh has high road density resulting in water logging and prolonged flooding as water flows from upstream down to the Bay of Bengal. The engineering activities also destroy the habitats of flora and fauna.

The management of wetlands is lacking in many areas including agriculture, fish production, swamp forest protection, migratory bird conservation and floral resource harvesting. Resource users as well as the concerned government departments are equally nonchalant about 'sustainable management of natural resources'. People in rural Bangladesh have, of late, been exploiting resources without considering the needs of our future generations. This has been happening due to lack of awareness and updated knowledge, prevalence of extreme poverty,

poor policies and weak law enforcement. Hence the awakening of the civil society, NGOs, government and enlightened sections of the community to the impending environmental disaster and their urgent advocacy in favour of rejuvenation of the wetlands and conservation for sustainable development and poverty reduction. After NEMAP and NCS and the current SEMP activities, the GoB is preparing to publish the National Biodiversity Strategy and Action Plan (NBSAP) for effective management and conservation of the environment and biodiversity. Also, wetlands of national significance, which have suffered considerable degradation have been declared Ecologically Critical Areas (ECAs) with a view to urging concerned policy-makers and other stakeholders' adopt measures leading to the restoration of the ecosystems. There are eight ECAs in the country, mostly wetlands. Bangladesh joined global environment and biodiversity conservation forums through signing and ratifying the Convention on Biological Diversity and the Ramsar Convention, making it obligatory for itself to implement the global environment and biodiversity conservation measures at the country level. The Sustainable Environment Management Programme (SEMP) of the Ministry of Environment and Forest and funded by the UNDP emerged from such felt needs.

1.4 Community Based *Haor* and Floodplain Resource Management

The natural resources of Bangladesh contribute considerably in enhancing the incomes of both state and individuals. People who are directly dependent on natural resources for their livelihood often show genuine interest in sustainable management. People who care about only harvesting resources are mainly responsible for habitat degradation and resource depletion. As for the fishery resources, it is commonly found that the non-traditional fishers, especially businessman and politicians are mostly for managing the private and government owned water bodies for obvious reasons, which is only profiteering. The traditional fishermen usually end up managing some small and not-so-profitable water bodies of common ownership or privately owned ponds and like. Similar trends are common with forest resource management. Skewed forest management is causing tremendous degradation through large-scale deforestation and introduction of exotic species to the fragile ecosystem.

SEMP evolved with a view to reversing the poor management of the above natural resources by the government through establishing tested and successful conservation and harvesting modes. SEMP consists of five major sub-programmes, viz. i) Policy and Institution, ii) Participatory Ecosystem Management, iii) Community Based Environmental Sanitation, iv) Awareness and Advocacy, and v) Training and Education. For the implementation of these sub-programmes, there are 26 components to address the main environmental concerns of Bangladesh; 22 selected government, NGO and international organizations are implementing the same.

The Community Based *Haor* Resource Management and Community Based Floodplain

Resource Management projects, under the broad theme of participatory ecosystem management, officially comprising the SEMP Components 2.2.1/A and 2.2.1/B, have been under implementation by IUCN, Bangladesh Country Office since October 1998 with support from the Ministry of Environment and Forest and the UNDP. Three national NGOs experienced in participatory management viz. Bangladesh Centre for Advanced Studies (BCAS), Center for Natural Resource Studies (CNRS) and Nature Conservation Management (NACOM) are assisting IUCN Bangladesh in implementing the above two components in five degraded *haor* and floodplain areas. BCAS is working in the Madhumati Floodplain, CNRS in the *haor* region and NACOM, in the Padma-Jamuna and Brahmaputra- Shitalakshya Floodplains.

While naming the components as Community Based *Haor* and Floodplain Resource Management, it was implied that the local communities of the ecosystems would be considered as the key stakeholders for planning, implementation and management of the wetland resources. Community participation was ensured in all stages of planning as well as implementation of the components. This document aims at providing a brief account of the tools and techniques used for successful piloting of the *haor* and floodplain resource management projects. A collection of literature, consulted during the preparation of the manuscript of this book, is listed in its Bibliography section.

CHAPTER 2

CONCEPT OF COMMUNITY BASED NATURAL RESOURCE MANAGEMENT

To fully understand the functioning of ecosystems and the interdependent relationships of plants, animals and ecological processes, it is very important to link them with the people living in them. An ecosystem is considered dynamic due to the changes it sustains which are caused by natural forces, viz. climate, seasonal cycle, vegetation, rain, sedimentation, erosion, living entities within the food chain, etc. and also by human interventions. Since humans are a part of their ecosystem, the myriad roles of human beings and how human activities affect the natural forces have also been examined. It has been widely realized by now that when people are not considered while management of natural systems are undertaken, any effort towards conserving natural resources might eventually fail. The concept of involving the local communities in ecosystem management is an important element of the approach. Borrini-Feyerabend *et al.* (2000) was extensively consulted while composing this chapter.

2.1 Ecosystem Approach

The livelihoods of people all over the world depend on the goods and services provided by the varied natural ecosystems that have been under increasing pressure stemming from unsustainable use generally and in many instances, outright conversion of the same. In spite of their being the major exploiters of resources, no consideration at all of such roles of the humans was ever taken into account while dealing with the ecosystem approach in the past decades. It has now been known well that both natural processes and human activities happen to shape the diversity and productivity of any ecological system over time. The Commission on Ecosystem Management (CEM) of IUCN promotes the Ecosystem Approach, recognizing humans as a part of

ecosystems, and establishing that humans need to be included for the integrated management of land, water and living resources. The ecosystem approach of the CBD comprises 12 overarching principles and 5 points of operational guidance that promotes conservation and sustainable use of eco-resources in an equitable manner. These principles and operational guidance was endorsed by the 5th Conference of the Parties (COP) to the Convention on Biodiversity (CBD) held in 2000 and therefore needs to be implemented across the world (Smith and Maltby, 2003).

CBD principles for Ecosystem Approach

The following 12 principles (CEM-IUCN, 2005) are complementary and interlinked:

Principle 1: The objectives of management of land, water and living resources are a matter of societal choice.

Principle 2: Management should be decentralised to the lowest appropriate level.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem management programme should:

(a) Reduce those market distortions that adversely affect biological diversity;

(b) Align incentives to promote biodiversity conservation and sustainable use;

(c) Internalise costs and benefits in the given ecosystem to the extent feasible.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Principle 6: Ecosystems must be managed within the limits of their functioning.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Principle 8: Recognising the varying temporal scales and lag-effects that characterise ecosystem processes, objectives for ecosystem management should be set for the long term.

Principle 9: Management must recognise that change is inevitable.

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific, indigenous and local knowledge, innovations and practices.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

2.2 Social Science Viewpoint

The integration of social science information and experience into ecosystem management has been proved important by social scientists and ecologists. Ensuring greater public involvement in the decision-making process results in stronger management policies and implementation strategies. Thus, the managers need to recognize and be aware of the diverse public opinions about various management options and the need to weigh the opinions of all constituents. This means that we must forge partnerships to create opportunities for public participation and work more effectively with diverse groups from local communities, relevant government agencies, and non-government organizations in their attempts to manage ecosystems that happen to cross the land ownership and jurisdictional boundaries.

Furthermore, the integration of social science information, including demographic analyses, population change patterns and distribution into an understanding of ecosystems helps process of making resource management decisions. It also includes analyzing human behavioural and cultural systems to see how resource uses, needs and values differ among communities. This requires examining the social beliefs and values that have evolved from cultural traditions. Finally, it involves incorporating social science research information that might provide an insight into how different social groups or communities form attachments to natural areas, which can, in turn, provide information on how or why certain resource utilization occurs.

2.3 Community Based Natural Resource Management (CBNRM): A Conceptual Framework

CBNRM is an approach of wetland and natural resource management created by, for and with local communities with the objectives of improving livelihood and security of local people, empowering them, and enhancing conservation efforts. Local communities perform NRM activities only when they see tangible benefits, unobstructed access and rights to resources. Sustainable community based wetland resource management (CBWRM) must be based on the indigenous knowledge of local people, their motivation to conserve natural resources and strong local organization to undertake the initiatives.

> Community based management is a pluralist approach to managing natural resources (NRs), incorporating a variety of partners in a variety of roles, generally leading to achieving the end goals of environmental conservation, sustainable use of NRs and the equitable sharing of resource-related benefits and responsibilities (Borrini-Feyerabend *et al.*, 2000).

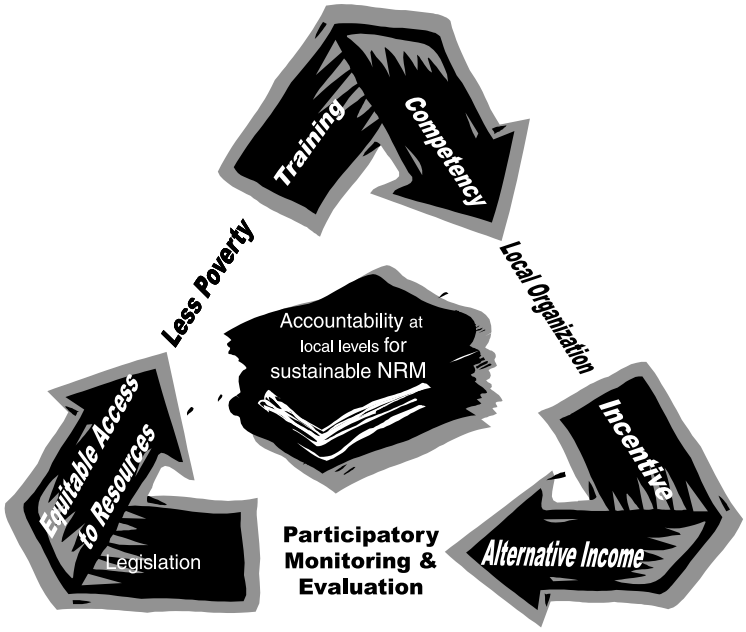


Figure 1: Conceptual Views of Sustainable Natural Resource Management (adapted with modification form Adhikari, 2001)

Next to improving the socio-economic conditions of the local communities, including poverty reduction, CBNRM interventions should have the important goal of assuring a high degree of sustainable use of natural resources. People would be provided with skill development training, incentives to reduce pressure on ecosystem resource bases, effective legislations ensuring equitable access and benefit sharing of natural resources and transparently operating local institutions either by the government or development organizations, leading to setting up a system accountable to the community people at the local level (Figure 1). A participatory monitoring and evaluation mechanism is also a tool through which activities and variables of the CBNRM process are monitored. The community people should operate this tool following a standard protocol agreed upon at the community level. Sustainable ecological and socio-economic use of resources implies a high degree of involvement and active participation of the concerned local populations (Laban, 1993, in Adhikari, 2001). Upon the extent of such involvement and participation will depend how these populations really feel, accept and are able to assume the responsibility and accountability with regard to the protection and management of local natural resources (Adhikari, 2001).

In CBNRM, local communities play the central role in identifying resources, defining development priorities, choosing and adapting technologies and implementing management practices. Various PRA tools are used at the community level for sorting out the identified problems, prioritizing issues, deciding upon the solutions, identifying relevant stakeholders and finally designing the action plan. The CBNRM is a potential development option to address problems related to poverty and environmental degradation. In an ideal situation, community based management ensures

- tangible benefits as products, services or income;
- necessary NRM competency for resource users;
- mainstreaming indigenous knowledge in the management practices;
- equitable access and benefit sharing for the heterogeneous groups of the community;
- rationalise individuals' selfish interests through CBO.

2.4 Important Factors Influencing CBNRM

2.4.1 Adaptive management

Adaptive management is an approach based on the recognition that the management of natural resource is always experimental, that it can be learned from implemented activities, and that the NRM modes can be improved basing on the experience gathered. The adaptive management approach is based on the scientific findings about the natural ecosystems and on field-based experience gained in various environments. The findings help to acknowledge the lack of unequivocal and definitive knowledge of the ways in which ecosystems work and the uncertainty that dominates our interaction with them. The central principle of adaptive management is thus an open, investigative and analytical attitude. Adaptive NRM activities state explicitly what they aim to achieve, specifying indicators and monitoring and evaluation methods; they are modified, as necessary, guided by the information obtained in stages (Holling 1978 and Wilston 1986, in Borrini-Feyerabend *et al.,* 2000).

Adaptive management is a process in which errors or any deviation can be taken care of through learning. Using the adaptive management approach requires a few basic elements including,

- explicit resource management objectives and explicit hypotheses about the ways of achieving them (including monitoring indicators),
- prompt collection of data (monitoring indicators),
- ongoing evaluation of monitoring data and NRM results,
- coherent changes in NRM practice in line with the results obtained and the lessons learned.

2.4.2 Pluralism

Pluralism is a situation in which autonomous and independent (or inter-dependent) groups freely interact and collaborate on natural resource management issues based on different views, interests and entitlements. A pluralist approach focuses on recognizing, acknowledging and involving the various actors, interests, concerns and values that exist in any society with

respect to almost any subject. The project aims at involving different categories of social actors - for example, governmental and non-governmental, groups and private individuals, local communities and outsiders with entitlements to local resources - bearing important complementary capacities for natural resource management.

Local governments, communities, business and other interest groups help set the agenda for human development. They can be partners with central governments in decisions on policies, programmes and projects that directly affect them, their environments and resources on which they depend. Women must be able to participate in these processes and contribute their, often unrecognized, expertise as environmental managers. Schools, businesses, youth organizations, and community groups including environmental NGOs should also be involved. The awareness building process can lead to the emergence of new groups acting for hitherto unexpressed interests.

2.4.3 Governance

Governance is a complex mechanism by which individuals and institutions, both public and private, manage their common concerns. Good governance depends on the legitimacy of the political system and the respect shown by the people for its institutions. It also depends on the capacity of such institutions to respond to problems and to achieve social consensus through agreements and compromise.

Governance:

- is neither a system of rules nor an activity; it is a process
- is not based on domination but on compromise
- involves both private and public actors
- is not necessarily formalized, and is generally based on an ongoing interaction (Smouts, 1998, in Borrini-Feyerabend *et al.,* 2000).

Traditionally, the governance process is established with laws and executed by institutions with the people participating only during implementation of laws, rules and regulations (Figure 2). The imposed rules and regulations are not often respected and then, governance breaks down. To overcome this situation, negotiations between people and legal institutions should be resorted to for establishing laws, rules and regulation. Negotiations will result in the drafting of objectives and management guidelines-cum-authorities followed by adaptation of laws including customary ones.

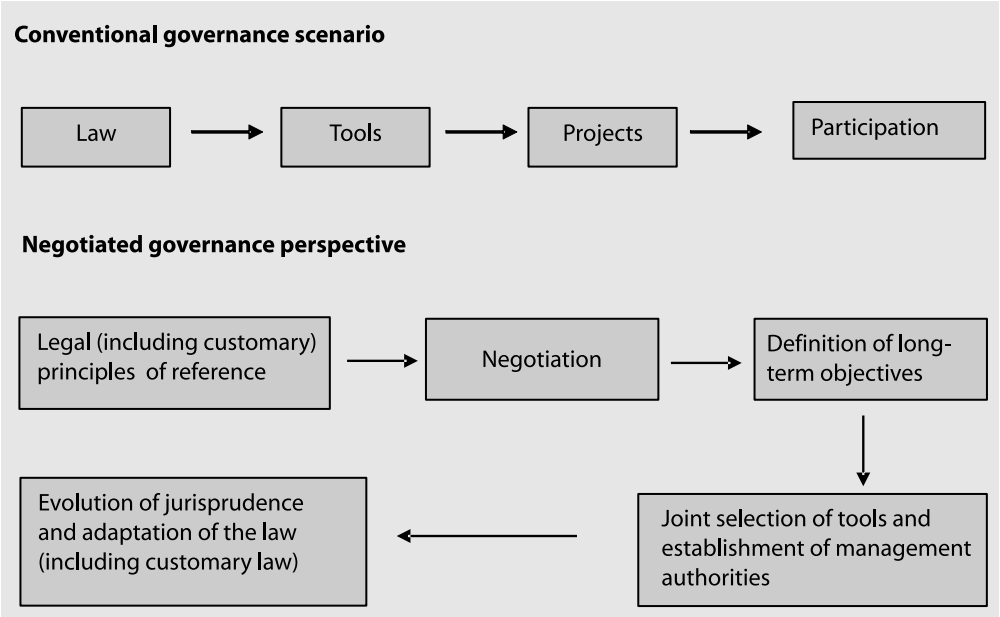


Figure 2: A comparison between conventional and negotiated governance, adapted from Karsenty (1998, in Borrini-Feyerabend *et al.,* 2000)

2.4.4 Conflict Management

Conflict management guides conflicts towards constructive rather than destructive results. Conflict management is a non-violent process that promotes dialogue and negotiation at the community level for CBNRM (Babbit *et al*., 1994, in Borrini-Feyerabend *et al.,* 2000). It implies:

- taking care of disagreements before they generate hostility
- helping the institutional actors to explore a multiplicity of options for agreement and subsequently select an option
- recognising the underlying causes of conflict and intervening, as appropriate, with a view to preventing their recurrence

Modern processes of conflict management are quite close to the processes used to negotiate a co-management agreement. Both express the same values (dialogue, transparency, pluralism, fairness, etc.), have the same main constituents and can be facilitated in a similar way.

Components of modern conflict management approaches include

- the social actors concerned
- a common area of interest and some points of conflict (different values, interests and

needs of various actors involved)

- a forum for negotiation and some basic rules providing a framework for the actors concerned to meet and discuss issues together
- some reliable data on the points of conflict
- various options for action generated by the actors concerned and discussed among themselves
- a written agreement on one of these options
- legitimization of the agreement
- implementation of the agreement.

