

Rapid Internal Evaluation of the Community Based *Haor* and Floodplain Resource Management Project

Sustainable Environment Management Programme (SEMP)
Component 2.2.1/A & B
BGD/96/007/A/01/99
IUCN Bangladesh Country Office

FINAL DRAFT

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Project identification

Title	Community Based Haor and Floodplain Resource Management
Project number	Sustainable Environment Management Programme (SEMP) Component 2.2.1/A & B BGD/96/007/A/01/99
Executing Agency	Ministry of Environment and Forest
Implementing Agency	Ministry of Environment and Forest Government of the People's Republic Bangladesh
Sub-Implementing Agency (SIA)	IUCN – The World Conservation Union Bangladesh Country Office
Duration	5 years
Effective starting	1 October 1998
Expected end	30 September 2003 Extended 31 December 2005
Project sites	Pagnar and Sanuar-Dakuar Haor, Hakaluki Haor, Padma-Jamuna Floodplain, Madhumoti Floodplain, Brahmaputra Floodplain.
Project Finance UNDP/GEF:	USD 3,213,760 (inclusive of additional funds requested)

Acronyms & Terms

Baor	Oxbow lake situated in the Moribound delta
BCAS	Bangladesh Centre for Advance Studies
Beel	Saucer-shaped depression of a marshy character
CBO	Community Based Organization
CNRS	Center for Natural Resource Studies
FAPD	Flood Action Plan Development
GEF	Global Environment Facility
GoB	Government of Bangladesh
Haor	A bowl-shaped depression located between the natural levees of rivers
HRMC	<i>Haor</i> Resource Management Committee
IMED	Implementation Monitoring and Evaluation Division
IPM	Integrated Pest Management
IUCN	The World Conservation Union
IUCNB	IUCN Bangladesh Country Office
Jheel	Natural or artificially created wetlands which are not rectangular
Kandas	Raised ridge like edges
Khal	Canal
Khas land	Government acquired land
Madrasa	Educational institution for Islamic studies
MoEF	Ministry of Environment and Forest
Mouzas	Sub area of an Union Parishad
NACOM	Nature Conservation Management
NEMAP	National Environmental Management Plan
NGO	Non Government Organization
NPD	National Programme Director
NRM	Natural Resource Management
PAPD	Participatory Action Plan Development
PIP	Project Implementation plan
PRA	Participatory Rural Appraisal
PSD	Programme Support Document
RRA	Rapid Rural appraisal
RIE	Rapid Internal Evaluation
SEMP	Sustainable Environment Management Plan
UNDP	United Nation Development Programme
UP	Union Parishad (Local Govt. body)
VC	Village Committee
VDC	Village Development Committee
VEC	Village Environment Committee
VGs	Village Groups
WMTC	Wetland Management Training Centre
WRMC	Wetland Resource Management Committee

EXECUTIVE SUMMARY

1. The Community Based *Haor* and Floodplain Resource Management project undertaken by IUCN Bangladesh Country Office (IUCNB) is a component of the Sustainable Environmental Management Programme (SEMP) of the Government of Bangladesh (GoB) implemented by its Ministry of Environment and Forest (MoEF). It is an implementation activity of the National Environment Management Action Plan (NEMAP) and is undertaken with the support of a grant from UNDP. The objective of SEMP is to build and strengthen capacity in environmental management at the community, local area and national levels especially through enabling access by the poor to natural and environmental resources, developing capacity to protect the interests of the poor, and by exploring possible changes to existing policies, laws and institutions. The overall aim of SEMP is to curb and where possible reverse the trend towards environmental degradation, promote development that is sustainable, alleviate poverty and enhance the quality of life.
2. The goal of Project is to establish and mainstream participatory resource management in *hoar* and floodplain ecosystems through improving access by the poor, especially women, by building understanding and capacity for sustainable wetlands resource utilization. It is implemented in association with three agencies acting as partners of IUCNB viz. the Center for Natural Resources Studies (CNRS), the Bangladesh Center for Advanced Studies (BCAS) and the Nature Conservation Management (NACOM). These organizations have strong grassroots links and have been working in the areas selected for the pilot projects, prior to the commencement of SEMP. They provided the much-needed link between IUCNB and local communities.
3. The Community Based *Haor* Resource Management Component of the Project (Component 2.2.1. A of SEMP) aimed to demonstrate the benefits of improving natural resource and environment management in the *haor* areas of Bangladesh. The Pagnar and Sanuar-Dakuar *Haor* and Hakaluki *Haor* in Northeastern Bangladesh were selected for this purpose.
4. The Community Based Floodplain Resource Management Component (Component 2.2.1.B of SEMP) aimed to demonstrate the benefits of improving natural resource and environment management in the floodplain areas. Projects were conducted in the floodplains of Padma-Jamuna, Modhumoti, and Brahmaputra-Shitalakshya areas of central Bangladesh.
5. The aim of this Rapid Internal Evaluation (RIE) is to conduct a rapid appraisal of the project with a view to assisting IUCNB prepare for the forthcoming evaluations of its performance in implementing these components of SEMP, by the GoB and UNDP. It also aims to help guide IUCNB and IUCN Asia Regional Office in taking appropriate next steps including the planning of future projects *vis-à-vis* the follow-up phase of the Project and the application of the lessons

learnt for community-based wetland resource management in other parts of the world e.g. The Lower Mekong River Basin.

6. The assessment involved a review of relevant key and related documents including the Project Support Document (PSD), Project Implementation Plan (PIP), baseline study reports, output and activity reports, quarterly progress reports, intervention specific reports etc. some of which were in draft stages of preparation. Visits were made to all project locations where discussions were held with field staff of partner organizations, and with a sample of the local communities involved in the project. Assistance in the field was provided by the IUCNB Project Task Manager, Research Associates, key field staff/manager of the Partner Organizations, and local community leaders. Evaluations were made for all interventions at each project location based on a Target-Achievement Matrix prepared for each project location by IUCNB and augmented with a consolidated summary of activities and achievements prepared by the relevant Partner Organization. Observations accruing from the field visits were further discussed with the Partner Organization field staff/manager, the Task Manager and other relevant persons for clarification and consolidation as appropriate.
7. SEMP was designed in 1996/97 and commenced in 1998. An Inception Report was prepared in 1999. Sites were selected based on a series of selection criteria that included the physical, hydrological, social, biological and management characteristics of the proposed site. Site-specific interventions and activities were designed collaboratively, and involved local communities, the government, non-governmental organizations (NGO), community-based organizations (CBO), the private sector and other stakeholders through Problem-Census and Planning Workshops. Flexibility was built into the projects by the mechanism of periodic reviews and modification of the Project Implementation Plan (PIP). Modifications were made to the Project in 2000. Two additional sites (Hakaluki Haor and Brahmaputra-Shitalakshya floodplain) were added to the project.
8. Monitoring of the project is three tiered. At the project site, activities were implemented and monitored on a continuous basis, by project participants and intended beneficiaries, and Partner Organizations (CNRS, BCAS and NACOM) project field staff employed at the start of the project. At the next level, IUCNB monitors implementation of project activities on a monthly basis and reports quarterly to the Project Management Unit (PMU) at the Ministry of Environment and Forest. The PMU approves Quarterly Progress Reports and Quarterly Work Plans. Upon approval the next tranche of funds are released to the sub-implementing agency (SIA) i.e IUCNB.
9. Progress of the project was evaluated using several tools and methods. Maps were used to show the location of interventions and types of changes occurring in the project area with the interventions; photographs and video recordings kept track of significant intervention events such as re-excavation of canals and ponds, replanting of swamp vegetation. These provide sequential records of changes in the project areas. Flow diagrams were prepared to indicate direct and indirect