Conflict could be arising from the following situations that commonly exist in our society during common property management

– One social actor controls another

– One actor gains from prolonging the conflict

– One or several actors have no confidence in the conflict-management process

– Prejudices and stereotypes prevail

– Some authorities and chiefs are stubborn and unwilling to negotiate an agreement

– The national or customary laws, if enforced, ought to help in resolving the conflicts, which is not practiced

Many traditional systems of conflict management known to be yielding effective results based on values, constituents and processes may not apply to the above listed situations. Such culturally distinct or unique situations should be recognized addressed in a sensitive and inclusive manner, which may use a variety of methods and techniques from non-verbal social pressure to trance induction, from chance decisions to linguistic reframing of issues etc. If traditional practices prove sufficient and effective in dealing with the conflicts at hand, they should be preferred. When traditional systems, however, do not suffice and/or when conflicts involve a variety of non-traditional partners, it may be appropriate to consider and weigh the modern approaches as well.

Whenever the conflicts assume serious dimensions and the parties involved stand aloof and hostile, the presence of a facilitator, mediator or arbitrator is highly recommended. A conflict management instructor could also be called upon, whose role though similar, is not the same. Individuals from the community (religious leaders, retired judges, elderly wise men and women, etc.) who are widely respected for their integrity, special characteristics and capacities often play important roles in conflict management.

Facilitators assist only in conducting the process of mitigation, never allowing themselves to be drawn into the arguments.

Mediators act as facilitators, but they also help develop a wide range of options for the parties to discuss and choose from. They help conflicting parties to reach an agreement acceptable to all concerned.

Community member themselves arbitrate conflict mitigation

Arbitrators acting as judges listen to the various parties, review pertinent documents and issue a decision, which is regarded by all concerned as an expert opinion or an obligation to meet.

Instructors help the parties, usually in separate sessions, learn about the elements of conflict management, which the parties should hopefully succeed in applying to resolve the conflictive situations they are faced with subsequently.

2.5 Communication

There is no denying that it is always the people who bring about development and manage natural resources. There can be no change effected for the better without involving the people, mobilizing their capacities and energies and enhancing their knowledge and skills. Communication caters to all these human dimensions and is vital for any activity in which the participation of the local people is envisaged and sought. In addition, effective communication generally has remarkable personal effects, such as raising morale, enhancing the sense of one's own value and dignity, and promoting social solidarity and collaboration.

Objectives of communication generally include information dissemination, awareness raising and training (Chiovoloni, 1996, in Borrini-Feyerabend *et al.,* 2000), which though realizable in an interactive fashion, are more frequently dispensed in a 'top-down' mode, with the 'sender' totally in control of the 'message' to be passed on, and the 'receiver(s)' hardly able to influence it. A rather different but effective communication situation is generated by interactive learning.

The awareness raising meetings with heterogeneous people of the community or any target group, popular folk drama, newsletter, billboard, posters, leaflets etc. enhance their knowledge and awareness level. The approach and the messages are guided and communicated by the communicators (Figure 3). During the training sessions, the receivers are oriented about the contents of the training modules under control of trainers. Very rarely, the trainees can influence the main message that the trainer intends to convey. In the interactive communication process, a common agenda, creating interest among the target recipients, is shared and discussed generating awareness, skills and education for both the sender and receivers.

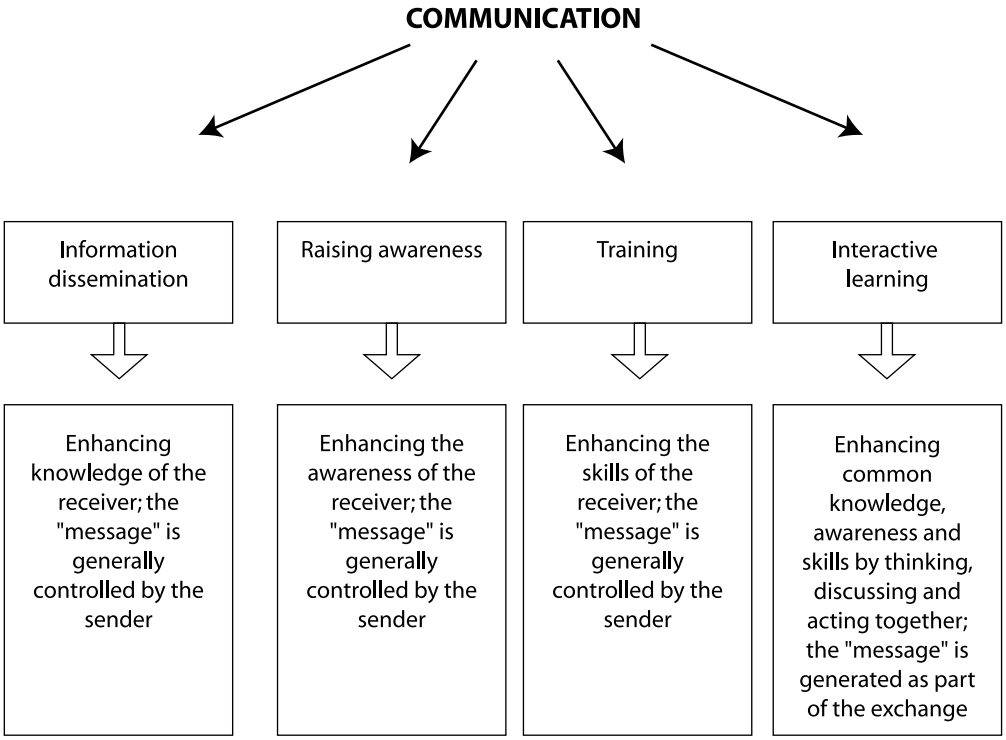


Figure 3: Communication types and their efficiency to reach target receivers (adapted from Borrini-Feyerabend *et al.,* 2000)

Varieties of communication media are used across the world for conveying messages to target people. Selection of media for communication should be based on the target receivers, number of receivers, education or awareness level, types of message, resource availability, etc. Categories of communication media could be

- Traditional (spoken words, writing, theatre, songs),
- Graphic (diagrams, illustrations, pictures, compositions, maps, films), and
- Electronic (videos, audiocassettes, television, radio, internet).

CHAPTER 3

APPROACHES AND METHODOLOGY

Wetlands in Bangladesh are faced with serious crisis caused by exponential degradation and destruction of ecosystem. Of late, this crisis has deepened further, mainly due to unplanned human interventions and reckless exploitation of the natural bounties. For mitigating such crisis effectively, initiatives are necessary for changing people's behaviour. To do so, the first step would be to identify which behaviours are problematic and what type of motivation is needed to inculcate eco-friendly disposition in them.

The overall quality of life of the people living in and around the wetlands is interlinked with the diversity, productivity and quality of the ecosystem of which they are an integral part, meaning that the needs of the people and those of the ecosystem are constantly interacting. Interaction also exists among different groups of people. It is important to study these interactions closely in order to strike a balance between quality of life and strength of the ecosystem, which should help in rendering the above interactions sustainable.

Keeping the above in mind, the Community Based *Haor* and Floodplain Resource Management components of the SEMP have adopted a participatory approach that integrates ecological protection and human needs to strengthen the fundamental connection between economic prosperity and environmental well-being in the *haor* and floodplain environments. This approach provides a network, drawing together the government, the private sectors, public groups and other stakeholders. It is goal-driven and is based on a collaboratively developed vision of desired future conditions that integrates ecological, economic, social and legal factors.

3.1 Community Based *Haor* and Floodplain Resource Management

Historical definitions of an ecosystem excluded human beings. In fact, both natural and anthropogenic processes form and influence the ecosystem dynamics. As an integral part of the ecosystem, humans need to be included at the center of the ecosystem approach for problem sorting and prioritization, finding a solution, feasibility analysis, action plan development, implementation and decision-making.

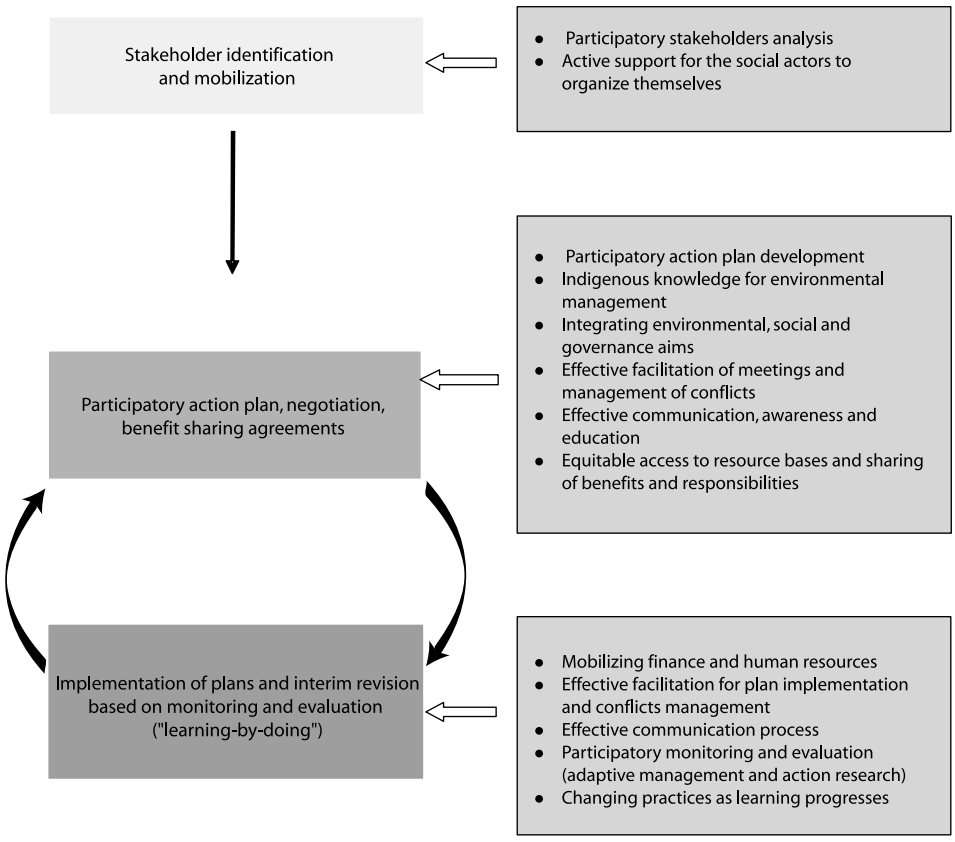


Figure 4: A schematic view of approach to Community Based *Haor* and Floodplain Resource Management (adapted from Borrini-Feyerband *et al.,* 2000)

The project implementation approach is wholly based on the project goals and objectives. The primary function of the Community Based *Haor* and Floodplain Resource Management components of the SEMP is to demonstrate ecologically sustainable *haor* and floodplain

resource management practices that will allow access and benefits to all users, particularly the poor and landless living in the ecosystem. The project activities were implemented on a participatory basis, involving all local resource users and stakeholders through transparent community-based planning, implementation, monitoring and adaptive management (Figure 4). The project staff and designated sociologists have made efforts to obtain people's opinions including indigenous knowledge related to environment management and using them in the process. The stakeholders' participation crossed social, religious and gender barriers. Equal access to skill development, awareness raising and economic benefit resources was ensured. It is expected that the overall success of these community-based interventions, coupled with comprehensive income generating activities will lead to the replication of this approach in other wetlands of the country.

3.2 Conceptual Issues

Sustainable wetland resource development and conservation have been linked together to provide greater livelihood security to the rural poor. The people, particularly the poor, living in the selected wetlands are dependent on the aquatic resources for their food, fodder, fuel, shelter and employment. Therefore, it is essential that these resources be managed with the aim of sustaining them for the well-being of the human population. This project emphasized resource development and conservation through community participation, wherein the local resource users have taken an active role in planning and implementing the project.

In the rural areas of Bangladesh, prevalence of acute differences among the social classes is pronounced. The upper class possessing most assets derived from the natural resource bases are most often unfair and prejudiced while managing the social, political or environmental areas under their control. The unjust and usurping attitudes of the rich and the influential give rise to social conflicts. Communities and individuals, rich or poor, need secure access to the land and other natural resources necessary for their livelihood. Without achieving the basics, people are not likely to be motivated to use resources sustainably. An effective implementation of community based wetland resource management ensures conflict management, good governance, effective participation, and equitable access and benefit sharing.

3.3 Role of Women

In the past, women have always been left out of the development process because those implementing development activities have not been used to taking into account the fact that women and men have, in specific cases, different needs, roles, and levels of access and control over information and natural resource management. These concerns have been identified in the global environmental agreements, especially the Earth Summit, Convention on Biological Diversity (CBD) and World Summit on Sustainable Development (WSSD). The third part of the

Agenda 21 emphasized the role of women in the areas of environment and development (Farzana *et al.,* 2004). Agenda 21 stated that women's abilities need to be strengthened to ensure their participation in the sustainable management of national and international ecosystems, so that further environmental degradation would be prevented. Similarly, the CBD recognized that women play a vital role in the conservation and sustainable use of biological diversity and affirmed the need for full participation of women at all levels of policy-making and implementation of strategies and programmes. The WSSD Plan of Implementation titled "Protecting and Managing Natural Resource Base of Economic and Social Development" called for transferring technology, promoting best practice and supporting capacity building for water and sanitation infrastructure and services development, ensuring that such infrastructure and services meet the needs of the poor and are gender-sensitive. Since the government of Bangladesh signed the Multilateral Environmental Agreements (MEAs), the global perspective of gender must be mainstreamed in our relevant national policies. The Environment Policy of Bangladesh recognizes the role of women in natural resource conservation management, environmental security, decision-making, etc.

The Population Census, 1991 delineates the gender ratio in Bangladesh as 106 males per 100 females (BBS, 2004) i.e. women comprise about 49% of the total population of Bangladesh. Men, however, govern the life patterns of women, especially in rural areas of Bangladesh. Men dominate most institutions, including family, society and the economy, though women do control all the household and unprofessional commercial activities. Based on the contributions of women, life patterns have been changing rapidly in terms of economic and demographic development.

The country's female population not only participates in agricultural and industrial labour, but also shoulders the entire responsibility of cooking, cleaning, collecting firewood and water, and washing at the household level. They are also involved in informal income generating activities such as farming, poultry and cattle raising, vegetable gardening, etc. They often help their husbands through other income earning activities including handloom operation for weaving fabrics, commercial cattle and poultry raising, fish processing and drying, rice husking, handicraft production, etc. Though women contribute substantially to the society, they are not visibly active in the main employment sector. Their voices and participation are not typically encouraged or used in the decision-making and planning stages of development in the country. They do not have equal human rights even though the Constitution of Bangladesh guarantees them equal rights with men.

Like other parts of the country, women comprise about half of the total population in our project areas too. Thus, any development without involving the women will result in failure.

Moreover, women form an integral part of the ecosystem, playing an active role in natural resource extraction. Equal participation of women in the project has been ensured, from planning to implementation, through several measures:

- Increased involvement of the rural women in relevant resource inventories and project planning meetings.
- Enhanced participation of women in the decision-making process for wetland conservation and management of sustainable development.
- Increased involvement of the rural women in resource enhancement and rehabilitation activities.
- Rural women encouraged to participate in conservation training sessions and workshops.
- Increased involvement of women in alternative income generating activities.
- Also, participation of women in project implementation and management in the future will be considered.

3.4 Methods Considered

Participatory methods have been used in planning and managing the field level activities as well as to assess wetland sustainability. The communities have been involved in all stages of environmental action, from setting objectives and designing activities to doing the work and evaluating the results. The basis of participation had been decided to be as broad based as possible, since the very inception of the project, involving all segments of the community, and emphasizing those individual actions that can make a difference. The participatory approach has been widely known to allocate fair consideration to all viewpoints so that reasoned and informed decisions can be reached in a development process. The approach takes all factors into account including people's feelings, sentiments and respect for values. The approach accommodates relevant knowledge and skills and uses all wisdom and assistance with due care and sensitivity. The method ensures maximum community participation in several steps of project implementation (Figure 5):

- Baseline benchmarking of resources in *haor* and floodplain.
- Development of participatory action plans for designing restoration and sustainable management options.
- Exploring indigenous know-how, local beliefs and values for wetland ecosystem conservation .
- Analysis and diagnosis of the prevailing situation in the ecosystem.

- Identification and prioritization of options.
- Implementation of action plan with a view to sustaining community and environmental integrity.
- Sustainable harvesting of natural resources to enhance the livelihood of local communities.

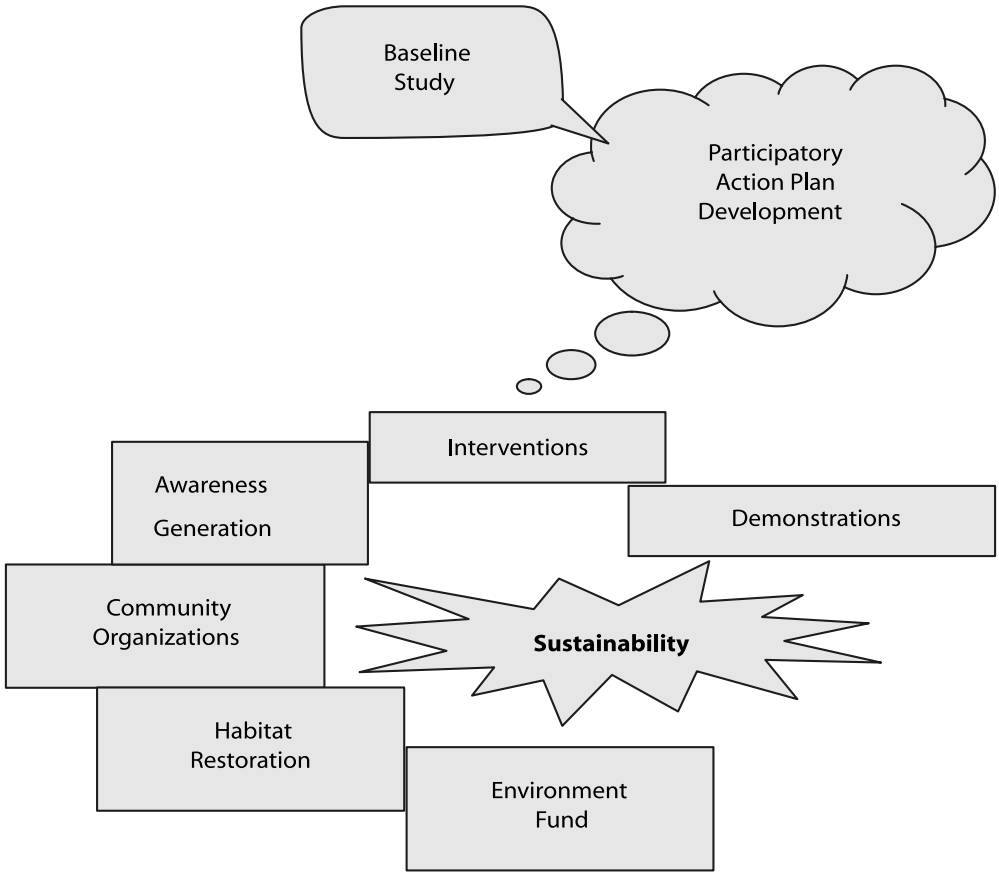


Figure 5: Programmatic approach of the Community Based *Haor* and Floodplain Resource Management projects

3.5 Tools for Project Implementation

It is difficult to reach the grassroots unless appropriate tools are used following the right protocol. There is no denying the fact that the people of the wetland areas of *haor* and floodplain have a very low awareness and education level. This should be raised, therfore, through applying awareness tools under the wider community based approach. Knowing that

CHAPTER 4

PRINCIPAL CONSIDERATIONS IN SELECTING PROJECT AREAS

4.1 Site Selection

The site selection criteria for the Community Based *Haor* and Floodplain Resource Management components of SEMP was fixed based on the benchmarks spelled out in the Programme Support Document (PSD) of the SEMP. According to the PSD, Pagnar and Sanuar-Dakuar *Haors* under Jamalganj *Upazila* of Sunamganj District were selected as Community Based *Haor* Resource Management sites. For floodplain areas, two separate sites in the Padma-Jamuna Rivers Floodplain of Shivalaya and Harirampur *upazilas,* Manikganj District; and the Madhumati River Floodplain of Muksudpur, Gopalganj and Rajoir *Upazilas* under Gopalganj and Madaripur Districts were selected. The selected *haors* and floodplains feature more or less the essential characteristics of the Bangladesh wetlands. A multidisciplinary project team had visited the areas and had discussions with the community leaders, fishermen, farmers, local government officials and other relevant stakeholders for final delineation of the project areas. The Section 4.2 presents the salient features of the project areas, while the project sites are marked in the Map 1.

Furthermore, at a later stage, in July 2001, based on the commendable performance of the project as well as constructive colloquia held with the participation of the IUCN project team with the PMU, and UNDP, Hakaluki *Haor* under Moulvibazar and Sylhet Districts and the Brahmaputra-Shitalakshya Floodplain were included as additional sites for *haor* and floodplain components respectively.

4.1.1 Physical and Hydrological Criteria

A *haor* component site had to be located in a hydrological and topographically defined *haor* basin having characteristics of the *haor* environment with diverse aquatic and terrestrial habitats in the form of seasonal and perennial *beels*, canals, secondary rivers and seasonally inundated lands and raised *kandas* with swamp forests and reeds. The floodplain sites had to be located in areas characterised by the floodplain environment, that is, areas flanked by a river system and comprising an array of permanent water bodies, viz. oxbow lake, river back swamp, etc., where dry land is subject to inundation in the rainy season, and important fisheries criss-cross the wetland, integrating the local aquatic ecosystem with the broader regional aquatic ecosystem.

4.1.2 Social Criteria

Access to resources (wetlands in particular) for the grassroots was an important consideration for site selection. Therefore, the resource use and land ownership patterns of the area had to be favorable in terms of the management needs of the project. People from various professions including fishermen, farmers, wood and reed collectors, wildlife harvesters and hunters, people engaged in water transportation business, leaseholders, women etc. had to be represented from within the selected site.

4.1.3 Biological Criteria

The sites would desirably have a wide range of aquatic habitats and ecological niches or potential for restoring habitats for a rich biodiversity of flora and fauna. The biological criteria also considered the abundance and diversity of organisms in an ecosystem that required tangible management intervention for restoration and sustainable management for livelihood enhancement of the local resource users.

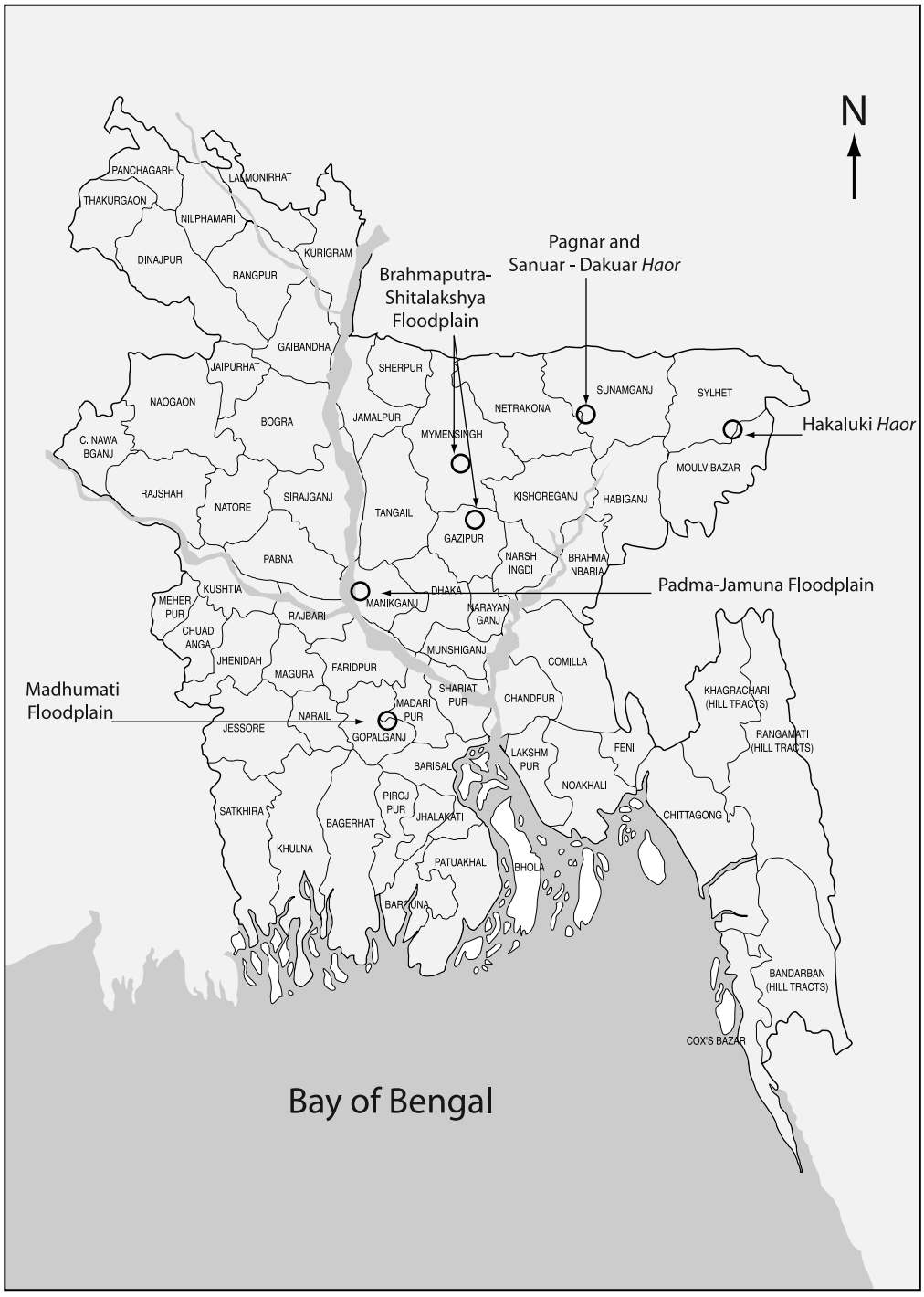
4.1.4 Management/General Criteria

From a management perspective, the project managers decided to field the planned activities within areas where management could reach effectively and make a pilot model, so that:

- Impacts to both biological and social sectors would be easily quantified;
- Results would be replicable in other localities;
- The area would have high potential for success so that the communities as well as the resource bases would reap sustained benefits from the project interventions;
- There would be negligible or no impact of external factors or other projects on the interventions and impact of the SEMP project; and
- The sites should be easily accessible for implementation and monitoring purposes.

4.2 Salient Features of Project Areas and Locations

Features	Pagnar and Sanuar Dakuar *Haor* Site	Hakaluki *Haor* Site	Padma-Jamuna Floodplain Site	Madhumati Floodplain Site	Brahmaputra-Shitalakshya Floodplain Site
Location	Northeast corner of Bangladesh	Northeast corner of Bangladesh	Central Bangladesh; Lower reaches of the Padma and Jamuna confluence	South-Central Bangladesh; Chanda *Beel* and Kadambari-Chowaribari *Beel* areas	Central Bangladesh
Administrative Location	Jamalganj *Upazila* of Sunamganj District	Fenchuganj, Kualaura, Barlekha, Golapganj and Juri *Upazilas* under Moulvibazar and Sylhet Districts	Shivalya and Harirumpur *Upazilas* of Manikganj District	Gopalganj Sadar and Muksudpur *Upazilas*, Gopalganj District and Rajoir *Upazila*, Madaripur District	Trishal and Kapasia *Upazilas* under Mymensingh and Gazipur Districts
Beneficiary Villages	42	30	43	31	21
Beneficiary population	28,000	35,000	35,000	30,500	23,000
Ecosystem Type	*Haor*	*Haor*	River floodplain	River floodplain and peat basin	River floodplain
Types of Water bodies	Small and medium sized *beels*, canals, rivers, rivulets and seasonally inundated lands	Freshwater *beels*, canals, rivers, hilly streams and seasonally inundated lands	Freshwater *beels,* canals, river, ponds and seasonally inundated lands	Freshwater *beels, kua,* canals, river, ponds and seasonally inundated lands	Freshwater *beels,* canals, ponds and seasonally inundated lands
Crops	Paddy (Winter variety), *amon* (insignificant)	Paddy (Winter variety), vegetables (insignificant)	Paddy (winter and early monsoon variety), vegetables	Paddy (winter and early monsoon variety), vegetables	Paddy (winter and early monsoon variety), vegetables, horticulture, aquaculture
Topography	Undulating with depression and submergible raised land	Undulating with depression, submergible raised land and hillocks in the periphery	Natural and artificial depression, raised homestead and cultivable lands	Peat flat land, small depressed water body, raised homestead land	Undulating land with flat crop land, small depressed water body, madhupur tract
Disaster	Flash flood, hailstorm, erosion of village mound	Flash flood, hailstorm	Flood, hailstorm, drought	Flood, hailstorm, water logging, siltation	Flood, drought, hailstorm



Map 1: Different *haor* and floodplain sites of the Community Based *Haor* and Floodplain Resource Management projects of the SEMP

CHAPTER 5

PARTICIPATORY TOOLS USED IN COMMUNITY BASED APPROACH

The execution of bottom-up (as opposed to the hitherto practiced 'top-down' development practices) process during planning and implementation of activities in the field level was the main objective for adopting the participatory approach in wetland resource management. The project emphasized the participation of community people from all walks of life including the local government bodies, government officials, political leaders, local NGOs, women, lessee of water bodies, poachers and any other stakeholders in the activities of the project. The participation ensured mainstreaming the concerns, indigenous knowledge, beliefs and values of the local people in the action plan with a view to stimulating eventually the well-being of the environment-biodiversity-human chain. People's participation was also deeply rooted in the implementation and management of the planned activities in various stages of the project. The sustainability of the project was intrinsically linked to the people's organizations in the project areas.

5.1 Studying Project Areas

5.1.1 Reconnaissance Visit

A multidisciplinary team consisting of a sociologist, a biologist, a gender specialist and an environmentalist had visited the project sites and areas in general to check the feasibility of project implementation and socio-environmental features. RRA and FGDs were conducted in the field involving various stakeholders. Reconnaissance visits of the above team aimed at collecting information on demography, biophysical aspects, social conflicts related to natural

resource harvesting and geographical characteristics. In most of the cases for this survey conducted in *haor* and floodplain areas, a semi-structured checklist was used while collecting information. Two to three days, depending on the size of the project area, were spent for the survey at each site of the project.

Recommendations with regard to the suitability of the project area, with special focus on the scope of project implementation, stakeholder types and interests, and accessibility in respect of the communities and project areas were the major outcomes of the reconnaissance survey. In addition, a semi-detailed map of each of the project areas was drawn based on transect walks taken during the survey. The result of the reconnaissance survey pointed to the overall feasibility of a community based wetland resource management project in the field before launching. More specifically, the survey determined which villages or unions of the area could be covered initially under the project and who would be the stakeholders to be considered for the project.

5.1.2 Demographic Profile

Collecting information on the age groups, primary-secondary occupations, landholding size, and community dependence on natural resources was the main objective of a household census conducted at the village level. These findings helped get an overview of the project area and glimpses into socio-economic status of the communities in question. A household study conducted in the initial stage of the project in Pagnar and Sanuar-Dakuar *Haors* of the project, using a structured questionnaire was conducted to collect information from the heads of the households. Members were selected from the community and trained in the know-how of conducting a census; then the census teams were provided with the necessary logistics before they undertook the exercise. At the floodplain site, clustering of households was done through discussion in the PRA meeting in presence of the heterogeneous groups. Some social indicators like asset holdings, landholdings, income, occupations, etc. were used to categorize the households in the project area.

The selection of tools for this census or survey depended on the human and financial resources and availability of time within the project.

5.1.3 Socio-economic Benchmarks

The socio-economic study was conducted with a goal of monitoring and understanding the changes effected due to the implementation of the project. The project carried out an initial stock-taking of the physical, biological and socio-economic attributes and situation in the project areas and assessed resource exploitation, utilization, and regeneration practices for agriculture, swamp forest, fisheries, etc. An interview technique was followed for collecting detailed information on the socio-economic condition of the project area. The survey was conducted involving selected

households in the villages under the project in the *haors* and floodplains. A random sampling technique was the basis for selecting the household samples from the villages.

A multidisciplinary team comprising a sociologist, an economist, a gender specialist and an ecologist designed the survey questionnaire. The survey incorporated relevant socio-economic indicators with utmost care, so that the desired relevant information could be collected within the stipulated time frame. For conducting the survey, enumerators were trained keeping in view the site specific dialects, local terms applicable to various socio-economic and environmental parameters, availability of the household members, climatic conditions etc. As the respondent during the socio-economic survey, the household heads were usually preferred; in the absence of the head of the household, a household member who knew about the family's assets or belongings, income, consumptions and interactions with the environment was consulted. The surveyor at times, carried out field-testing of such questionnnaires with a view to fine-tuning the same. Since filling out a questionnaire usually took 1-1.5 hrs, the survey team would try and select off-peak hours to visit the households for the purpose, so that they would be better able to derive the most information when the respondent should be resting or like. The implementation of the survey was overseen by a supervisor designated from the project held responsible for organizing the collection of required quality information.

Box 1: Identifying key individuals and groups and building rapport

Rapport building is an important task for collecting reliable information as well as implementing the project in the field involving the local people. It is mainly done to develop communications and to establish working relationship with the local people. Generally, rapport building should start as soon as the project staff enters the project area.

Rapport building with community people at *haor* and floodplain sites has been facilitated through:

- Meetings with the community/social leaders, teachers, Chairmen of the UPs on the nature and goal of the project. Alleviation of project related suspicions of the local people remains a cardinal objective of the orientation meeting.
- Involving local knowledgeable persons with the project team to initiate project activities.
- Clearly explaining the reasons for emergence of the project and why this area has been selected. Main beneficiaries of the project, their role in the project, and position of the implementing agency are also discussed before the local audience.
- Respecting local values, beliefs, comments, suggestions and advice of the local people related to the project.