impact routes of the interventions and their relationship to local and other causes; network diagrams were used to describe the inter-relationships between people, the environment and interventions; Venn diagrams were used to show changes in relationships between groups, institutions and individuals; diaries were kept to record changes in the lives of individuals, groups and communities; and a matrix scoring system was adopted to compare the performance of target groups for outcomes and outputs.

10. All activities of the project have been thoroughly documented. Reports of activities at the project sites have been summarized in *Monthly Progress Reports* that gives a schedule of planned work, achievements, constraints, and suggested follow-up. *Visit Reports* summarized all visits and activities undertaken, findings from the visits and follow-up actions required. Periodic *Training Workshop Report* and *Environmental Education Report* gave accounts of the training and education activities under the Project. With each report the needs addressed, the number of trainees, course content, programme duration, training materials used/produced, the relevant pre-and post-training assessment and suggested follow-up action, were recorded. Other than these, at each project site a *Baseline Report* was prepared. These provided information about baseline physical, hydrological, biological, social, economic, and management conditions prior to the start of interventions. They focused on wetland resources and human settlement characteristics that enabled the local communities to prepare an informed *Participatory Action Plan Development* (PAPD). An overall *Quarterly Progress Report* and *Quarterly Activities Plan* were produced to help all relevant parties monitor progress towards the goals and objectives of the project.
11. Overall, the Project has successfully met its objectives and all activities crucial to its satisfactory conclusion have been completed. Local communities involved with the project are better organized, have institutions/committees with legal status, and community financial resources in the form of savings that enabled them to sustain the activities started with the assistance of the Project, after the end of the project period. It was also evident that local communities have begun to understand the critical roles wetlands play in maintaining and enhancing their livelihoods, and that reversing the deterioration of the wetland ecosystem results in better incomes, improved productivity of the land and waters (terrestrial and aquatic ecosystems), and provides a more diverse and richer living environment that they can benefit from.

12. Assessment of Project Results

- a. Output 1 – Participatory resource management tools developed and practiced

Workshops with local community participation were conducted to collectively develop the action plan for specific villages and locations. These *Participatory Action Plan Development* (PAPD) process gave ownership of the interventions to local communities. Appraisal of the

status of the physical, hydrological, biological and management status of project areas used the *Participatory Rural Appraisal* (PRA) approach. *Participatory Monitoring and Evaluation* (PM&E) was used as a tool to track the progress of the Project. These tools have been used in the management of the resources in the Project sites.

b. Output 2 – Ecosystems improved, restored or rehabilitated

Many examples of improved and rehabilitated ecosystems are evident and have been reported at all project sites. This included the unaided reestablishment of swamp vegetation cover, the return of previously rare fish, bird and mammal species (e.g. dolphins) and increased fish harvests. Additionally, the excavation by local communities of water channels that had degraded owing to sedimentation and neglect, restored communication routes that had in the past connected *beels* and rivers. The re-establishment of such canals also improved fisheries in the local area by re-opening fish migration routes. Re-vegetation of barren areas with local wetland species was shown to result in the return of rare and endangered species such as the Pallas's Fish Eagle and the Ganges River Dolphin. The establishment of sanctuaries for fish and other species has been shown to lead to better fish harvest in the following season.

c. Output 3 – Local institutions for sustainable development established and functioning

Several institutions have been established in the project areas. These include the Village Environmental Committee (VEC), *haor* and floodplain Resource Management Committees (RMC) (at some locations Village Resource Management Committees - VRMC), and Village Group (VG). These organizations have legal status as they have been registered with the Cooperative/Social Welfare and Women Affairs Department of the GoB, and with the Upazilla Cooperative Department at the local government level. In schools, Nature Clubs or Eco-clubs have been formed and teachers have been given training to organize activities and supervise the clubs. Wetland Management Training Centres (WMTC) have been established using community resources and facilities donated by members of the community organizations. Communities involved in the Project have established revolving funds from an initial environment fund provided by the Project that enabled them to start small income-generating activities that appear to continue to grow.

d. Output 4 – Capacity, awareness and skills enhanced

A large number of training courses, study visits and participatory activities designed to increase awareness of local communities about sustainable

wetland management strategies and options, were concluded in this project. Training were held to ensure that local communities have the necessary capacity to manage wetland resources sustainably, and that they have the necessary skills to improve their livelihoods and economic standing. The communities visited during this RIE appear to have the confidence and will to continue the activities initiated under this project using the knowledge and resources they have acquired and accumulated by participating in this project. Some of the communities visited had plans to disseminate their know-how to neighbouring communities that had not had the opportunity to participate in the Project.

13. The Project has been successful in achieving to a fairly substantial extent all its objectives and has had significant impact towards sustainable resource management by local communities. By undertaking the mapping of resource baselines at the beginning of the Project, developing mechanisms and institutions for community participation and empowerment in resource management, introducing sustainable farming systems, promoting measures to curb soil erosion, and introducing feasible measures to rehabilitate degraded water bodies, the Project has been successful in demonstrating measures to prevent and reverse wetland ecosystem degradation, one of its primary objectives. Opportunities for sustainable resource use have been illustrated by activities to restore swamp forests, establishment of fish sanctuaries, providing protection for wildlife species, reintroduction of extinct species, promotion of plant nurseries, and introducing the use of biogas and solar energy. At the same time community-based institutions have been legally strengthened and provided access to microcredit facilities. Clubs and folk drama groups have been formed to help disseminate the conservation message and increase awareness of local communities of sustainable resource management practices.
14. The objective of promoting community-based resource management has been achieved through enhancing the technical know-how of the local communities, providing them with supporting resources, such as seedlings and materials for conservation, trainers and facilitators, and sponsoring awareness raising activities. Overall, the objective of improving the quality of life of poor rural communities has been aided by the Project through the provision of technical, financial and in-kind support, and by enhancing the role of women.
15. A draft internal End-term Impact Evaluation report has been prepared by IUCNB. It views the Project favourably while highlighting some of the major difficulties faced. Widespread illiteracy and resistance by the local elites currently controlling land and resource utilization activities to change towards a more transparent system that involves the participation of local communities in resource management are major obstacles that delayed Project implementation.