5.1.4 Documenting Land Use Patterns

Participatory Land Use Survey (PLUS) is a collective exercise undertaken by the community people and facilitators from the project. To conduct a PLUS, a group of people collectively made a map of a community, a territory or an area at stake. The designated facilitating staff well equipped with a *mouza* map, a topography map, coloured markers, large sheets of paper, etc. sat with community people from all walks of life. The PLUS started with an introduction and delineation of the objective of the activity, so that people felt free to share their views and opinions regarding the land use patterns, seasonal variations, distribution of natural resources, land tenure, encroachments and so on. In the second part of the activity, one knowledgeable person from the group was requested to draw a map of their *mouza* showing the position of their village, its water bodies, crop fields, rivers, canals, school/college, religious places and other significant land use features. The map also showed the geographical distribution of the environmental, demographic and socio-economic features, land ownership and use patterns as seen by the participants in the exercise. To get an insight into the PLUS process, a transect walk was taken before settling in a convenient and suitable place of the *mouza* for carrying out the exercise. The participants then developed the sketch or map on a large sheet of paper or on the ground, plotting features with symbols that are understood and accepted by all members of the group, regardless of literacy. After reaching consensus on the hand drawn map and placement of different features, the facilitator/s showed the participants *mouza* and topomap for comparison. Any changes, based on *mouza* or topomap, were then made by the community people themselves. At the end of the mapping activities, an FGD session was facilitated following a simple checklist. Information relating to land dispute, potential land areas for conservation and rehabilitation through establishing fish sanctuary, swamp forest regeneration, community interaction with the resource bases, etc. were captured and recorded. Land use mapping was found useful for providing an overview (or 'snapshot') of the local situation. It prompted the start of the project through environmental and social assessment.

Participatory land use mapping in Khujargaon village, Jamalganj

5.2 Participatory Action Plan Development

Problem Census (PC) and Solution Identification

Proper diagnosis of the problems is a major concern before starting work on a prescription for any development project. People who live with the problems can easily identify them along with their causes, effects and probable redress. At a project site, the problem census workshop was organized to draw a list of problems related to project scope and goals. Representative participation from different groups, both primary including fishermen, farmers, day labourers and women; and the secondary ones including Union Council members, concerned government officials from the *upazila* level, lessees of water bodies, etc. was ensured in the workshop. The participants of the PC workshop discussed the root causes and consequences thoroughly. Based on the information generated from this activity, stakeholders became aware of the various dimensions of the impacts generated due to unsustainable resource use patterns, livelihood options and economic activities in their ecosystem. The problems, causes and effects were then arranged, that is, placed as appropriate, in a problem tree (Figure 6).

Box 2: Careful facilitation

Community people are generally enthusiastic to participate in the problem identification and action plan development workshop, since they look at it as an opportunity for resolving their problems, which usually remain unnoticed and therefore, unresolved by the government agencies. In this situation, facilitator/s of the workshop should be careful about threshing out the objective and scope-limit of the project clearly. Problems listed by the participants need to be carefully filtered, so that the results do not exclude any sensitive issue specific to a site. Facilitators often tend to raise unrealizable hopes or expectations among the poor villagers that are beyond the capacity of the project. Care should be taken not to give rise to such confusions at all; or, all such misgivings should be dispelled by all means.

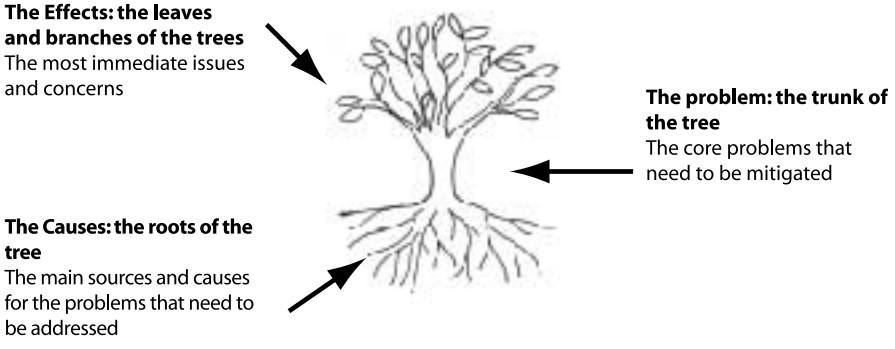


Figure 6: Problem-cause-effect nexus could be shown in a 'Problem Tree'

In the second part of the workshop, that is, in the Planning Workshop, solutions to the listed problems were identified by the participants followed by a discussion on the feasibility of addressing the problems through commonly identified means. The feasibility analysis covered social conflicts pertinent to identified solutions, resource involvement, technical capacity, political interference, sustainability of activities and environmental issues. The planning part of the workshop often spelled out the implementation modality of the planned solutions and who would be the major actors in implementation and management actions. Planning workshops also allowed consensus building among the different community groups. A sequential diagram of the Problem Census and Planning is shown in the Figure 7.

Box: 3: Results from the Problem Census and Planning Workshop: An example

A total of 42 Problem Census and Planning Workshops were organized in the *haor* and floodplain sites. The major concerns raised related to the environment and livelihood of the local communities, which included depletion of fisheries resources, degradation of swamp forest, exacerbated wave erosion, loss of biodiversity, siltation, vulnerability due to unsustainable harvesting, encroachment of wetlands and forests, unplanned infrastructure development, deforestation and inappropriate water management. The participants sorted out problems, root causes and consequences of their problems and finally identified relevant redress for the problems. The community people came up with solutions to many problems on their own, viz. restoration of swamp forest, roadside and riparian vegetation, rehabilitation of degraded wetlands, enforcement of fishing regulations, providing alternative income generation activities, banning fishing during breeding period etc. – all of these were volunteered by the community people. A problem tree was thus drawn in each workshop showing their problems, causes, effects and solutions for illustrating things more clearly.

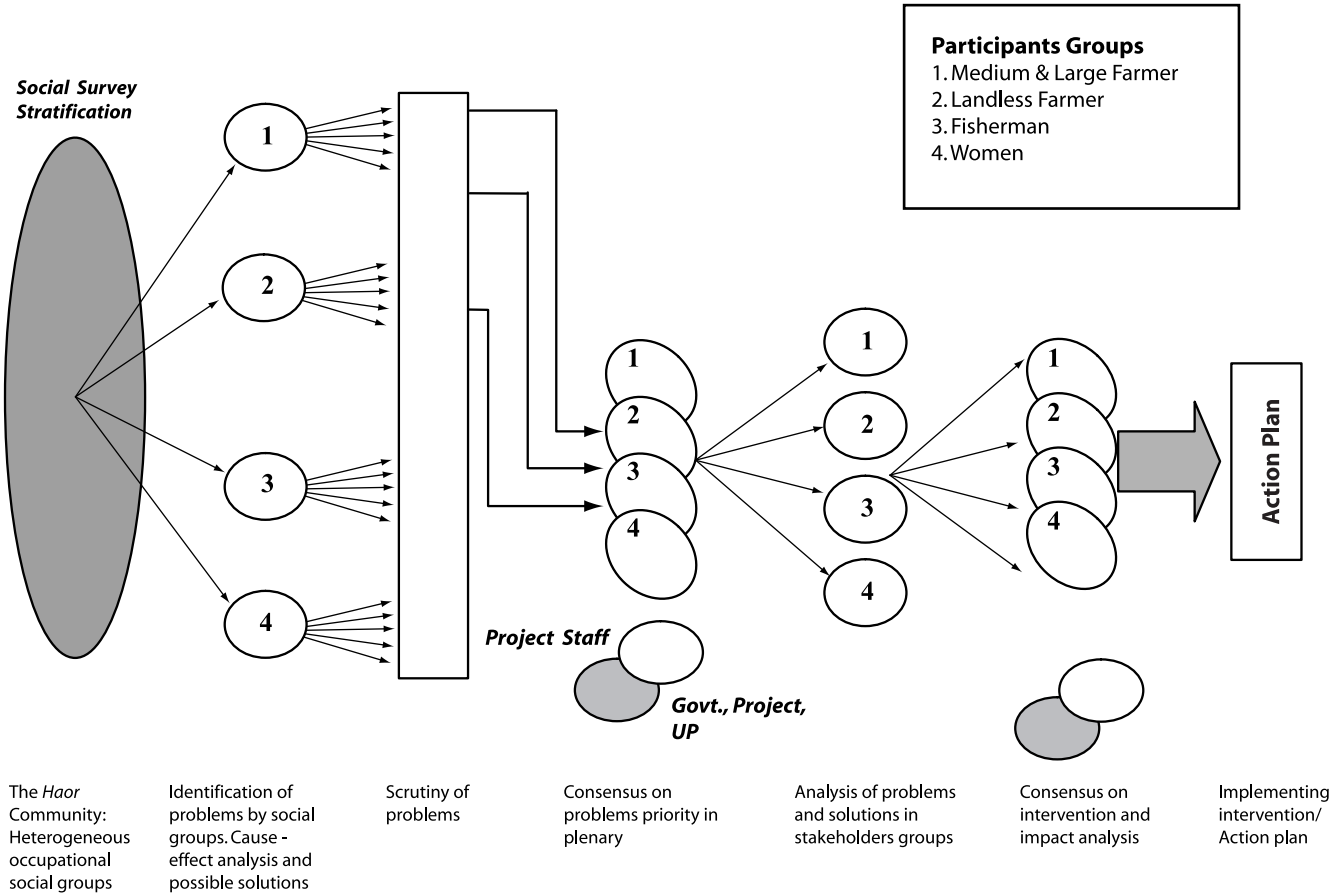


Figure 7: Schematic diagram showing Problem Census -Planning Workshop (PC- PW) method of participatory natural resource planning in *haor* area (adapted from Islam and Barr, 2001)

5.3 Stakeholder Analysis

Stakeholder analysis is a vital tool for understanding the social and institutional contexts of a project. Its findings can provide early and essential information about who will be positively or negatively affected by the project, who could again, positively or negatively influence the project, which individuals, groups, or agencies need to be involved in the project, and how; and whose capacity needs to be built to enable them to participate. Stakeholder analysis, therefore, provides a foundation and structure for the participatory planning, implementation and monitoring that follows.

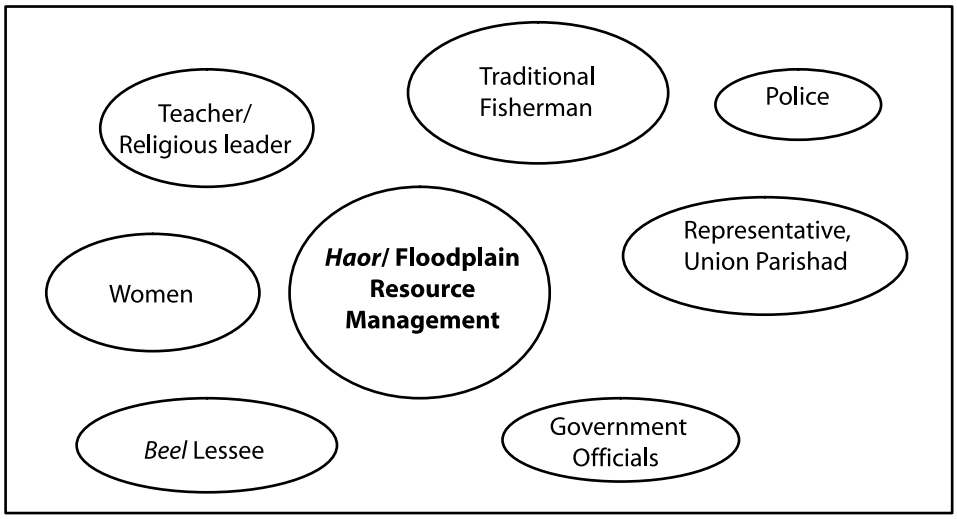


Figure 8 : Venn diagram for stakeholder analysis

In the Community Based *Haor* and Floodplain Resource Management Projects, stakeholder analysis was done within the process of PAPD. Venn diagrams were used as a PRA tool for this analysis in the field (Figure 8). The same participants involved in Problem Census and Planning Workshop also helped in identifying the stakeholders of their community for different actions and interventions in varying degrees of potentiality.

In the stakeholder analysis workshop, participants were requested to identify potential stakeholders for *haor* or floodplain resource management, as appropriate for the occasion. Guided by the instruction of the facilitator, the participants discussed the potential stakeholders for the project and in the chart of Venn diagram, identified them appropriately, drawing small or big circle and marking them clearly. The size of the circle indicated the degree of importance while the frequency and magnitude of involvement of stakeholders were indicated by the distance of the respective stakeholder's circle from the centre. Figure 8 shows the relationship of different stakeholders within the project. Flip charts, coloured markers, tape, scissors, board pins, etc. were used to conduct a stakeholder workshop in the field.

Box 4: Categories of stakeholders identified for the project

Primary Stakeholders: These were project beneficiaries. The Community Based *Haor* and Floodplain Resource Management projects regarded all villagers of a village, whether they depended on the wetland resources or not, as the primary beneficiaries and tried to focus efforts on fostering their participation. In the case of creating options for alternative livelihoods, only the poor and marginalized groups, especially women, were considered as the primary stakeholders.

Secondary Stakeholders: This group comprised Union Councils, leaseholders of water bodies, concerned government departments, law enforcing agencies, etc. They participated in the project planning, implementation and management because either they had a stake/interest in or contributed to it.

Other Stakeholders: Those people, groups and institutions that were not formally involved in specific project activities but could have an impact on or be affected by a project.

5.4 Identification of Actions and Implementation Approach

The concept of a community-based approach was carefully incorporated in all stages of the Community Based *Haor* and Floodplain Resource Management projects. The actions for restoring the *haor* and floodplain ecosystems have evolved from the Planning Workshops organized at each site of the project. The major approach and activities for *haor* and floodplain resource management were more or less similar but often varied due to difference in hydrological, socio-political and agricultural characteristics of respective areas. The community people of the *haor* and floodplain sites identified a number of programmes for restoration of the *haor* and floodplain ecosystems, viz.

- **Institutionalization** of resource management bodies at the local level,
- **Afforestation** in the degraded *haor kandas* for swamp forest restoration, plantation along roadsides of *haor* and floodplain sites, homestead plantation, block plantation,
- **Rehabilitation of potential but dead/silted water bodies** to reinstate aquatic resources,
- **Capacity building and awareness raising** of the resource users on the concepts of sustainable NRM,
- **Creating alternative livelihood options** among the poor households aimed at alleviating extreme poverty and minimizing pressure on NR bases,
- **Demonstration of eco-friendly agriculture** to reduce agro-based pollution, promote

organic farming and Integrated Pest Management (IPM) and seed bank for indigenous seed/germ preservation and link modern and indigenous agricultural practices ,

- Conservation of endangered biodiversity,
- Wise use of natural resources,
- Empowerment of the poor and women's access to resources, rights and governance.

The above-mentioned activities listed by the stakeholders were implemented with active participation of multi-stakeholder groups from each village of the *haor* and floodplain project sites.

5.4.1 Local level institutionalization

The need for development of local level institutions was identified first in the planning workshops of the project. The objective of institution building was to unite people under their common interest in natural resource management as well as improvement of the well-being of local wetland ecosystems. The participants of the planning workshops recognized institution

Box 5: Cancellation of lease of Ganger Agar– a negotiation process for conflict resolution

The Ganger Agar, a partially silted up river flows bifurcating Matargaon village of Pagnar *Haor*. The villagers there have been traditionally depending on the river for their daily needs, the Ganger Agar being the most important source of water and fish for them when the whole *haor* system dried up during winter except some deep ditches, canals and *beels*.

The villagers of Matargaon were most genuinely concerned when the need for restoration of the precious water body arose. They discussed the issue at various workshops and meetings of the SEMP project in 2002-03 and succeeded in rehabilitating the degraded part of the river measuring 675 ft in length and 141ft in width. A sanctuary was established in over 1 acre of area for conservation of the locally threatened fish species. The Ganger agar flourished once again with high abundance and diversity of fish. In early 2004, a conflict arose when the government leased out the water body as government land. The lessee had legal right to fish in the sanctuary and tried to impose his management, but the villagers were not ready to allow any external management to take over their conservation practices in the Ganger Agar. The villagers sought help from the responsible government officials as they tried to have the leasing of the water body cancelled. The Government as the owner of the land intervened in the conflict between Matargaon Village Resource Management Committee and the lessee. After a few meetings at the Jamalganj *Upazila* Office, both parties agreed to an arrangement by which the water body would be reinstated as the fish sanctuary of the past causing minimum loss to the lessee.

development as the prerequisite for community based development. Participation of people from all walks of life was ensured under institutionalization process with a view to achieving consensus building, planning, implementation, equitable access, conflict management and benefit sharing of the resources.

It was anticipated in the planning workshops that a three-tier organization would be adopted for managing the wetland ecosystems in the respective territory. The *First tier* of the institutionalization process as proposed was a Village Group (VG) to be formed with the poorest of the poor of the village, usually dependent on natural resources for their daily livelihood. The VG mainly comprised women of the village and sometimes included vulnerable traditional fisherman or potters. The *Second tier* was the Village Resource Management Committee (VRMC) to be formed of representatives from multi-stakeholder groups at the village level, including male and female representatives from the VGs, eventually becoming members of the VRMC. All households of the village are members of the general body of the VRMC while a 7-11 member Executive Committee would be responsible for holding meetings, implementing activities, managing the finances and any other tasks generated from the deliberations of the general body of the VRMC and any relevant agencies in/outside the village. The *Third tier* of the institutionalization process as proposed by the participants of the planning workshop was an Apex Committee to be formed with the representatives of members from all the VRMCs located in the respective *haor* or floodplain project jurisdiction. The Apex body was intended to be formed when the project would mature, that is when the VRMCs would be able to manage their ecosystems through ensuring sustainable livelihood of the communities involved. All the committees, as a part of institution building at the local level, had been formed democratically, offering platforms for enabling individuals express their views freely. Later, the idea of adding a sperate tier at *upazila* level was considered along with making VRMC the first tier at the local level as indicated in Chapter 8.