16. The Project was in full compliance with a majority of the CBD principles of the ecosystem approach. In promoting community-based resource management, the objective of management was entirely a matter of societal choice (Principle 1), and management was decentralized to the lowest level (Principle 2). It was also in compliance with Principle 7 because management was undertaken at the appropriate spatial scale and temporal (Principle 8) and the objectives of management were set for the long-term (Principle 8). The communities recognize that change is inevitable (Principle 9) and that the management of resources in the haor and floodplains is based on seeking a balance between use and conservation (Principle 10). In designing and implementing the Project all forms of knowledge were used (Principle 11) and it involved all relevant sectors of society and scientific disciplines (Principle 12). The Project was also in close conformity with the remaining principles of the ecosystem approach.

17. The outcomes and outputs of the CBHFRM project fulfill all five categories of guiding principles listed in the Ramsar guide on promoting wise-use of wetlands. Actions undertaken during the Project has improved institutional and organizational arrangements with the local communities in the project areas (Ramsar Guideline 1); directly or indirectly addressed government policies and legislation (Guideline 2); significantly increased the awareness of local communities, government and other stakeholders on the importance of wetlands and their values (Guideline 3); and had contributed to GoB initiatives to review the status of wetlands in the national context and to identify wetland conservation and management priorities (Guideline 4). Of particular significance in relation to this is the impending designation of Tanguar *Hoar* as the second Ramsar site in Bangladesh. Also actions have been taken to address problems at the wetland sites chosen for the project (Guideline 5).

18. There was a strong desire at IUCNB to maintain the continuity of the Project. Future projects can include the following: establishment of an electronic knowledge network on community-based natural resource management. This will make the information and knowledge generated during the Project more easily available to researchers, managers and local communities to strengthen ability to manage natural resources within a sustainable environmental governance framework. Other potential future projects include the establishment of a monitoring and evaluation system to monitor and evaluate the long-term impacts of the current project; extending the scope of the current project to include communities other than those that had participated; capacity building at the village, *upazaila*, and district levels for sustainable environmental governance; establishing legal and institutional frameworks for sustainable environmental governance at the local level; and a project to explore possible ways of linking community-based organizations to the local government structure. Substantive gains can also be made if training on effective methods and techniques for conflict resolution can be provided to local community leaders and other stakeholders engaged in community-based natural resource management.

1 Project Context and Background

1.1 Bangladesh and its Wetlands

Bangladesh is situated mainly on the deltas of large rivers flowing from the Himalayas. The Brahmaputra River, known locally as the Jamuna, joins with part of the Ganges in Bangladesh to form the Padma, which, after joining a third large river, the Meghna, flows into the Bay of Bengal. Offshoots of the Ganges-Padma, including the Burishwar, Garai, Kobadak, and Madhumati, also flow south to the Bay of Bengal.

No part of the delta area is more than 150 m (500 ft) above sea level, and most of it is but a meter or two above sea level. Its soil consists mostly of fertile alluvium, which is intensively farmed. During the rainy season floodwater covers most of the land surface. The North-western section of the country is less flat, but the only hilly regions are in the east, in the Chittagong Hill Tracts to the southeast, and the Sylhet District to the northeast.

The population of Bangladesh in 2003 was estimated by the United Nations at 146,736,000. In that year approximately 3% of the population was over 65 years of age, with another 40% of the population under 15 years of age. The annual population growth rate for the period 2000–2005 was estimated to be 2.02%.

Bangladesh is one of the world's most densely populated nations and the population density in 2002 was estimated to be 928 persons per sq km. The population is still heavily rural, with the great majority living in more than 85,000 villages. Life expectancy is 59 years, and infant mortality rates remain high.

The high population has severely strained Bangladesh's natural resources. Nearly all arable land is already cultivated and land under forests has been severely reduced by agricultural expansion and by timber and firewood harvesting. Between 1983 and 1993, forest and woodland declined by 12.5% to 1.9 million ha (4.7 million acres). As of 1995, the total forest area was only 1 million ha.

Bangladesh's environmental problems have been complicated by natural disasters that add to the strain on the agricultural production systems. Water supply is also a major problem because of population size, lack of purification procedures, and the spread of untreated contaminants into the usable water supply during floods. It has recently been suggested that high level of arsenic in the drinking water is also the result of arsenic released from sediments deposited by flooding¹.

¹ Proc Natl. Acad. Sci. USA Published on line <http://www.pnas.org/cgi/content/abstract/0509539103v1>

Wetlands comprise about 50% of the total area of Bangladesh (about 7 to 8 million hectares). About 7% of the country is permanently under water, 21% is periodically deeply flooded to a height of more than 90 cm, and around 35% of the country experiences shallow inundation². The variety of wetland areas found in Bangladesh include the riverine areas, creeks, seasonally inundated floodplains known as *haors*, *baors*, *beels*, fresh water lakes and estuarine systems including mangroves.

1.2 Wetland Resources and Their Use

The greater part of the North-eastern Bangladesh is covered by *haors* (bowl-shaped depression between natural levees of rivers). They cover an area of about 2,045,000 ha. The North-eastern *haor* basins contain about 47 major *haors* and some 6,300 *beels* of which about 3,500 are permanent and 2,800 are seasonal. Elsewhere, Bangladesh's vast alluvial plains are dotted with about 6,000 *beels* surrounded by large areas of seasonally flooded plains. The *beels* vary in size from as little as a few ha to many thousand ha.

There are also an estimated 700 rivers in Bangladesh, with a total length of about 24,140 km. These rivers are associated with about 5,486,609 ha. of inundable floodplains. The floodplains make up a complex and diverse sub-system of rivers and streams that enable temporary storage of excess water from the main river channel during flood. This increases and maintains quite considerably the fishery productivity of riverine system especially during the dry winter season.

The wetlands of Bangladesh are a reservoir of biodiversity and natural resources upon which communities depend for their livelihoods. Fisheries from wetlands provide about 80% of the dietary protein of the population. Food, fuel, fibre, fodder, building materials are also harvested from wetlands. The wetlands also provide water for irrigation and domestic uses and act as overwintering habitat for a rich variety of resident and migratory waterfowls.

The economic uses of the wetlands include that for growing flood tolerant rice paddies, fish rearing, collecting molluscs, planting vegetable gardens, and rearing ducks and other livestock. Fodder for cattle and dried weeds for fuel, are also collected from the wetlands. Healthy wetland ecosystems also act as a buffer for floods and serve to reduce the vulnerability of local communities to drought and floods.

The wetlands of Bangladesh are being degraded rapidly due to pressure from the population for water for irrigation, fish for food, wood for fuel and from large-scale habitat conversion for farming and agriculture. In some places

² IUCN Bangladesh (2005). *Community Based Sustainable Management of Wetland Resources: An Approach*. IUCN Bangladesh Country Office, Dhaka, Bangladesh, 119 pp.

wetland degradation has arisen from the neglect of waterways that eventually become unusable because of sedimentation. Such sedimentation also fragments water-bodies and disrupt the local ecology. Fish migration routes become disconnected preventing the completion of breeding cycles, causing fish populations to decline in the local area.

Current systems of wetland utilization encourage maximum exploitation, and marginalization of local communities. Wetland forest areas have become very rare due to clearing, cutting and burning. Reed beds have been severely reduced because of collecting for fuel and thatch, and the conversion of marginal wetlands for agriculture. Certain species of aquatic plants have disappeared or become very rare due to a combination of over-utilisation of useful species and changes in water quality. Many species of fish, amphibians, reptiles and mammals have disappeared, become rare or decreased significantly due to overfishing and habitat destruction. Collecting and hunting for food (e.g. frogs and turtles), persecution as pests (e.g. wild boar, otters), and incidental poisoning from use of pesticides (e.g. frogs), also add to the decline of wetland species and disruption of the local ecology.

1.3 Community-based Wetland Management

Wetlands in Bangladesh occur as government land or as privately owned land. Both government and privately owned wetlands can be leased for commercial exploitation. Leases are usually renewed on an annual basis. Areas adjacent to the *haors* and floodplains are usually cultivated, mainly with rice, and other crops. Around homesteads, vegetables (beans, gourds, yams) fruit (banana, papaya, mango, jujube) and crops such as mustard and onions are grown. As water levels drop in the drier months, peripheral areas of the *haor* are cultivated with rice, and used for grazing of cattle and buffalo. Rice fields are also irrigated with water pumped from the *beels*. Ducks are kept in village ponds and in the *beels*. Reed, grass and swamp forest trees are all used as fuel. Wildfowl have in the past been hunted for food and for sale at local markets. Turtles and tortoises are also hunted for food.

The current leasing system is seen as one of the major threats to sustainable management of the wetland areas as it encourages maximum exploitation, excludes local communities and does not take into account the need to sustain yields for future generations. Forested land has become very rare due to clearing, cutting and burning; reed beds have been severely reduced because of collecting for fuel and thatch, and because of the conversion of marginal wetlands for agriculture. Certain species of aquatic plants have disappeared or become very rare due to a combination of over-utilisation of useful species and changes in water quality. Over-fishing and habitat destruction, have severely reduced the population of fish, amphibians, reptiles and mammalian species. Some species have become rare or have decreased in occurrence significantly.

Most wetland sites do not have official protection status and even if they did, the enforcement of rules and regulations would be a serious challenge because of the extent the wetlands, and of the difficulty of gaining regular access to some of the remoter areas. For these reasons, a community-based *haor* and floodplain resources management regime, where the local communities play the key role in the management of resource use and conservation for the long-term, is crucial for ensuring the sustainability of these wetland areas. The community-based approach to natural resource management is a pluralist approach to managing natural resources that incorporates the interest of a wide range of stakeholders who are engaged in a variety of roles, generally leading to achieving the end goals of environmental conservation, sustainable use of natural resources and the equitable sharing of resource-related benefits and responsibilities (Borrini-Feyerabend *et al*, 2000³)

The Community Based *Haor* and Floodplain Resource Management Project (2.2.1-A/B) are components of the SEMP implemented by IUCN Bangladesh and is being implemented in association with three national NGOs namely Bangladesh Centre for Advanced Studies (BCAS), Center for Natural Resource Studies (CNRS) and Nature Conservation Management (NACOM). The project started in October 1998 and was designed so as to contribute to the overall objective of the NEMAP to further support the process of identification and field validation of key environmental issues, conserve, improve and reduce environmental degradation, promote sustainable development and generally raise the quality of human life as an integral part of the overall national strategy of development and environmental improvement. The Project also aims to increase the awareness and knowledge of the local communities about the links between the environment and nature conservation, and the resources upon which they depend for their economic and livelihood activities.

1.4 Project Background and Objectives

The Sustainable Environment Management Programme (SEMP) of the GoB was initiated in response to the National Environment Management Action Plan (NEMAP) published in 1995. NEMAP was developed by the Ministry of Environment and Forest with inputs from all sectors of society including non-government organizations, academics, parliamentarians, lawyers, journalists and grassroots organizations representing local communities. It is a plan that proposes actions for sustainable development and gives particular emphasis on the participation of the people in its implementation and monitoring.

³ Borrini-Feyerabend, G; Farvar, MT; Nguinguiri, JC; Ndangang, VA 2000. *Co-management of Natural Resources, Organizing, Negotiating and Learning-by-Doing*. International Union for Conservation of Nature and Natural Resources, Rue Mauverney 28 Gland CH-1196 Switzerland. 95 pp. 2000.

NEMAP took cognisance of the key actors in the decision-making process *viz.* government agencies, people's representatives, civil society groups, and individuals. All actions of the NEMAP are prioritized based on the number of people likely to be affected, the urgency of action necessary to protect ecosystems, the dependability of people 's participation, and the feasibility of pilot projects. Preparation of NEMAP thus involved consultations with the local communities and all other relevant stakeholders to identify concerns and options associated with the increasing degradation of the environment and its impact of the livelihoods of local communities. A major feature of NEMAP is the identification of priority areas of environmental concern where immediate action is required.

SEMP was formulated with the participation of civil society and support from the Government of Bangladesh (GoB) and the United Nations Development Programme (UNDP). The Ministry of Environment and Forest provided the necessary guidance in developing the project and it was designed through participatory consultative workshops with stakeholders. Its overall aim is to build national capacity for environmental governance at all levels of Bangladesh society.

SEMP consisted of 26 projects undertaken by 22 agencies. These projects were clustered in following 5 thematic areas:

- Policy and Institutions
- Participatory Ecosystems Management
- Community-based Environmental Sanitation
- Advocacy and Awareness
- Training and Education

IUCN Bangladesh (IUCNB) is the Sub-Implementing Agency (SIA) for Component 2.2.1 A and 2.2.1 B of the Participatory Ecosystems Management thematic cluster of SEMP. This focused specifically on community-based *haor* and floodplain resource management. The specific objectives of this project are as follows:

- Prevent and reverse the trends of wetland degradation
- Sustainable use of wetland resources
- Promote sustainable development
- Ensure people's participation in formulation and implementation of sustainable management plans

- Improve the quality of life with special focus on women
- Develop regional wetland centres for ecosystem management and
- Capacity building of the community for the management of natural resources and sustainable uses.

1.5 Purpose of Evaluation

The primary purpose of this Rapid Internal Evaluation (RIE) of the Project is to assist IUCNB develop a basis for preparing the final External Review of the project and to think through potential follow-up projects (see Annex 1). The RIE will provide an independent view of all the significant achievements, their documentation and dissemination for wider use and of any shortcoming that could have arisen. In this way the RIE will assist IUCNB meet its final reporting obligations to the MoEF and UNDP.