5.4.2 Community in Ecosystem Greening

Afforestation - a way of restoring degraded areas of *haors* and floodplains was proposed by the participants in the Participatory Planning Workshop held at the five sites of the projects. The community people also focused on their preference of native plant species for plantation, regardless of their economic valuation. The afforestation and plantation programmes were more precisely discussed in the village level meetings of the VRMC in question. Selection of species for plantation, labour mobilization, plantation management including irrigation of newly planted saplings, mulching, weeding, fencing, guarding, benefit sharing and any other means to protect plants were also discussed threadbare in the afforestation related meetings of the VRMC. All the activities were jointly implemented by the community people and the project staff.

5.4.3 Community in Wetland Rehabilitation

Wetland rehabilitation, a most crucial concern raised by the *haor* and floodplain communities, was proposed to be addressed urgently for restoring the hydrological and biological characteristics of the wetland ecosystems. This was undoubtedly the most technical, labour intensive and costly intervention, which also required input of a hydrologist and from the concerned government authorities, viz. Local Government and Engineering Department, Water Development Board and Department of Land. Addressing land tenure issues relevant to the rehabilitation of water bodies also arose as a vital process to be initiated before the rehabilitation activities would be undertaken, as most of the natural water bodies belonged to the Government and the Deputy Commissioner's Office at the district level administered and managed the same under the aegis of the Ministry of Land.

Box 6: Why was wetland rehabilitation treated as a high priority issue?

It came to be known during the problem census workshops that most of the perennial water bodies contiguous to the project villages were either dead or rendered isolated from the main streams due to siltation or encroachment. Connectivity of such degraded water channels was proposed to be rehabilitated through re-excavation.

The wetland rehabilitation process started with the identification of degraded water bodies within the project boundaries using participatory land use survey tools. The issue of rehabilitation was the main focus during the problem census and planning workshops, wherein sites for rehabilitation were identified. Subsequently, the community people carried out activities such as, demarcation of sites for re-excavation, labour mobilization, the actual re-excavation of the selected water bodies, etc. The involvement of the community people all through enhanced people's ownership of the project, as local knowledge, practices and ideas were regularly shared and utilised during the activity.

5.4.4 Environment Management for Alternative Livelihoods

The environment fund is a grant for the most vulnerable and the hardcore poor, and especially women, which has been disbursed with a view to establishing an enabling environment in the project area so that women's position could be bolstered generally through creating income opportunities for them from environment-friendly activities. The approach and the means of such income generation were wholly decided and adopted by the local people, though some controlling and guiding principles were laid down by the project authority, which actually helped regulate the fund flow and eventually reduced the risk of fund mismanagement. The

environment fund management was continually monitored by the respective VRMC, thus helping in maintaining a linkage between the VG and the VRMC of a village.

5.4.5 Demonstrating Environment-friendly Activities

Demonstration is one of the most effective techniques of transferring technology, concepts and models from one group of users to another. Under this project also, the local communities were encouraged and facilitated to take initiative for piloting environment-friendly activities leading to conservation of local agro-biological diversity including the threatened flora and fauna. The important activities piloted and demonstrated in the *haor* and floodplain sites were IPM, compost preparation including vermiculture, seed bank for preserving local crop seeds, biogas plant, fuel efficient oven, solar panel for off-grid rural electrification, *ex situ* and *in situ* conservation of fisheries and wildlife, demonstration of medicinal and swamp and terrestrial plantations. Participation of the local people and the members of VRMCs and VGs in the demonstrations were ensured for up-scaling the concept and activities in their day-to-day life.

5.4.6 Community in Biodiversity Conservation

Community people being the main users of the biotic components, the plants, animals and birds of the wetland ecosystems, a management plan for restoration and conservation of biodiversity developed by the local community was considered to be the most effective way of sustaining such resources. Accordingly, the VRMCs of the five project areas in association with the relevant stakeholders from the concerned government departments, schools, *madrasah* (religious school for the Muslims) and mosques selected some degraded or naturally dying sites for conservation of wildlife and fish mainly.

CHAPTER 6

AWARENESS, EDUCATION AND TRAINING LEADING TO IMPROVED UNDERSTANDING

6.1 Awareness Raising

The level of awareness with regard to natural resource management has been known to be generally poor among the rural communities, despite their direct and indirect dependence on the resources for their very existence. The concept of sustainable management of resources is a relatively novel one, especially in rural Bangladesh. People are very much reluctant to conserve the plant and animal species which are not directly related to their livelihoods. Furthermore, the rural people of Bangladesh have incentives to grow more food, especially rice in the lands without giving a thought to wetland or forest conservation. Massive processes of degradation thus have occurred due to converting wetlands to crop fields, ignoring the economic or biological importance of the natural distribution of the biotic and abiotic entities of the ecosystem. In addition, due to lack of consensus among the resource users, common resources are indiscriminately harvested, despite people's apprehensions about the ominous consequences of such reckless exploitation of natural resources.

Through this project, community people were expected to learn how the ecosystems function and how to improve its well-being, the role of the ecosystem in livelihood enhancement and how to protect against further environmental degradation. The awareness programmes mainly

targeted the grassroots of various occupations, viz. fishermen, farmers, day labourers, fuel wood collectors, women, school children and teachers and all else who are closely linked with nature. Site-specific environmental issues and natural resource management were discussed through community meetings, video shows, folk dramas, rallies, knowledge sharing meetings, workshops, Environment Day observance programmes, exchange visits, etc. Relevant communication objectives, such as, information dissemination, awareness raising, and enhancement of interactive learning, etc. were achieved through awareness raising activities. Communication plans were developed in association with the community stakeholders who suggested that local dialect, site-specific resources and the media might be used for better results in the ensuing mass awareness activities.

The project staff posted to the area concerned, local government officials, school teachers, local professionals, other NGO workers and local elderly and knowledgeable persons facilitated the activities. The invited resource persons delivered speech on environmental conservation, protection and management issues and the role of the community in nature conservation.

There were different distinct approaches considered for reaching various groups of people through the awareness activities as described below.

Awareness programme at the Hakaluki *Haor* site against bird hunting

6.1.1 Awareness Meetings at the Grassroots Level

The project staff organized the community people to form heterogeneous groups to discuss project specific matters in meetings. Benefits and boons accruing from sustainable management of wetland resources and their implications to the communities' livelihood enhancement were generally shared with the community people in such meetings. Awareness materials, such as, posters, leaflets, festoons, caps, billboards, signboards, video documentaries etc. depicting and displaying messages about the importance of wildlife, swamp forest, reed lands, wetlands, medicinal plants, etc. were printed, crafted, made, as appropriate and disseminated, posted and shown, as necessary in the meetings and all other assemblages. The project staff, representatives from the UP, local teachers and knowledgeable persons from the community shared their knowledge and experience with the villagers through delivering speeches on local environmental concerns.

6.1.2 Knowledge Sharing - Updating Concepts

Knowledge sharing meetings were conducted with the teachers of the local schools and colleges of the project area. These meetings highlighted the local and national environmental issues, and discussed mechanisms for improving ecosystem health and livelihood options. The meetings usually started with a keynote speech delivered by the subject specialist staffmember. Subsequently, during the group work session, the local teachers were requested to work in groups of villagers and guide the deliberations on the local environmental concerns, determining and listing what management measures would be initiated to address the issues specifically. During the group work, handouts and posters on wetlands, biodiversity conservation and other environmental concerns were distributed among the groups so that the teachers present could use them effectively in a bid to enhancing the group members' working knowledge of the same.

6.1.3 Awareness in Educational Institutions

Awareness meetings were organized for the students in the local schools with a view to building their relevant capacity and moulding them as competent and able managers-to-be of their ecosystems in such a way as will enhance the wellbeing of the ecosystems as well as enhance local livelihood opportunities. Awareness materials such as posters, leaflets, festoons, etc. containing environmental conservation messages were on display in the venue to educate the students. The students listened to the speeches on ecosystem functionality, environmental degradation and its consequences on livelihoods, better management methods, harmful fishing practices, importance of migratory birds and overall ecosystem functionality. Video film shows on environmental issues were often held for the students.

6.1.4 Environmental Folk Drama

Folk drama and popular theatre were the most effective communication tools for awareness raising in the implementation of the *haor* and floodplain resource management projects. An entertaining and informative folk drama can reach and affect a large audience, hundreds or thousands of people at a time. A local scriptwriter knowledgeable about the local cultural expressions, environmental issues, concerns, values and the dialect usually attempted writing the script of a drama of this particular genre. The key actors capable of whipping up the emotions of the viewers delivered messages of the drama delineating the local environmental situation, demonstrating both unsustainable and sustainable management of natural resources symbolically, highlighting the consequences of wanton resource depletion and the roles of the different stakeholders in the game of management of resources.

Wherever possible, local theatre groups were chosen for staging the environmental play or, a group was formed in each site with the local people interested in theatrical activities. Training sessions were organized for the newly formed groups and some equipment, viz. a sound system, players' costumes and other logistical requirements were met, while the group independently accomplished the performance. Places of public or historical importance in the project area were usually chosen for staging such plays, which generally drew large audiences.

Folk drama performance by a local group in Manikganj

6.1.5 Observance of Environment-related Days

The World Wetlands Day (2 February) and the World Environment Day (5 June) are the two most relevant days observed globally for conservation and restoration of the global environment. The Ministry of Environment and Forest (MoEF) is the national official upholder of the days in Bangladesh as the GoB signed the Ramsar Convention and the CBD as well.

At all the project sites, the World Wetlands Day and the World Environment Day were observed to reach the global messages of the days to the grassroots living in the Bangladesh wetlands.

A rally marking the World Environment Day 2005 in Chanda *Beel*

Meetings, seminars, students' rallies, debates, quiz competitions, art competitions, etc. were organized, involving the respective *upazila* government officers, the Chairmen of the Union Councils and representatives from the local level organizations. Participation of the VRMCs, FRMCs and VGs, as appropriate, were also ensured at the events. The rallies or meetings put up banners, posters, festoons and participants donned special T-shirts and caps imprinted with logos, messages and slogans relevant to the day.

6.2 Capacity Development

Sustainable management of the natural resources of the wetlands is vital for reversing the trend of natural resource depletion there. But how will sustainable resource management be achieved? People in the *haor* or floodplain are not aware of or educated on the issue. Most people, simply over-exploit the resources to earn more money, despite their being somewhat aware of the moral burden of the sense of guilt ensuing. Villagers are neither organized enough to refrain from or restrict over-exploitation or manage the common property resources in any proper manner. The project, therefore, tries to empower the community people by organizing them into groups of common interests for natural resource management as well as financial strengthening of themselves. The project also aimed at enhancing the skill and capacity of the community people through

Training session for the community in Jamalganj

organizing training on NRM, leadership development, institutional development, alternative, that is, environment-friendly income generation activities, sustainable resource management options, environment-friendly agricultural practices, etc. Need assessment of the participants was done prior to organizing the training activities.

Taking the local resource users through the various conservation and skill training events has a continuous process all through. The training process initially started with training the leaders of the VRMCs and VGs. Farmers or target occupational groups such as potters, fishermen, herbal healers, women, etc. were also trained under various skill development training programmes run with the expectation of enhancing effective management and environmental services in the project area.

CHAPTER 7

ENVIRONMENT FUND: AN OPTION FOR ALTERNATIVE LIVELIHOOD

Natural resources being the primary sources of livelihood and development for most of our grassroots, degradation of such assets certainly puts the livelihood security of the majority at stake. In Bangladesh, the rural communities solely depend on the natural resources for their food, shelter, fuel, medicine and almost all other means of the daily needs. People extract and harvest timber, fuel wood, fish, turtle, forage, thatching materials, wild animals, birds, etc., as necessary, for their income and subsistence. Extreme dependence on natural resources often leads to over-exploitation and degradation of ecosystems. To reduce the dependence on natural resource bases, environment funds, as small chunks of seed money or capital, were disbursed among the poorest of the poor of the SEMP *haor* and floodplain sites for helping them access alternative employment opportunities. The goal of this approach was to effectively motivate and support the most vulnerable and the hard-core poor through promotion of locally available innovative income opportunities, development of enterprise that would contribute to livelihood security, environmental conservation and sustainable natural resource management.

The Environment Fund was a grant for the poor, especially women, aimed at establishing an enabling environment in the project area so that women could be empowered through affording them with opportunities of income generation from environment-friendly activities. This fund was provided to the poorest of the community members and no interest or overhead

was charged; it should be noted here that the environment fund management was not comparable with any of the micro-credit systems prevailing in Bangladesh. The simple disbursement and management modes of the fund helped the poor people generate entrepreneurial employment for income supplementation.

Box 7: Village Group — a vehicle for generating environment-friendly employment options

Once the group members were motivated to conserving the environment through changing their livelihood, they were encouraged to form a VG by selecting a President, a Secretary and a Cashier from amongst the members. The committee size varied, having 10-25 members depending on the population size of the village. Based on the size of the village, more than one committees could be formed, as necessary, to include the maximum number of poor women/men in the village. In the group meetings, the pros and cons of the group formation mechanisms were discussed threadbare and the decisions taken were unanimous.

7.1 Motivation and Group Formation

Community Based *Haor* and Floodplain Resource Management Projects, while working on preservation, conservation and management of resources, emphasized livelihood security induced overall sustainable development. Better unity and solidarity were achieved by forming groups and rendering them skilled and resourceful through training, so that they could undertake entrepreneurial activities for income generation. Finally, they were encouraged to build savings to form sizeable capital of their own. The project envisaged development of both natural and human resources for complementing and supplementing each other.

While disbursement of the Environment Fund was undertaken, the poorest of the villagers helplessly dependent on the wetland resources for sheer survival were selected. The selection process followed a participatory method that led to the establishment of a VG. A VG is the lowest tier of an institutional structure envisioned under the project aimed at practicing environment-friendly activities at the grassroots level. The project staff skilled in group formation paid utmost attention to orienting the group members about sustainable environment management that will ensure economic benefits for livelihood security. Group meetings were organized periodically for each group where environmental phenomena including people's dependence on nature, nature's degradation, cause and effect, trends related to exploitation, etc. were discussed for awareness raising and knowledge sharing among the participants. Motivational communication for conserving ecosystems was continuous activity for any group.

7.2 Orientation

Subsequent to group formation, basic orientation about teamwork, its dynamics and other crucial issues such as importance of alternative employment generation, how alternative income plays a role in effecting and enhancing the well being of environment and livelihood was afforded to the groups to help them understand the approach of environment fund management better. The project staff worked with the groups closely with a view to enriching and strengthening their motivation. Eventually, each village group prepared a constitutional framework with the help of the project staff, which was to be adhered to while the relevant activities would be accomplished, viz. organizing group meetings, depositing savings and selecting potential sectors for employment generation.

7.3 Need Assessment

It has been evident from the socio-economic survey that the sizes of cultivable landholdings among the villagers of Pagnar and Sanuar-Dakuar *Haors* show varied considerably. Data reveals that about 53% of the Pagnar *Haor* households own on average 0-4 decimals of cultivable land, which have been classified as 'landless'. On the contrary, about 19% of the total households are considered as 'large' farmers, having on average above 251 decimals of cultivable land. Similar variance was found with respect to occupation. Need assessment is important for finding out people's real socio-economic status, their understanding of the environment, dependence on natural resources, level of awareness and other livelihood factors.

Box 8: Situation analysis and need assessment of the vulnerable groups

Women's groups in both *haor* and floodplain areas were eager to be involved in income generating activities promising secured livelihood. According to the group members, since they are poor, they have to totally rely on nature for their survival. In certain seasons of the year when employment is scarce and they are debarred from accessing the resource bases by the leaseholder or due to any other factor, the poor households are faced with starvation and destitution. Selling remaining household assets or taking informal loans from the usurers are thus the only means they are left with. As a coping mechanism, the poor have to depend on the local moneylenders for obtaining loans at very high interests. As a result, the tiny homesteads and whatever cultivable lands the poor have been left with are mortgaged in the process, which in most cases are devoured by the usurers eventually. Hence, the all pervading desperate cry for a secured livelihood.

The findings of the need assessment exercises conducted at the haor and floodplain sites show that most of the group members preferred activities they had been acquainted with, viz. poultry and cattle raising, nursery development, small trade and small-scale handicraft production.

There were several PRA tools used to conduct need assessment among the resource user groups in the project areas. One was conducting small-scale discussions through serving a pre-designed questionnaire and concurrence of most participants usually decided what course of action would be resorted to next. Results of need assessment revealed that women/men from the community were enthusiastic about training themselves on alternative livelihood options they had identified during the previous discussion session.

7.4 Savings Generation

After the formation of the village groups and the need assessment, they were motivated to raise savings and build a common fund for establishing a venture of the group members by themselves. Group meetings were held to fix the amount to be deposited periodically, the day for depositing such instalments and the frequency of the group meetings. The deposit amount varied from one group to another, depending on the socio-economic status of the members. Usually the group member who functions as the cashier is the depository of the fund and s/he receives the savings amounts from the group members during the weekly or fortnightly meeting. The money thus collected is to be deposited with a joint account maintained with a trustworthy local commercial bank.

The group members' savings deposited in the bank account could be invested in any venture after the group so decided by passing a resolution to that effect while the members met in a meeting. The practice of savings generation would strengthen the unity among the members, empower them economically through offering a common platform with promises for livelihood security.

7.5 Environment Fund Mobilization

In a bid to taking the prevalent extreme pressures off the wetland resource bases, an incentive in the form of seed money was provided to the most vulnerable women and men in the project areas to enable them look for alternative income. The selected group members decided about the alternative means of income through discussing all the probable options that could be tried at the local level with external funding from the project. Members were also encouraged to develop the skills relevant to such alternative employment.