2 Project Sites

2.1 Site Selection Criteria

Pilot projects were established in *haor* as well as floodplain sites. These sites were chosen based on the following physical/geological, social, biological and management criteria (PSD 1997⁴). Physically a chosen *haor* site would be located in a hydrological and topographically defined *haor* basin having characteristics of *haor* environment with a diversity of aquatic and terrestrial habitats. These would include seasonal and perennial *beels*, canals, secondary rivers and seasonally inundated lands and raised *kandas* (raised edges) with swamp forests and reeds. A chosen floodplain site would meet the characteristics of a floodplain environment, flanked by a river system with an array of permanent water bodies such as ox-bow lakes and river back swamps. The floodplains are subject to inundation in the rainy season.

The social criteria used at both the *haor* and floodplain sites were similar and emphasised the importance of access the natural resources by local communities. The resource use and land ownership patterns of the areas should be favourable in terms of management needs of the project and the sites should offer considerable scope for income generation rural households. People from various professions including fishermen, farmers, wood and reed collectors, wildlife collectors/ hunters, people associated with water transportation, leaseholders, etc., should be represented within the selected site.

The biological criteria for selection of sites at the *haor* and floodplain sites included the consideration that the sites should contain a wide range of aquatic habitats and ecological niches or have potential for restoring habitats for rich biodiversity of flora and fauna.

The management/general criteria used in selecting *haor* and floodplain project sites included the criteria that the sites were of reasonable size and that the impacts of biological and social interventions by the Project can be easily quantified, and be replicable to other localities. The sites should also show a high potential for success so that the communities and resources would benefit as a result of the project intervention, and that there would be negligible or no impact of external factors or other projects which would influence the intervention and impact of the project. The sites selected for the Project is shown in Figure 1 and are described briefly in the following sections.

⁴ UNDP Programme Support Document (PSD) for Programme BGD/96/007/A/01/99 Sustainable environment Management Programme (SEMP), Ministry of Environment and Forest, Government of the People's Republic of Bangladesh.

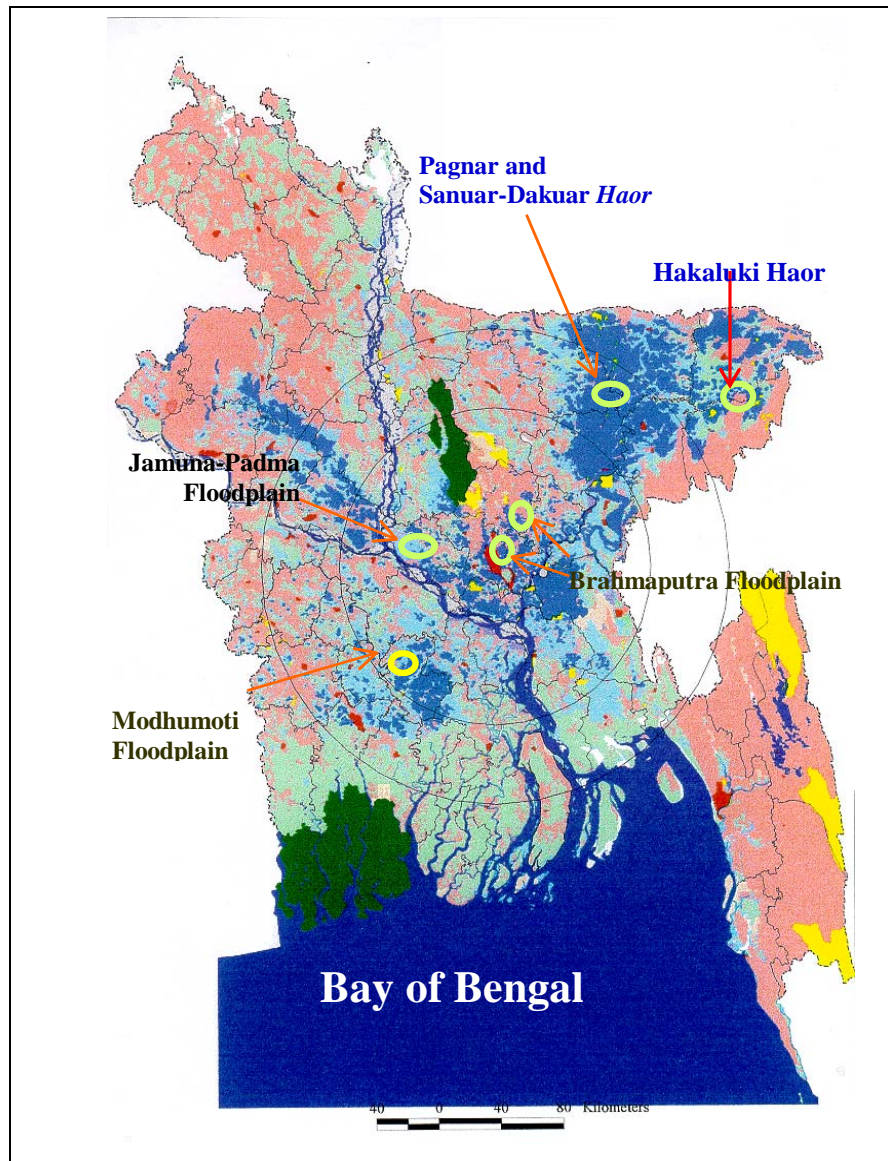


Figure 1 Location of Project sites. (Source: IUCN Bangladesh (2005). *Community Based Sustainable Management of Wetland Resources: An Approach*. IUCN Bangladesh Country Office, Dhaka, Bangladesh, 119)

2.2 Pagnar and Sanuar-Dakuar Haor

The selected Pagnar *Haor* has about 22 villages with a total population of about 12,000. The Sanuar-Dakuar *Haor* site has about 20 villages and a total population of about 16,000. Both sites have diverse wetland habitats consisting of small- and medium-sized *beels* and canals, secondary rivers, and a wide expanse of seasonally inundated lands where communities fish in the wet season and cultivate rice in the dry season. Patches of degraded swamp forests occur in the *khas* land. The Pagnar *Haor* site is a deeply flooded area during the monsoon season and some of the villages are exposed to wave action that cause erosion of homestead land.

2.3 Hakaluki Haor

The Hakaluki *Haor* site is a complex ecosystem of more than 80 inter-connecting freshwater *beels* in a shallow basin bordered by the Patharia and Madhab Hills in the east and the Bather Hills in the west. The important *beels* are Chatala, Pinglarkona, Haorkhal Footi, and Paula. Degraded *beels* in the Borelekha (Sujanagar) and Fenchugonj (Gilachara) were selected for the project activities. The Gilachara Union contains 16 villages with a population of 11,000 while Sujanagar Union has 14 villages with a population of 11,196. The important water bodies (*Changer khal, Radhar Dubi beel, Volak Handir Khara, Bara Kachua beel, Lidori beel, Padni Dor beel* etc.) within the project sites were considered suitable for community based management.