The fund disbursement was usually carried out in the group's meetings, so that the record of the transactions could be maintained in the resolution book.

Very strict monitoring and follow up was carried out to regulate the desired flow of the environment fund. Under the environment fund management activity, a group can withdraw funds from the group account after a formal endorsement by the respective group. Any

concern raised by any member regarding the fund management or any objectionable attitude of a member or any instance of disobeying the agreed code of conduct by any member of the group are all discussed in the group meetings. VMRC representatives may be called upon if any correctional or disciplinary action is required to be taken against any member's misdemeanour.

Woman involved in an alternative income generating activity

7.6 Skill Development

People of the rural areas in Bangladesh are generally skilled in myriad indigenous techniques of employment generation. Still there exists scope to pursue a traditional vocation in many

Women group in a meeting

more scientific, modern and hence profitable ways maybe; this project values such innovations with a view to facilitating the livelihood issues of the local populations. Traditionally, male or female members of the present project groups have considerable experience in cattle raising, duck/poultry rearing, craftwork and aquaculture but this project's facilitation through training programmes has certainly led to reduced livestock mortality, reduced accidental losses and enhanced access to market opportunities for their products. Skill development training has proven helpful for the rural people in their efforts to alleviate poverty and promote wise use of natural resources.

Skill development training for alternative employment usually was based on the needs and opportunities of the members of particular groups in a particular project area. The trainers, from the project or hired as a resource person, were equipped with well-organized training manuals and materials to successfully reach the trainees. Local values, beliefs and traditional knowledge were incorporated into the manuals, blending in the environment conservation concepts, as appropriate. The training sessions were usually a day's affair and were organized during the lean period of the year when people's activities were low, which ensured maximum effective participation from the target groups. Training sessions on cattle raising, poultry rearing, handicraft production, vegetable gardening, account management, leadership development, natural resource management, etc. were facilitated by the respective experts from the relevant government departments or NGOs, which also established linkage between the group members and the available services of the government departments. Such services include those offered by the Departments of Livestock, Fisheries, Agriculture Extension, Forest or Bangladesh Council for Scientific and Industrial Research (BCSIR). Apart from the above training opportunities, exchange visits were organized for the leaders of VGs and VRMCs to experience successful demonstrations of the above income generating ventures existing in other *haor* and floodplain areas.

CHAPTER 8

INSTITUTION BUILDING FOR SUSTAINABLE MANAGEMENT

8.1 Community Based Organizations (CBOs)

Establishment and strengthening of CBOs pose major challenges for sustainable management of natural resources in rural Bangladesh. At the *haor* and floodplain sites of SEMP, the CBOs sent in representatives from all stakeholder groups to participate in the project activities; the stakeholders generally enjoyed social acceptance and properly represented the social or occupational class of a target area. Participation of women was also ensured during the formation of the CBOs. Quality participation of the multistakeholders in the CBOs helped in the process of designing an effective plan that was finally executed by the CBOs.

It was anticipated in the planning workshop that a three-tier organization (Figure 9) would be established for managing the wetland ecosystems in the respective territory.

The *first tier* was the Village Resource Management Committee (VRMC) to be formed with representatives from multistakeholder groups at the village level including male/female representation from the VG. In the general body of the VRMC, a member from each household in the village would be included as a member while an Executive Committee comprised 7-11 members, which would be responsible for holding meetings, implementing activities, managing funds or any other tasks decided upon by the general body of the VRMC and

concerned agencies. As anticipated, this would be the formal and registered body eventually turned into an organization responsible for management and conservation of the ecosystem.

The *second tier* of the institutionalization process as proposed by the community people was the Upazila Environment Committee (UEC). The project areas covering more than one *upazilas* were proposed to establish the UEC with the representative members from all the VRMCs. The UEC would have two members from each VRMC, but the committee should not have less than six members. The UEC is responsible for negotiating, introducing or carrying out the environmental activities generated at various levels, from the village to the Government Offices under the aegis of the Upazila Parishad. The UEC was also proposed to be further strengthened with the presence of the respective Chairman of Union Council as the advisor to the committee.

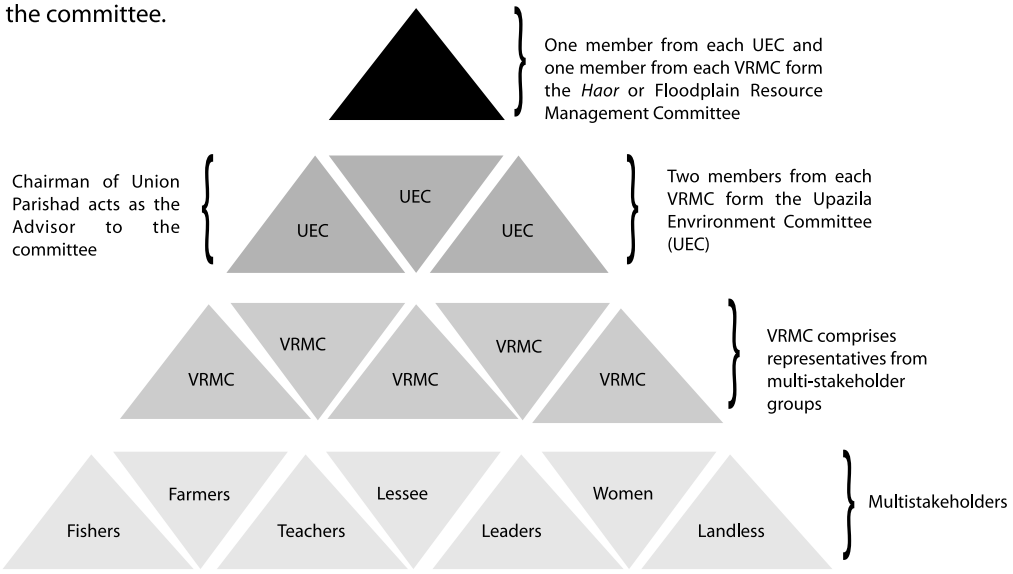


Figure 9: Schematic diagram showing linkages among CBOs at different levels

The *third tier* is the Apex Committee consisting of representatives from the VRMCs and the UECs. In the case where only one upazila is there in a project area, the UEC would be considered as the Apex committee. The apex committees were named as *Haor* or Floodplain Resource Management Committees, as appropriate. This committee would handle the general environmental issues relevant to the respective water bodies and refer matters to the concerned government departments or NGOs. The committee being the organization with representation from all VRMCs is responsible for launching any procession, advocacy or conservation measures for the greater benefit of the water bodies in question and their resource users, as necessary. Figure 9 illustrates different tiers of the grassroot organizations and how they are formed locally.

All members of the committees, as a part of institution building at the local level, were selected following a democratic procedure that would offer an environment befitting for expressing an individual's relevant views.

8.2 Institution Building for Sustainability

The term 'institutionalization' refers to the long-term viability and integration of a new programme within an organization (Steckler and Goodman, 1989). For success of any community based management intervention, there must be a group or organization within the community, which is ready to take the lead in resource management. The community as a whole generally cannot take on this role, even though all may participate in the implementation of the management measures when adopted.

The identification and establishment of appropriate groups need to commence as early as possible in the process of developing a local level management regime. Functional groups within the community may already exist or they may be established as an understanding of issues develops among a core of the community members. If possible, existing or traditional structures of any given area should be utilized so that cultural norms practiced by that community will not be overlooked.

The three-level organizations (VRMC, UEC and the Apex) formed under the project should become the organizations for executing the activities like awareness raising, monitoring and evaluation, strategy development and implementation processes after withdrawal of project support. The contribution made by the members as efforts, and sometimes funds, in favour of the respective resource management groups would serve to strengthen their commitment to the community based management process.

Due attention was given to the selection of committee leaders. The individuals who are acceptable to the community and who can command sufficient respect should lead the community. Awareness raising activities can be deployed to help increase the support for the key group. There might be a requirement of capacity building for the leaders. In the *haor* and floodplain resource management project, training was provided in financial management, leadership development, participatory monitoring, natural resource management and dispute resolution. In addition, study tours were organized to promote exchange of successful experience among the different *haor* and floodplain communities, which provided good exposure to varied resource management practices.

8.2.1 Official Recognition of CBOs

The CBOs formed with the local people are ineligible to receive support from the government until and unless they are registered with a government agency. In this regard, the Village

Groups were registered with the Department of Women Affairs that rendered them entitled to access facilities available with the Department. Furthermore, such departments in question are authorized to visit such organizations to monitor any management regime. The department has the capacity to provide training for capacity building and management improvement or might even fund continued empowerment interventions for the groups. The same approach was followed for having the VRMCs registered with the Department of Cooperative at the *upazila* level.

It is expected that during the exit stage of the project, the role of the CBOs and the Apex Committee would be further bolstered through initiating an institution building process in the *haor* and floodplain wetlands. The successful activities of the project may be replicated elsewhere in the country in the future or incorporated into the action plans for wetland resource management of different agencies.

8.2.2 Linkage Development

The rural people of Bangladesh are a little detached from the government departments excepting a few compulsive attachments with the agriculture, livestock and health services departments. The rural folks have mostly remained traditionally unaware of the government facilities and services or how these could be accessed. Even in the case of agriculture, fisheries or any other support or services, only a few influential or politically empowered people have been availing of the opportunities, that too in the subsidized or free of cost category. The empowerment of CBOs in the project areas was important to ensuring their sustainable development. In the project areas, linkage development workshops were organised to inform, both beneficiaries and supporting agencies about the services and opportunities for the CBOs to carry out their activities in the long run. Assurance was given by the relevant government offices of tapping resources from their sectoral funds, Annual Development Plan allocations, Food for Work allocations, local government developement funds, etc. to implement environmental programmes.

CHAPTER 9

PILOTING RESTORATION AND REHABILITATION OF WETLAND ECOSYSTEMS

The participants of the community sorted out issues and concerns related to the ecosystem and livelihoods in the respective problem census and planning workshops. Most participants prioritized wetland degradation as the most crucial concern to be addressed under the project. The participants selected potential wetlands already degraded due to various anthropogenic and natural causes, and they were also able to identify the ways of rehabilitating the wetlands in the Participatory Land Use Survey workshops. In addition to the action plan development workshops, a number of meetings were organized as necessary that focused on the specific intervention agenda. The participants in the various meetings and workshops reiterated that compared with the present day situation, swamp forests in the preceding five decades had provided more fishes and forest products supporting their livelihood and more protection from wave erosion during monsoon. According to the people of the *haor,* implementation of action plans for swamp forest restoration by the respective VRMC would help reestablish the lost resources of the *haors* that support people's livelihood. A specific and final action plan was designed and a Village Resource Management Committee (VRMC) was formed at the village level prior to implementing interventions in the field.

Bangladesh is a country of wetlands, consisting largely of *haor* and floodplain ecosystems. These wetlands support fisheries, agriculture, transport, fuel, fodder and many other products, which are declining at an alarming rate. The rapid drop in the produces of wetlands causes the people of rural Bangladesh reconsider wetland degradation issues. The community people at the *haor* and floodplain sites focused more about their concerns over the rehabilitation of degraded water bodies. Restoration of connectivity between *beels* and rivers received a high priority in the planning workshops. *Haors* and floodplains in the project sites are used for producing paddy during monsoon and winter. Thus, connecting canals between the floodplains and rivers allow timely recession and inundation of the ecosystem for cultivation of rice and other winter crops, in addition to promoting the migration of aquatic living organisms. The large scale destruction of forests was another issue that was raised in many meetings and workshops at different levels. They proposed a major initiative of raising plantations of local tree species in the degraded areas for the restoration of swamp forest.

9.1 Participatory Plantation

The project approach has been a participatory one and it was planned to involve citizens from all walks of life in all the stages of project implementation. One urgent need articulated by the stakeholders in the PAPD workshops was restoration of *haor* and floodplain areas through raising plantations with indigenous plant varieties. The community people stated that the resource users needed to be capable of managing their natural resources; therefore, awareness raising, capacity building, institution building and promotion of alternative income generation activities were specially stressed as discussed earlier in this report.

Karoch trees *(Pongamia pinnata)* in a *haor* area in winter

The community people in Pagnar and Sunuar-Dakuar *Haors* of Jamalganj and Hakaluki *Haor* of Kulaura, Barlekha and Fenchuganj *Upazilas* prioritized issues related to the restoration of swamp forest and reed lands. They designed the swamp forest regeneration plan, management protocols and identified relevant stakeholders for the activities. The area for swamp regeneration was identified by conducting a land use survey among the *mouza,* the lowest revenue collection unit. In the 20th century, *mouza* became popularly synonymous with village, which is indeed a social unit. Species selection for plantation was very important and it varied from site to site. Flora surveys conducted under the project were the technical basis for selecting the species, which was subsequently shared with the community people.

Box 9: Meeting on plantation agenda at the village level at *haor* sites

Representatives from all the households of the village attended the meetings, which is open to all villagers. This meeting helped analyze issues, viz. land tenure, accessibility, benefit sharing and management of swamp forest and determined the exact area for plantation. These meetings also helped in the formation of VRMC, the CBO for managing all activities at the village level.

In the planning meeting, each VRMC made an action plan, which included name of the *kanda* for plantation, location on the *mouza* map (plot no.), land tenure of *kanda,* number of saplings required, species identification, options for sapling collection and post plantation nursing etc. The planning meeting came up with a tentative budget required for plantation. The planning meetings conducted in Matargaon, Khujargaon, Rajapur and Fenarbak villages of Pagnar *Haor* and Sukdevpur and Naya Sukdevpur villages of Sanuar-Dakuar *Haor* showed that a total of 209,152 saplings including 137,964 *karoch*, (*Pongamia pinnata*) and 71,188 *hijal* (*Barringtonia acutangula*) would be required for planting in the selected *kandas* of Pagnar and Sanuar-Dakuar *Haors*. *Karoch* grows faster than *hijal* and so, the villagers favoured the former species more for plantation.

In general, people in most of the areas of the country like to plant saplings that will ensure economic benefit in the future. However, in some communities, the people do not always like the plantation of swamp species, because they believe the saplings have relatively low economic value even after attaining maturity. Thus, any plantation, for that matter, and its successful growth depend on some unavoidable factors including social acceptance, natural adaptability, economic benefit, care by the community and sustainable harvesting (Figure 10). The community people selected *hijal, karoch* and *borun* (*Crataeva magna*) to plant on the degraded *kandas* of *haor* (raised land in *haor*). Since saplings of these species are not available at the government or any commercial nurseries, a strategy was developed to train up the community women in nursery development with native tree species. The women trained and established nuseries; the saplings grew and the local women sold the same when they attained 2-3 ft height, earning a sizeable income from the activity.

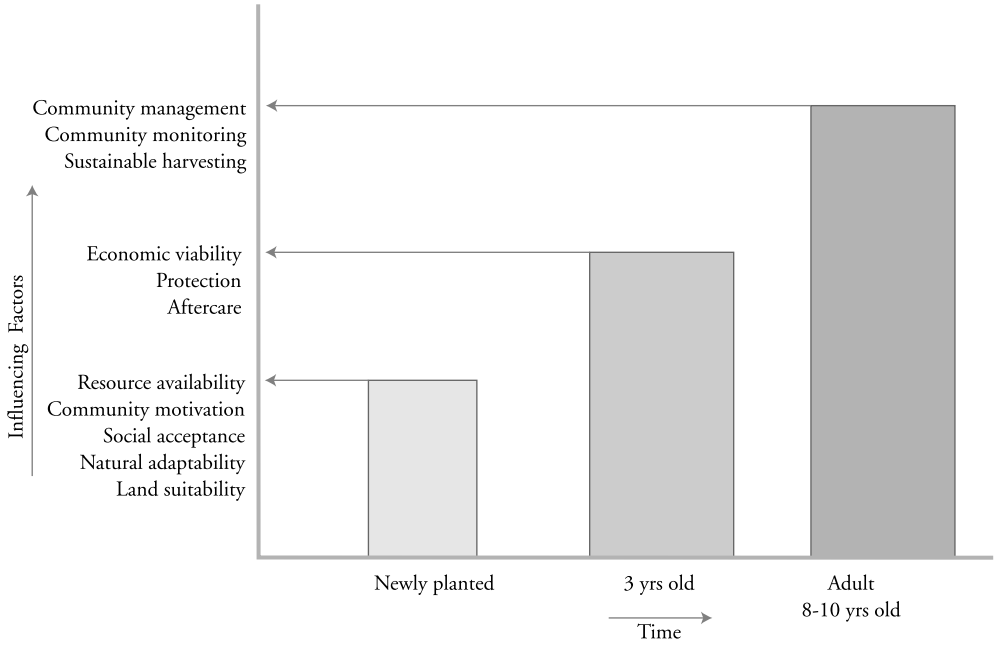


Figure 10: Hypothesis for rehabilitation of community based forest

A similar approach has been followed for plantation activities in the Padma-Jamuna, Madhumati and Brahmaputra-Shitalakshya Floodplain project sites. However, restoration of swamp forest in the floodplains was as useful as in the *haor* sites. At the Padma-Jamuna site, roads and riversides were identified as suitable locations for raising plantations with native tree and reed species. Vetiver grass was planted along the banks of the Ichhamati River while raintree, *nim (Azadirachta indica), arjun (Terminalia arjuna), kadom (Anthocephalus cadamba), panibaj (Salix tetrasperma),* etc. were planted alongside the

Box 10: Swamp forest gets the highest priority for restoration

Through the PAPD exercise, community people identified the depletion of swamp forest as one of the major problems in the Pagnar and Sanuar-Dakuar *Haors*. Wave erosion in the *haor* villages is leaving the villagers increasingly vulnerable during the monsoon especially when, in the last few decades, the swamp forests which used to provide protection against erosion, have been destroyed. The loss of forests also causes scarcity of fuel wood, house building materials (e.g. thatching and roofing materials), traditional food, fodder and erosion proofing grass *chailla (Hemarthria protensa)*. The plan to address such degradation includes area identification, sapling collection, plantation, nursing, transportation of saplings, benefit sharing, involving community members, organizing land use surveys, mapping and arranging village level meetings.

roads. Plantation in the Madhumati floodplains was concentrated along the roadsides, school and college premises, shrines and along the banks of rivers and canals. Some aquatic and semi-aquatic tree saplings, viz. *hijal, kadom, panibaj* and *babla (Acacia nilotica*) were planted along the banks of the reexcavated canal in Gopinathpur *Beel* of the Padma-Jamuna Floodplain and also in the depressed parts of Chanda *Beel* of the Madhumati Floodplain site. Roads and canal sides of the Brahmaputra-Shitalakshya Floodplain were also planted with saplings of native species similar to the species of the Padma-Jamuna Floodplain site.