2.4 Madhumati Floodplain

In the Madhumati floodplain, the sites chosen were at Chanda *Beel* of Gopalganj Sadar and Mokshedpur thanas of Gopalganj district. Five villages Chanda, Betgram, Barampalta, Andorkota, Shanpukkuria were selected as principal activity areas from among the total of 45 villages in the area. The area is within the Madaripur-Gopalganj peat basin consisting of a basin-like depression with patches of perennial water. The physical and hydrological characteristics and processes of this Madhumati floodplain ecosystem differ considerably from those of other wetland ecosystems. Seasonal variations in ecosystem characteristics from being predominantly aquatic in the monsoon season to being predominantly terrestrial in winter are the result of large annual fluctuations in river and floodwater levels.

2.5 Padma-Jamuna Floodplain

In the Jamuna-Padma floodplain major interventions were concentrated in the Arua Union, covering 24 villages with a population size of about 13,000, the

Gopinathpur Union that has 13 villages with a population of about 15,000 and in Kanchanpur Union has 6 villages with a population of about 6,500. The *Kanchanpur* Union was included in response to demands by their communities to participate in the Project. All sites are at the lower reaches of the Jamuna-Padma floodplain and at the confluence of Jamuna and Ichamati rivers.

2.6 Brahmaputra Floodplain

The Brahmaputra Floodplain site was located in the floodplain of Brahmaputra River of Bailar and Rampur Union of Trisal *Thana* of Mymensingh District. The area has 14 villages with a population of 31,300. Project activities were primarily concentrates in two areas, the Boka *beel* and the Brahmaputra-Shitalakha floodplain areas in the Kapasia *upazilla* under the Gazipur district.

3 Methodologies

3.1 Project Approach and Methodology

The project approach and methodology is thoroughly described in the IUCNB document *Community Based Sustainable Management of Wetland Resources: An Approach* (IUCNB 2005⁵) that was available in draft form during the RIE. This document is anticipated to be published before the end of the project in December 2005.

The community-based approach was adopted from the project design and formulation phases of the SEMP. All plans for intervention, action plans, implementation plans, monitoring and evaluation plans were developed in cooperation with the relevant local communities using several Participatory Rural Appraisal (PRA) and Participatory Action Plan Development (PAPD) tools and techniques, depending on the site, its demographics, resource availability and responses of the local people. In this way the design of the project at each location depended considerably on the demands and decisions made by the local communities and in that way departed from traditional top-down project planning, implementation and management practices.

In planning the project local knowledge and beliefs was integrated with what is scientifically known. It was also the principal method used for promoting the involvement of local communities in the project as a whole and as a way of ensuring popular ownership of the project by the local communities who were educated, made aware and motivated to be a part of the environment in which they live and interact with on a daily basis for their livelihood. The local communities' ideas for restoring and rehabilitating degraded ecosystems were taken into account and the design steps taken to rehabilitate and restore degraded ecosystems combined knowledge from indigenous sources with that from a scientific understanding of ecosystem management.

In summary the following steps were taken to ensure that the Project would successfully involve the local communities in natural resource management:

3.1.1 Baseline Studies

Multidisciplinary teams consisting of a sociologist, a biologist, a gender specialist and an environmentalist visited each project site and collected baseline information on demography, geography, socio-economy, land-use pattern and biophysical features, and documented any conflicts in natural resource use. The teams made

⁵ IUCN Bangladesh (2005). *Community Based Sustainable Management of Wetland Resources: An Approach*. IUCN Bangladesh Country Office, Dhaka, Bangladesh, 119 pp.

recommendations with regard to the suitability of the project site based on the site selection criteria described in Section 2.1. A semi-detailed map of each project site was also prepared.

3.1.2 Participatory Action Plan Development (PAPD)

Communities in the selected sites were then engaged in the identification of problems and their possible solutions in a problem census activity. The “problem tree” approach was used and 42 workshops were held to develop the action plans appropriate at the village level in each project site. The Logical Framework Approach was used in further developing the project interventions. This involved conducting a stakeholder analysis and then planning the outputs, outcomes, activities and inputs necessary for the successful implementation of the project by the local communities.

3.1.3 Enhancing Awareness and Knowledge

Concurrently, activities were undertaken to raise the awareness of the local communities on the benefits of conserving and rehabilitating the wetland ecosystem. Awareness meetings were held for villagers at the village level and for students at the local schools. Where appropriate, folk drama groups were encouraged and supported to present the conservation message.

3.1.4 Skills Development

The knowledge and capacity of key local leaders and women’s groups were enhanced by providing them with the necessary training courses and by organising exchange visits to local and foreign organizations and groups that enabled the sharing of knowledge and expertise in environmentally sound economic and other activities that would raise their income levels. 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.

3.1.5 Creation of Environment Fund

An environment fund was created to provide micro-credit to needy groups especially women. It enabled them to engage in income generating activities that did not do further damage to the environment. Funds were provided interest free with no overhead charge. Groups accessing the environment fund were given training so that they had some understanding of how to organize their group meetings, open and keep a bank account and select as a team an appropriate income generating activity funded by the funds they receive.

3.1.6 Project monitoring and evaluation

Progress of the Project was closely monitored and evaluated on a regular and continual basis. It involved staff of partner organization, IUCNB and of the MoEF. Monthly progress reports were submitted by all partner organizations. These were tabled at the monthly progress review meetings held during the last week of each month. Quarterly review and planning meetings were held during the last week of the last month of each quarter. Quarterly progress reports were compiled and submitted to the PMU. Work plans and the budget requirements were tabled and approved at these quarterly progress review meetings. Any significant deviation from the approved plan of activities will require approval by the Project Management Committee (PMC) and endorsed by the Project Steering Committee (PSC) that meets quarterly. The PMC met monthly as does the Project Financial Committee. A Project Completion Report is required by the Implementation, Monitoring and Evaluation Division (IMED) of the Ministry of Planning, GoB. The UNDP requires the submission of a Terminal Report at the end of the Project.

3.2 Substantive Areas of Interventions

The activities suggested in the Action Plan developed by the communities can be clustered into the following substantive areas of intervention.

- **Institutionalization** of resource management organizations at the village level;
- **Afforestation** of degraded *haor* 'kandas' for swamp forest restoration, plantation along roadsides of *haor* and floodplain sites, homestead plantation, block plantation;

- **Rehabilitation of potential but dead or silted water bodies** to reinstate aquatic life and resources of wetlands;
- **Capacity building and awareness raising** of the resource users on the concept of sustainable natural resource management;
- **Creating Alternative Livelihood Options** among the poor households to alleviate extreme poverty and to reduce pressure on the natural resource base;
- **Demonstrating eco-friendly agriculture** to reduce agro-based pollution and erosion of genetic diversity of local crops;
- **Conservation of endangered biodiversity** in order to increase species diversity;
- **Wise use of natural resources** so as to obtain optimum direct and indirect benefits from a healthier ecosystem; and
- **Empowerment of the poor and enhancing women's access** to resources, rights and governance with regards to natural resource management.

Clustering of the focus of activities in the Project in this way facilitated project monitoring and evaluation of progress and achievements.

3.3 Rapid Internal Evaluation Approach and Methodology

The Rapid Internal Evaluation (RIE) was conducted in a participatory manner, working closely with the IUCNB Country Representative, and all IUCNB staff involved in the implementation of the Project especially the Task Manager. Other IUCNB staff responsible for activities associated with the Project, such as the preparation of publications, was also interviewed. Discussions were also held with senior staff of all IUCNB Partner Organizations involved in the implementation of the project in the field and with Senior Management Staff involved in the overall management of SEMP at the MoEF. A list of key personnel met during the Evaluation is given in Annex 2.

The primary objective of the RIE is to conduct a rapid assessment of project implementation and impacts so as to provide assistance to IUCNB in preparing for the final external review of the Project and in preparing the Project Completion Report for the IMED, Ministry of Planning and the Project Terminal Report for UNDP. Its subsidiary aim was to explore and

provide suggestions of project concepts that can be developed further as follow-up to the current Project.

Key project documents, such as the UNDP Programme Support Document (BGD/96/007/A/01/99), Project Inception Report, and Project Implementation Plan (PIP) were reviewed along with other relevant reports and documents produced by the Project. These included Monthly Progress Reports, Quarterly Operational Reports, and other internal documents such as consultant and financial reports. A list of reports received and reviewed is given in Annex 3.

Field visits were made to all project sites (Pagnar and Sanuar-Dakuar Haor, Jamalgonj, Sunamgonj District; Hakaluki Haor, Movibazar and Sylhet Districts; Chanda Beel, Gopalganj; Padma-Jamuna Floodplain, Manikgonj District; and the Brahmaputra-Shitalakshya Floodplain, Gazipur and Mymensingh and Gazipur Districts) as shown in the itinerary in Annex 4. At each Project site Field Managers appointed by partner organizations within the project area provided detailed information of project achievements and impacts on the local area and communities. One or two selected villages within each site were visited and interviews were held with local village communities targeted by the project.

At each village, activities that were initiated as a result of the Project were visited and reviewed first-hand. Where possible the Chair and Members of the Village Resource Management Committee, Chair and Members of the Women's Group, other community leaders such as the Member of Parliament, the Upazaila Nilbahi Officer (Sub-District Officer), the Union Parishad Chair, and the Deputy Commissioner of the District, were informally interviewed for their views of the Project, its impacts on the local communities and on the local environment and nature. Impacts of the Project on the livelihood of the local communities were usually explored in detail in discussions with the village level committees and groups.

Findings from the field visits and interviews were discussed with senior management of the Project such as the IUCNB Country Representative, the Task Manager of the Project, and the Chair of the Project Management Unit of the MoEF, so as to obtain the correct interpretation of findings in the field. Output and outcomes of the Project were cross-checked against a Target-Achievement Matrix provided to the reviewer by IUCNB. Final evaluation was made against the target outputs listed in the logical framework matrix for the Project found in the most recently updated Project Implementation Plan (PIP) dated November 2004.

4 Overall Evaluation

4.1 General and Contextual Considerations

The Project aimed to contribute to the overall objective of NEMAP through the SEMP, and to support further identification and field validation of key environmental issues in the Project sites. The activities undertaken were designed to showcase community-based initiatives to manage natural resources in a sustainable manner. This required making interventions to conserve the biological diversity of the areas concerned, arrest environmental degradation, enhance the incomes and increase livelihood options available to local communities thereby improving their standard of living and raising their quality of life. Gender related issues received special attention. In short the Project aimed to promote sustainable development through community empowerment and participation. This is in line with the country's overall strategy of development and environmental improvement outlined in NEMAP.

Project Implementation Plans (PIP) were prepared for each ecosystem (*haor* and floodplain)) upon the conception of the project in 1998 and an Inception Report was prepared in 1999. Flexibility of project implementation was built into the Project by allowing the PIP to be reviewed and revised as appropriate during the entire duration of the Project. The initial PIP was first updated in December 2000 and together with this, the logical framework analysis, activity plan, and budget for the Project were also updated (MoEF 2004^{6 & 7}). The last up-date of the PIP was in November 2004.

The Project was officially suspended by the MoEF from September to December 2000 but owing to constraints in disbursing revised financial allocations, Project activity resumed only in July 2001. During the period of suspension, minimal activities were continued at the Project sites to maintain contact with the local communities and their interest in the Project. An independent external evaluation of the Project was conducted in February 2001 after the suspension of SEMP by the MoEF. During that time the programme underwent comprehensive review and assessment for progress achieved, and for managerial and financial control procedures.

The evaluation resulted in an increase in the scope of the Project to include additional study areas. For component 2.2.1 A that was implemented in Pagnar and Sanuar-Dakuar Hoar was added an additional study site at

⁶ Ministry of Environment and Forest, Community Based *Hoar* Resource Management. Updated Project Implementation Plan (PIP) November 2004

⁷ Ministry of Environment and Forest, Community Based Floodplain Resource Management. Updated Project Implementation Plan (PIP) November 2004

Hakaluki Haor (in Sylhet and Moulvibazar Districts). With component 2.2.1 B that was originally implemented in the Padma-Jamuna floodplain (Manikganj District) and the Chanda and other beels of the Modhumati floodplain (Gopalganj and Madaripur Districts) was added a site in the Brahmaputra-Shitalakshya floodplain.

An Internal Mid-Term Review of the Project was undertaken in December 2001⁸. This mid-term review also evaluated the achievement and shortfalls of project implementation based on the Inception Report, PIP and Project Support Document. The Project was then viewed positively and was deemed to have made significant progress. Its scope was expanded to include the additional Project sites mentioned above, and additional funding was allocated to meet the additional expenses that would be incurred with the addition of Hakaluki *Haor* and the Brahmaputra Floodplain sites.

4.2 Evaluation of Approaches and Methodologies

Overall the approach and methodologies adopted by the Project were sound and well thought through. Involving local communities in the management of natural resources around them is a complex and difficult task, often requiring a long period of incubation and development. In many instances the community-based approach to natural resource management challenges the *status quo* with regard to resource allocation and management. There was the need to understand the *de facto* owners of the rights to land and water resources for whom any change would be considered a challenge to the *status quo*. It is commendable that IUCNB successfully achieved the goal and objectives of the Project although this required a two-year extension to the project period.