9.1.1 Restoration of Swamp Forest

Remnant stands of *haor* swamp forest species - mainly *hijal (Barringtonia acutangula), karoch* (*Pongamia pinnata*) and *borun* (*Crataeva nurvala*) are still sparsely distributed and common in some of the wetland areas. Swamp forests are under pressure from conversion to agricultural land, grazing and felling. These processes are very rapidly affecting the remnant swamp forests adversely. Stakeholders of the project, therefore, identified swamp forest restoration as one of the most important activities for sustainable development and management of the wetland ecosystem there.

Afforestation Plan

VRMCs of the *haor* and floodplain sites designed their afforestation plans in the respective village level meetings. Labourer mobilization, species selection, size of saplings, number of saplings, sources of saplings, procurement plan, estimated cost for plantation, best plantation time, post plantation nursing, conservation and benefit sharing aspects were thoroughly discussed for consensus building prior to the finalization of the afforestation plan. To avoid conflicts, land tenure issues for afforestation at selected sites were discussed and shared with the Upazila

Protecting the plantation areas from interference

Land Department and Union Parishad prior to start off plantation. The afforestation in the *khas* land took place, assuming that the land would be leased to the respective VRMC in turn with a view to improving their livelihood. More specifically, the afforestation plan would include the following:

Guarding: Guarding or protecting the planted areas is very important for a better survival rate and sustainability of plantation. It was, therefore, so arranged that the VRMC would provide a guard who would be remunerated by the project initially and by the community people after phasing out of the project. Protection is usually a must until the saplings attain a height of 6-7 ft so that the plants are out of danger, that is, damage-risks caused by the grazing cattle. Plantation along roads, canals and rivers needs to be watched by the guards. VRMCs should monitor the performance of the deployed guards and look into other matters related to the sustainability of the afforested areas.

Irrigation: Monsoon is the planting time for the floodplain sites so that rainwater suffices to irrigate plantations, unless there is a drought spell prevailing. However, in the case of *haors*, aquatic saplings are planted after recession of water i.e. during the December - January period of the year. Extensive irrigation is required for newly planted saplings during the dry season (January to late April). In this case, the cost of the irrigation was provided initially by the project, but there must be a provision to provide labourers, especially women for irrigating the planted areas. At times, portable pumps are installed to irrigate large plantation areas in the *haor*. The VRMCs of the respective plantation areas were made responsible for irrigation management too.

Nursing: Nursing plants is important to protect them from the shocks or stresses generated due to weed infestation and any other natural causes viz. drought, floods etc. Weeding and mulching were carried out, as necessary to ensure adequate nutrients, thereby enhancing the resistance of plants against moisture stress.

Forestry experts visited the plantation areas to oversee the status that included growth, survival rate and natural succession of the flora. Any recommendations regarding thinning, application of fertilizer, insecticide or pesticide, gap filling, and uprooting excess plants were provided by the experts and subsequently implemented in the field by the project staff along with community people.

Box 11: Afforestation Plan in the *haor*, an instance

- *Agrahayana-Poush* (November/December) months, following draining of water from the *haor*, is considered the proper time for plantation.
- *Karoch* saplings should be 5-6 ft tall; they could be collected from various natural sources, viz. Manikkhila baag and Latifpur baag of Tahirpur *Upazila* and Ahsanpur baag of Jamalganj *Upazila*. *Karoch* saplings would be made available at the community nursery for plantation, offering income opportunities for poor households.
- *Hijal* saplings are rare in the nature; so, the poor women of the project area would be trained to raise saplings in the community nurseries.
- Poor women of the village would be engaged for irrigating the newly planted saplings during the peak dry months (March-April).
- Guards would be recruited from the respective villages under the project for patrolling plantation areas until the saplings attain a reasonable height and they are safe from the grazing cattle.
- A code of conduct for sustainable harvesting of forest products was developed. Through a workshop, the VRMC divided the regenerated forest resource into five parts of which one would always go for biodiversity conservation. The remaining four parts would be harvested and shared following a sustainable code of conduct.
- A 5-year rotation would be maintained for trimming/pollarding the plants of the forest.
- The benefit distribution modalities developed are as follows.

  60% benefit would be equally distributed among all the households of the village.

  25% would be saved for generation of community reserve fund for smooth operational activities to be undertaken by the VRMC. This fund could be used for social or pro-poor development purposes as agreed by the community too.

  Remaining 15% would be reserved for the landowner or Union Parishad, as appropriate.
- Furthermore, the VRMC decided that forest regenerated on *ejmali* as well as *khas* lands would all be a common property resource (CPR). Every villager has equal right to use these lands, taking prior permission from the VRMC.

Access and Benefit Sharing: A benefit sharing mechanism for each plantation area was designed before the plantation raising activities were undertaken. Community people, especially the members of the VRMC played a major role in preparation of the agreements at the village level meeting. The Chairman and the Members of the local Union Council usually attended the meetings and in case of plantation on the *khas* land, the presence of the representative from the Upazila Land Office was ensured to avoid and resolve land related conflicts, as necessary. Benefit sharing mechanisms were designed based on consensus reached by all the stakeholders (Box 11). An agreement was signed between the project authorities and the VRMC and subsequently endorsed by the necessary departments of the government and the Union Council. A code of conduct for harvesting of forest products, a plan for regular management and a description of the role of VRMCs with respect to forest conservation were also put in place to facilitate the process. The project authorities were responsible for facilitating and monitoring the regenerated forest until the phasing out of the project, when it would be handed over to the community for subsequent management.

9.1.2 Community Forestry

Community forestry aims at ensuring economic, ecological and social benefits for the people, particularly the rural masses and those living below the poverty line. While doing so, the beneficiaries are involved right from the planning stage till harvesting. The target of the community forestry is not only regenerating forests, it is also improving the life of the rural poor. The fund provided for planting is not simply to ensure that the trees get planted and survive, but also to ensure that the people who plant the trees receive adequate sustenance to live with dignity before reaping the harvest from the raised crops.

Roadside strip plantation

Strip Plantation: Strip plantation along roadsides and riverbanks promises both environmental amelioration and livelihood development, especially when land is scarce for block plantation. At the *haor* and

the floodplain sites, it so happened that the VRMCs identified the potential roads, rivers and canals for development of social forestry. The management followed the government rules and regulations for social forestry from the planning and planting stage to harvesting of matured trees. SEMP being a project targeted at conserving both environment and biodiversity, the beneficiaries of its interventions were facilitated while they selected site specific native species that would both support conservation and improve the livelihoods of local people.

Plantation in Religious Institutions: Plantation programmes have been implemented in the premises of selected shrines and Christian missions in the Madhumati Floodplain area, as such sites were deemed the best locations for raising plantations with a view to promoting biodiversity conservation. The authorities of the shrine, mission or religious institutions selected the species for plantation and planted the same in their premises for conservation and sustainable use. Saplings of local timber and fruit trees as well as medicinal species were planted for the benefit of the institutions.

Plantation in Educational Institutions: Premises of educational institutions of the project areas of *haor* and floodplain are also potential sites for greening. Similar to the religious places, strip plantations were established along the boundaries of the educational institutions with local timber, fruit and medicinal species that would ensure restoration of threatened tree species as well as provide income and medicine for teachers, students and local people.

Sapling Distribution for Planting in Homesteads: People in the project area have been motivated to plant native tree species in their unused lands. A need assessment in this connection was conducted at the household level where people mentioned their choice of species, number of saplings required for each household and when and how the saplings could be distributed and planted. In the *haor* and the floodplains, more than 120 thousand timber and fruit-bearing saplings were planted to increase canopy coverage of social forestry that might eventually augment the income andnutrition levels of households.

9.2 Rehabilitating aquatic habitats

Bangladesh is in the downstream of the Himalayan Mountain Range, which has contributed to its being deltaic in formation, attributes and dynamics. The major river systems (Padma-Meghna-Jamuna) deposit large loads of sediment annually in the *haor* and floodplain sites. The beds of rivers, canals and *beels* in the project areas are, therefore, getting raised gradually, resulting often in isolating water bodies from main water channels. As a consequence, habitats of aquatic resources, especially fisheries undergo fragmentation and fishes disperse.

Communities living both in the *haors* and floodplains have identified the root causes of wetland degradation in the respective ecosystems and suggested how the habitats could be rehabilitated, attaching due priority. Land use mapping, PAPD workshops and a series of village level meetings were organized with participation of multi-stakeholder groups where potential degraded wetlands were selected for rehabilitation. The community people suggested removal of the deposited silts off the beds of selected water bodies through earth-cutting with a view to restoring connectivity and habitats for aquatic organisms.

Box 12: Water bodies rehabilitated in *haors* and floodplains

Degraded canals contiguous with Matargaon, Khujargaon and Sukdevpur villages, measuring more than 3 km in total length were rehabilitated through re-excavation using local labour. A degraded *beel* owned by the Sukdevpur Madrasah was rehabilitated and protected as a sanctuary for enhancing fisheries production in Sanuar-Dakuar *Haor* of Jamalganj. A kilometre long Birali canal in Hakaluki *Haor* was re-excavated for enhancing its water retention capacity during the dry season with a view to providing habitat for brood fishes, irrigation water for winter crops and roosting ground for thousands of migratory birds.

Similar initiatives were taken for regenerating some of the water bodies at the floodplain sites. The 2.2 km long Bahadurpur canal, which in the past had maintained the connectivity between Gopinathpur *Beel* and the Padma River, was re-excavated for regeneration of fisheries resources and facilitating draining out of the flood waters for paddy cultivation. People living around Gopinathpur *Beel* established a fish sanctuary there for conservation of threatened fish and other aquatic species. To achieve similar objectives, 0.8 km of Ranapasha canal in the Madhumati Floodplain and 2.1 km of Boka *Beel* canal in the Brahmaputra Floodplain, were re-excavated for reconnecting the Madaripur *Beel* Route Canal with Chanda *Beel* and the isolated Boka *Beel* with the Brahmaputra River respectively.

Re-excavation of water bodies is a difficult and costly measure for wetland restoration, management and conservation. In the village level meeting, land tenure, encroachment, conflicts, prevalent use, potential for rehabilitation, etc. were reviewed carefully in the presence of the local Union Parishad representative. Concerned officials from the local Department of Fisheries, Department of Land and Water Development Board offices attended the meetings relevant to re-excavation to discuss the land tenure issues and operation modality.

Most of the water bodies located in the project areas were *khas*, which were often leased out to private parties for fishing. The water bodies enlisted in the leasing provision of the government were the most inaccessible for the community; so, the project and community

people excluded them from rehabilitation. The water bodies considered for rehabilitation had to be adjudged and qualify as per the following criteria:

- Community consensus
- Existing leasing arrangement-leased out or not
- Equitable access for community people
- Flora and fauna productivity of the water body
- Potentiality in terms of environment flow requirement, especially during the dry season
- Potentiality in terms of facilitating irrigation for crop fields during the dry season
- Community consensus about establishing fish sanctuaries in parts of the re-excavated water bodies
- Cost effectiveness
- Community's concern with respect to its management and maintenance after re-excavation.

Post re-excavation management of water bodies is a very important aspect of wise-use of wetlands. From a management point of view, community people identified the following activities for sustainable management:

***Plantation along re-excavated canals or* beels:** To facilitate soil-binding along the banks of the re-excavated water bodies, native aquatic trees and reeds, viz. *murtha (Schumannianthus dichotoma), hijal, karoch, babla, panibaj,* etc. were planted there. The management plan and the benefit sharing mechanism for the plantation were the same as those framed and applied to other plantations in the project area. VRMCs were considered as the main agency responsible for implementing plantation and subsequent management of the same.

Establishment of Conservation Area: Restoration of fish habitats and improvement of drainage within the project sites were the objectives of re-excavation of selected degraded water bodies. In the past, the poor villagers used to fish in the water bodies contiguous with their homesteads and respective villages for subsistence and income. Gradual siltation of those water bodies eventually compelled them to leave fishing. To promote fisheries abundance and conservation of threatened fisheries, fish conservation areas were established at each project site, involving community people from all walks of life. Brushpiles were put in the sanctuaries to ensure the security of aquatic species against illegal exploitation.

The community people selected specific conservation zones out of the re-excavated areas. Leaving the conservation areas out, the remainder re-excavated water bodies were accessible for fishing and other domestic uses. The community, however, restricted the use of harmful fishing gears and catching of brood or small fish from the re-excavated water bodies. Bamboo poles planted in the sanctuary waters prevented illegal fishing effectively, as one had to leave one's gear stuck or badly damaged/torn in case of any such ill attempt. In addition, fish sanctuaries were marked with red flags and signs to warn people against fishing, bathing and like. The conservation sites were managed by the respective VRMCs, who often deployed guards from the community for patrolling the sanctuaries, especially during the dry season.

Water withdrawal for irrigation: Usually, farmers in the floodplains and *haors* wait for the flood water to recede from their crop fields before planting crops. Arable yet heavily silted wetlands happen to prevent the expected draining of water, ultimately delaying plantation. Deliberations in the PAPD sessions revealed that the degradation of the water bodies in general affected the community people most. People considered the causes of such degradation and resolved that re-excavation of the silted up canals and water bodies would facilitate the timely inundation and recession of water from those parts of the *haors* and floodplains where profitable crop farming would be possible to undertake. As a direct positive result of the re-excavation, enhanced water storage capacity of the rehabilitated water bodies would also help in times of need of irrigating their *boro* rice paddies in the field in winter.

9.3 Conservation of Threatened Wildlife

Bangladesh was once the home to diverse flora and fauna species. But the degradation of forests and wetlands both due to anthropogenic and natural causes during the last few decades specially caused at least 10 mammals, 2 birds and 1 reptile to disappear from Bangladesh. The vertebrates extinct from the wetlands include the one-horned rhinoceros, swamp deer, hog deer, wolf, pink-headed duck and marsh crocodile. At present, more than 200 fish, amphibians, reptiles, birds and mammals are threatened in Bangladesh in varying degrees (IUCN Bangladesh, 2000). The declining biodiversity emerged as an issue and people expressed concerns over the crisis when the Government of Bangladesh formulated its first draft National Conservation Strategy (NCS) in the late 1980s. The good intention of undertaking conservation efforts was also formalized through the signing of the relevant MEAs, the formulation of the NEMAP and executing follow up environment conservation programme through the implementation of Sustainable Environment Management Programme (SEMP).

In the SEMP Community Based *Haor* and Floodplain Resource Management projects, efforts have been made to conserve the threatened biodiversity and their degraded habitats as well.

Like any other activities under this project, conservation of wildlife also involved local people of all occupations and their active support to halting further decline. The experiences of IUCN Bangladesh and its associates in the venture were also used at the local level for conservation of threatened biodiversity.

Box 13: Participatory efforts for biodiversity conservation

IUCN Bangladesh and its associates affirm their commitment to conserve threatened wildlife for preservation of genetic diversity and viable populations of all species in the wild that would help maintain biological interactions, ecological processes and function. The biologists of the project thus included the community people for identification of threatened species and the threats they were facing in the locality. A series of consultation meetings were conducted at the field level where indigenous knowledge of and practices related to conservation and local beliefs about the role and the needs with regard to wildlife were discussed, which generated considerable interest among the participants. The participatory as well as technical studies conducted under the project showed that vulnerability of species varied from area to area. The major threatened species included bat, Gangetic Dolphin (*Platanista gangetica*), and Pallas's Fish Eagle (*Haliaeetus leucoryphus*). It has been established that involving the local people in conservation is important. Communities, therefore, were educated and facilitated to enable them identify potential habitats and ways of conserving wildlife in the project areas.

9.3.1 Biodiversity Monitoring

All previous efforts made as regards conservation of biodiversity of Bangladesh expressed concerns over the adverse trends, which need to be addressed on a war footing immediately with the active participation of the local level community people. Baseline studies on flora and fauna conducted under the project followed both participatory and statistical survey methods. For monitoring of flora and fauna in the *haor* areas, standard methods were followed and a team of biologists comprising wildlife zoologists and botanists recorded fauna and flora both in monsoon and winter seasons. The unidentified specimens were brought to the respective field offices or Dhaka, as necessary, for referencing.

A participatory approach was also followed in the field to identify the status and trend of biodiversity in the project area, mostly in the floodplain sites. Enumerators of the survey met with heterogeneous groups of the community members for identifying the biodiversity resources of the locality. A structured format was used for keeping record of the data generated from the survey in the fields. After recording data in the datasheet, they were edited and coded for storing in the computer database. The monitoring report showed the situation analysis, trend, composition of biodiversity and environmental integrity as a whole.

9.3.2 Identification of Threatened Species

The rare species of *haors* and floodplains threatened with extinction were identified through the survey results and from the information generated after reviewing the secondary reports. According to the community people of haor areas, some of the largest mammal species, viz. leopard (*Panthera pardus*), tiger (*Panthera tigris*), rhinoceros, wild buffalo (*Bubalus bubalis*), etc. have totally disappeared from the *haor* ecosystems. Marsh crocodile (*Crocodylus palustris*) and Rock Python (*Phython molurus*) have also been extinct from the *haor* region. Bengal fox (*Vulpes bengalensis*), small Indian civet (*Viverricula indica*), jungle cat, fishing cat, etc. are facing pressure of extinction exerted by the rapid aggression into their habitats. Pallas's Fish Eagles, now a rarity, were also abundant in the recent past, just as other waterfowls of both resident and migratory species used to be. Nonetheless, millions of migratory birds still visit the region during winter, which makes the *haors* globally significant.

With an aim to undertake conservation of the threatened wildlife and plants, the community people including teachers, students, farmers, fishermen and women were informed and educated about the conservation objectives under the project in details. The plan of action was also designed at the community level with participation of multi-stakeholder groups where people were guided to select the degraded but potential habitats/sites of threatened wildlife for restoration. In addition, special efforts were made to conserve critically endangered species that included the Pallas's Fish Eagle, Gangetic Dolphin, Ring Lizard (*Varanus salvator)*, bat and turtle species at the *haor* and floodplain sites.

9.3.3 In situ *Conservation of Threatened Species*

Conservation of local biodiversity is important to maintaining ecological integrity of a locale, keeping humans in the centre of the ecosystem. The local people were initially reluctant to undertake any effort of conserving wildlife. Subsequently, they were motivated to realize the environmental and economic benefits from conserving wildlife. Knowledge sharing meetings with the local educated people were an effective tool for opening further avenues to wildlife conservation involving local people. Continuous awareness activities organized in and around the potential habitats of particular wildlife species enhanced people's perceptions of restoration and sustainable use of biodiversity. Wildlife conservation issues and concerns were discussed in the VRMC and Village Groups meetings on a regular basis, wherein they designed the approach and action plans for identification of potential areas for the purpose. The action plans included rehabilitation of habitats that often addressed the relevant concerns through planting indigenous species, restricting resource extraction, prohibiting hunting of wildlife and promoting a conducive environment for roosting and breeding. The project staff and enthusiastic mentors of wildlife conservation campaigns

have consistently followed up with appropriate action plans and their subsequent implementation.

Communal lands, shrines and educational institutions with a potential for harbouring wildlife were selected and subsequently established as wildlife sanctuaries. Land tenure issues for establishing conservation areas were carefully addressed before setting up the same. In the case of private or *khas* land, the VRMC could take a long-term lease of the land containing a particular habitat with a view to conserving threatened animal or plants in a specific area. In the Padma-Jamuna Floodplain in Manikganj, cormorant and bat colonies were protected from any intervention whatsoever through respective VRMCs' maintaining an agreement with the owners of the particular trees of habitation. Similar conservation efforts were made in the Madhumati Floodplain, Pagnar and Sanuar-Dakuar *Haors*, Hakaluki *Haor* and Brahmaputra-Shitalakshya Floodplain to conserve threatened species such as, the Gangetic Dolphin, Ring Lizard, Pallas's Fish Eagle and other local wildlife.

9.4 Community Initiative in Medicinal Plant Conservation

As a repository of natural resources, Bangladesh harbours about 450 to 500 of plants with medicinal value (Ghani, 1998). They serve as important therapeutic agents as well as sources of valuable raw materials for manufacturing traditional and modern medicine. The rich heritage of indigenous knowledge associated and based on herbal medicine is considered the nursery of all systems of traditional remedies practiced in Bangladesh.

Medicinal plant demonstration nursery in Jamalganj

Local medicinal plants along with the traditional knowledge of their therapeutic properties form an integral part of the culture and heritage of a community. A shift from traditional agricultural practices to the modern intensive ones due to the pressures of the ever-increasing population and over-exploitation has resulted in the depletion of medicinal plant resources. To reverse the trend, IUCN Bangladesh launched a community based approach for both *in situ* and *ex situ* conservation of medicinal plants that may help recoup the declining resources as well as the dwindling employment of the rural healers.

Among the five sites under the Community Based *Haor* and Floodplain Resource Management Projects, the Padma-Jamuna, Madhumati and Brahmaputra-Shitalakshya Floodplains certainly had potentials for conservation and management of medicinal plants.

9.4.1 Review Status and Identification of Needs

In the early stage of the project, a baseline status of medicinal plant was established under a flora survey conducted in the project areas. Medicinal plants as a particular area of focus had been treated with increasing importance during the information collection on the use of a regime of medicinal plants available in the area, their distribution, extent of their use as such and people's perceptions of the relevant issues. Secondary documents including literature, relevant websites available on the internet and research findings were reviewed but very scanty reliable information was available about the specific project areas in this regard.

The knowledge gap identified during the literature review initiated the PRA exercises focusing on medicinal plant resources and associated traditional knowledge. Focused Group Discussions were also carried out and in the PAPD workshops, the communities incorporated medicinal plants related issues with a view to discussing and identifying ensuing work to do as regards medicinal plants conservation and all. Based on the findings of the above exercises, participatory medicinal plant conservation initiatives were taken in the project areas, which included awareness raising, *in situ* and *ex situ* conservation, promoting the use of medicinal plants, etc.

9.4.2 Awareness for Conservation of Medicinal Plants

The all-round importance of medicinal plants is yet to be researched into and the concept has at times, been ignored while discussing sustainable conservation and management options. This project concentrated on raising awareness through community meetings and awareness workshops, emphasizing the related conservation values. An awareness workshop organized in this connection usually focused on the medicinal values of plants before designing a plan for conservation. People who lacked in information about the same were educated, motivated and advised to consult traditional healers before using the medicinal plants on their own. To

supplement the awareness activities, leaflets on the value and usefulness of medicinal plants were distributed in the project area to encourage local people to conserve medicinal plants. The project also emphasized organizing meetings and workshops where users of medicinal plants and local healers participated and exchanged their knowledge and relevant perceptions that essentially enhanced the participants' resolve regarding the conservation of local medicinal plants.

9.4.3 Conservation of Medicinal Plants

As part of the conservation efforts, local people established hundreds of medicinal plant plots in the courtyards of their homesteads and premises of educational and religious institutions. *In situ* and *ex situ* conservation of the plant species in smaller plots ensured the protection of threatened medicinal plant species from further loss. The people in the locality now harvest various parts of the plants, when necessary, as remedies for their diseases. Increasing uses of the herbal medicine bolstered the support for conservation of medicinal plants by the local people.

CHAPTER 10

EXIT STRATEGY AND SUSTAINABILITY ISSUES

'Exit' here refers to the discontinuation of all external resource supply through the project source in the project areas. The goal of the 'exit strategy' is to ensure the sustainability of the project impacts after the project terminates. In each fixed-term project, there should be a plan prepared for exiting from the project, involving the community people again. Approaches for exiting include handing the project activities over to the communities or institutions earmarked or established for the purpose. Identifying the options for generating alternative resources from the community or external sources, with a view to continuing with activities which must be done is the most critical component of an exit strategy, for that matter. The exit strategy for the Community Based *Haor* and Floodplain Resource Management projects was designed at the community level, in the light of the CBOs' capacity, financial condition and linkages with the external funding resources, legal status, transparency and accountability for project management.

The exit strategy for the project was incorporated into the Project Implementation Plan (PIP) of the project. The main vehicles for continuing the project after exit were identified as the VRMCs and VGs formed under the project. As per the Terms of Reference of the VRMCs, they have been vested with the responsibilities of carrying out environmental activities in the wetlands they have been using customarily. For ensuring sustainable management of the *haor*

and floodplain ecosystems, members of the VRMCs formed an apex committee named the *Haor* Resource Management Committee (HRMC) and Floodplain Resource Management Committee (FRMC) respectively. Ensuring improved management of the ecosystems in question is the objective of the apex bodies through establishing better coordination among the VRMCs, Upazila Environment Committees (UECs) and local administration bodies of the government. Participation of local government representatives in the apex body as advisors would establish strong and effective linkages among the secondary stakeholders (non-beneficiary) of the project, who are potentially important for sustainable and effective management of the wetlands.

The sustainability issues were reviewed on several occasions at different project workshops with the community leaders, project staff, donors and government representatives participating. In those forums, the participants expressed concerns about the financial aspects, conflict management, role of concerned government officials, land tenure issues of rehabilitated wetlands, and transparency and accountability of the CBOs' leaders during management of their ecosystems in this connection.

Aimed at ensuring sustainability of the project initiated systems and activities, the crucial issues identified by the stakeholders from the very beginning were addressed through institutionalization of the improved systems as well as promoting capacity building of the resource users. The implementation of wetland resource management attempted at addressing the issues and resolving the problems related to the degradation of ecosystem and their restoration, with the active involvement of all stakeholders at all stages through the project. All inventories and formulation of restoration and conservation plans were initiated at the community level, subsequently blended and fused with the proven modern techniques and finally implemented at the field level.

Apart from ensuring the participation of the stakeholders, their capacity building, alternative income generation and overall improvement or restoration of *haor* and floodplain ecosystems, the following strategies were formulated and deployed during the project implementation for long-term sustainability.

Self-reliance: Effective financial capacity of the VRMCs was considered a major issue to be addressed for ensuring the sustainability of the people based organization. The community people restored communal resource bases under the project that would generate adequate economical benefit as profit from sustainable harvesting of wetland products. In addition, poor groups and VRMCs received environmental incentives/funds from the environment fund for strengthening their financial viability. The alternative employment and income generated from

the effective utilisation of the environment fund would help alleviate poverty. The uplift thus accomplished would eventually prevent the poor from over-exploiting and recklessly harvesting natural resources.

Continuity from Operational Level/Replication: It has, by now been apparent that a multi-tier management and coordination system comprising three types of committees, viz. VRMC, UEC and HRMC/FRMC were formed with representation from all stakeholder groups. The representatives from respective Union Councils involved themselves as the advisors of the UEC to lobby the *upazila* administration regarding the environmental matters. In the project areas, where the work involved more than one *upazilas*, a wetland based apex committee was formed with representation from the VRMCs and the UECs (Figure 9). These local level organizations of different tiers are now fully functional and it is with them that the responsibilities for long-term management of their ecosystems have been vested with. In this endeavour, the capacity of the committee members has been enhanced to render them competent for managing the ecosystems in a sustainable manner.

The CBOs were registered with the Department of Cooperative or Department of Women Affairs of the Government of Bangladesh, as appropriate. The reason behind the registration was to ensure their sustainability and accountability to a department that would assuredly protect the interest of the members of the CBOs concerned against any personal exploitation even after phasing out of the project. It was envisaged that the regenerated resources such as swamp forests, plantation along roads or canals, medicinal plant plots, turtle conservation, *kua* (small water body inside the Chanda *Beel*) fisheries, cultivation on *baira,* etc. would certainly augment the income of the CBOs in the ensuing days. The concerned departments dealing with the enlisted CBOs would be responsible for monitoring and auditing the activities of these organisations under the project. The rational distribution of the economic benefits among the village households would hopefully render the CBOs enthusiastic about continuing with the conservation and sustainable management of wetlands.

The successful cases of wetland management by the community people have not yet been publicized or demonstrated before other stakeholder groups comprising the grassroots as well as policy-makers in other ecosystems. The sharing, adoption and replication of the success stories by and among the stakeholders related to natural resource management thus play an important role in ensuring the sustenance of the approach as well as the existing CBOs involved in wetland resource management.

Ownership from Sustainability Perspective: Ensured participation of multi-stakeholders in different stages of projects, from planning to implementation, would enhance the sense of ownership of the community people. This could also be strengthened through practicing financial transparency, good governance, participatory approaches and equitable access and benefit sharing within the scope of the project. Continued participation of the community people depends on the cost and benefit ratio evolved. A project manager thus needs to design such a community-based action plan clearly showing that the envisaged activities would generate much greater benefits for the community people with the participants incurring negligible or very little participation costs in comparison for the purpose.

In the SEMP projects, CBOs were formed, financed and trained in the various skills with regard to environmental management, monitoring and account keeping. The concerned CBOs' regulations governing finance and relevant record keeping of income and expenditures encouraged the members to up-scale and enhance their efforts of conservation and development. The sense of ownership the members experienced from managing and accessing their resources provenly helped enhance their self-esteem.

Land Tenure Issue: Being a populous country, land is a critical issue in Bangladesh. Private lands are split gradually into smaller and smaller fragments with the passage of generations and are shared among the new and newer inheritors of the lands. The landholding of a household thus becomes smaller and smaller as years pass by, exacerbating the competition for land. The government owned degraded forests, wetlands or any other fallow lands in and outside the localities, which are *khas*, lands are eventually encroached upon and utilised mostly by the influential and powerful men. In most of the cases, there are conflicts or judicial cases filed in the courts on land tenure and management issues. In these circumstances, land tenure issues should be considered closely prior to fielding any intervention.

Under the Community Based *Haor* and Floodplain Resource Management projects, major physical interventions such as afforestation with native plant species and re-excavation of silted or dried up water bodies implemented in the *ejmali* (communal property) and *khas* (government property) lands involved representatives from respective communities and the Upazila level Department of Land office. Land demarcation was conducted in the presence of the above people, so that nobody from the landowner group could object to the implementation, conservation and restoration activities.

Multistakeholders designed the protocol for conservation, management and benefit sharing mechanisms for the regenerating resources, ensuring the realization of rights of everybody involved. For plantation in the community land, the village community receives the shared

benefits along with the landowner, whereas, the Department of Land is the only official beneficiary as the landowner in case of plantation conducted in the *khas* area, unless it is leased out to the community on agreed terms. To ensure unhindered access and resource management in the *khas* lands in respect of this project, a process has been initiated by IUCN and the SEMP-PMU for executing a long-term lease of the *khas* lands utilised under different project activities; the lease agreement in question will be excuted by the two parties involved, that is, the Department of Land and the respective VRMCs. Leasing of *khas* lands in favour of the VRMCs would ensure their rights over the resources for sustainable extraction as well as conservation of ecosystem in the years to come.

Monitoring and Evaluation: Monitoring and evaluation has been a continuous activity through the project period to understand the changes taking place due to the implementation of the project. Regular monitoring, progress review workshops and interim evaluation of activities helped rectify lapses and gaps during project implementation.

Numerous lessons have emerged and good examples have been created in the process of implementation of the project. Lessons learnt have been applied to correct the wrongs and examples of efficacy and efficiency were mainstreamed after making necessary adjustments to the action plans with a view to effecting better results and better efficacy as regards the project implementation.

CHAPTER 11

CONCLUSION

Practicing participatory approaches in the Community Based *Haor* and Floodplain Resource Management projects issued positive signals for the environmental practitioners engaged in the project and the donors and the relevant departments of the government were afforded potential knowledge of the grassroot stakeholders' capacity for planning, implementation and management of ecosystem in a sustainable manner. It was understood from the very beginning of the project that people living in an ecosystem must have the capacities necessary to generate and maintain livelihoods, while enhancing their own well-being and that of the generations to come. These capacities should be based on equity, ownership of resources and participatory decision-making. A successful community based wetland resource management, thus, develops local resources, viz. forestry, fisheries, agriculture and tourism, leading to overall improvement of the community and environmental conservation (Figure 11).

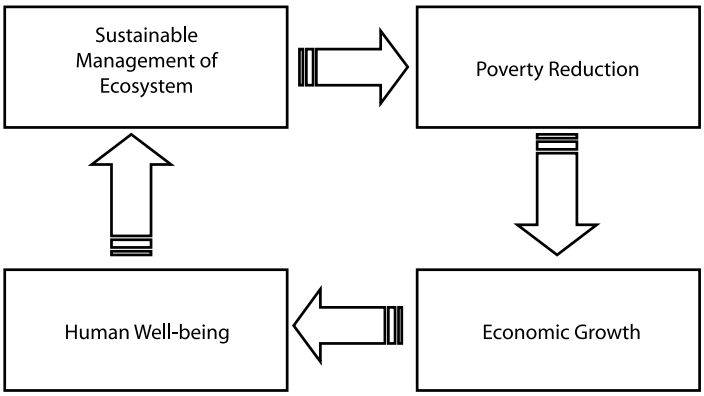


Figure 11 : Logical order of natural growth and livelihood well-being

Community based wetland resource management approaches deployed in the project implementation seriously considered and tested the following components for sustainability of activities and interventions at the local level, viz.

- institution building at the local level provenly enhances organizing capacity of the community people,
- educational and awareness raising messages on environmental and ecological integrity, when disseminated meaningfully, ensures the long-term sustainability of the natural resources,
- legal and institutional frameworks ensure establishing and supporting the community's rights to the usage and protection of the resources,
- people would be motivated to support resource conservation when they are provided with livelihood alternatives, and
- participation ensured in practice eventually and certainly enhances the sense of ownership of the community.

Besides, some area specific factors such as socio-political conditions, accessibility to the common properties, marketability of local products, religions and customs were considered carefully for effective implementation of the project. It was experienced from the project that hurdles could be overcome through effective participation of those people who traditionally had stake in the management and conservation of resources.

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