The community-based approach in this Project had a strong ecosystem bias that challenged traditional systems of resources allocation and utilization. It required changes in what, how and when resources were harvested and utilized by the local communities and how they arrived at decisions related to resource utilization. There were also economic push- and pull-factors that had to be considered such as in the case of snail harvesting from *haor* areas for coastal aquaculture feed production. Although there will always be winners and losers when the prevailing system of resource utilization and management in a particular area is replaced by another system, the Project has been successful in getting the local communities to adopt a majority of the changes it proposed.

Local communities are also usually wary of change agents who are not from the local community. Sociologically, these agents will require time to gain the trust and confidence of the local communities and the process is time

⁸ IUCNB Internal Review Report 2001

consuming. The brief suspension of the Project soon after the initial groundwork commenced added to the challenge in gaining the trust and establishing the confidence of the communities involved that delayed to a small extent, the implementation of the project.

The engagement by IUCNB of local Partner Organizations such as CNRS, BCAS and NACOM that have been operating as grassroots organizations in the selected Project sites for many years prior to the start of the Project was essential to the success of the Project. These organizations have well established field staff and offices close or in the Project sites, and have been used to working closely with local communities at the grassroots level. By involving these organizations in the Project, trust and confidence of the local communities were more quickly established than if they had not been involved.

The engagement of the Partner Organizations (CNRS, BCAS and NACOM) also enabled closer and almost continual monitoring and evaluation of the progress of the projects by field staff of these organizations. In addition opportunities for more meaningful interventions were not easily missed and the Project was adaptively managed to take advantage of opportunities not foreseen at the design stage of the Project. Staff of Partner Organizations also received the requisite training to act as change agents, a benefit that will prevail in any future activities with a similar nature in the Project sites and elsewhere.

The range of tools and techniques used to develop the Project as a participatory activity was varied. Some new tools were developed and Project staff was trained in their use as the Project progressed. Many of these tools, such as Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA), Participatory Action Plan Development (PAPD), and Participatory Monitoring and Evaluation (PM&E) techniques are new to participatory community-based natural resource management. However through the Project, they have been adapted and used very successfully to ensure community participation in project conceptualization, planning, implementation and monitoring. A firm basis for a lasting community-based natural resource management in the Project sites has thus been established.

4.3 Achievement of Project Overall Goal

The progress of the project was continuously evaluated by IUCNB using several tools and methods. Maps were used to show the location of interventions and types of changes occurring in the project area with the interventions; photographs and video recordings kept track of significant intervention events, such as re-excavation of canals and ponds, re-establishment of vegetative cover and establishment of plant nurseries. These

enabled the keeping of a sequential record of changes in the Project areas with progress of the Project.

Flow diagrams were prepared to indicate direct and indirect impact routes of the interventions and their relationship to local and other causes; network diagrams were used to describe the inter-relationships between people, the environment and interventions; Venn diagrams were used to show changes in relationships between groups, institutions and individuals; diaries were kept to record changes in the lives of individuals, groups and communities; and a matrix scoring system was adopted to compare the performance of target groups for outcomes and outputs.

All activities of the project have been thoroughly documented. Reports of activities at the project sites have been summarized in *Monthly Progress Reports* that gave a schedule of planned work, achievements, constraints, and suggested follow-up. *Visit Reports* summarized all visits and activities undertaken, and noted the findings from the visits and follow-up actions required. Periodically, *Training Workshop Report* and *Environmental Education Report* gave accounts of the training and education activities under the Project. With each report the needs addressed, the number of trainees, course content, programme duration, training materials produced and/or used, pre-and post-training assessments and suggested follow-up actions were all recorded.

At each project site a *Baseline Report* was prepared. These provided information about baseline physical, hydrological, biological, social, economic, and management conditions prior to the start of project interventions. These reports focused on wetland resources and human settlement characteristics that enabled the local communities to engage in an informed manner in preparing the action plans. An overall *Quarterly Progress Report* and *Quarterly Activities Plan* were produced to help all relevant parties monitor progress towards the goals and objectives of the project.

Overall, this RIE finds that the Project has been successful in meeting the goal and purpose stated in the Project LFA viz. establish and mainstream participatory resource management in the selected Project sites through enhanced access and capacity building for the poor, especially women, for sustainable utilization of resources. Local communities involved with the project are better organized, manage institutions/committees that have legal status, and possess community financial resources in the form of savings that would enable them to sustain the activities started with the assistance of the Project after the end of the project period.

It was also evident that local communities have begun to understand the critical roles wetlands play in maintaining and enhancing their livelihoods, and that reversing the deterioration of the wetland ecosystem results in better

incomes, improved productivity of the land and waters (terrestrial and aquatic ecosystems), and provides a more diverse and richer living environment that they can benefit from. Changes in the area that can be leased from individuals and the local government and a lengthening of the lease period to more than a year at a time, can provide greater security of tenure for the communities involved in managing the wetland and other resources collectively.

At the project management level in IUCNB, it appears that preparations have been made for the satisfactory conclusion of the project. Sustainability of the activities initiated by the Project appears to continue to depend, with some of the local communities, on continued support and facilitation by field personnel from the Partner Organizations and from staff of IUCNB. The continued participation of the Partner Organization field staff and of IUCNB staff if any, is dependent on the availability of funds to these organizations from the GoB, external aid organizations and the UNDP.

A draft Exit Plan has been prepared (IUCNB 2005⁹) that gives a detailed breakdown of actions to be taken to try and ensure that the activities initiated under the Project are sustainable in the long-term. These plans of action are specific for each of the five Project sites. They detail the activities that need to be undertaken prior to the complete phasing out of the Project at the Project sites. Activities under the plan have been categorized according to the following major categories:

- Making CBOs Operational;
- Access to Generated Resources;
- Capacity Building;
- Resource Mobilization for Income Generating Activities;
- Conservation and Management of Natural Resources; and
- Monitoring and Evaluation.

The section on conservation and management of natural resources in the Exit Plan is further sub-divided into sub-sections that reflect the key activities requiring specific attention. Depending on the Project site, the sub-sections dealt with general conservation and management matters for the site, plant nurseries, tree plantations, fish conservation measures, seed banks, support for local biodiversity conservation initiatives, and wildlife conservation. At the Madhumati and Padma-Jamuna Floodplain Project

⁹ IUCNB 2005. Exit Plan: Community Based Haor and Floodplain Resource Management Project (SEMP Component 2.2.1 A & 2.2.1 B)

sites, attention is also given to turtle and dolphin conservation, while at the Pagnar, Sanuar-Dakuar, and Hakaluki *Haor* sites, fish sanctuaries and swamp forest redevelopment were given special attention.

The RIE finds that in general, the overall goals of the project have been successfully achieved.

4.4 Achievement of Project Outputs

The Logical Framework of the Project gives four main outputs. The RIE makes the following summary observations regarding the success of the Project in delivering each output.

4.4.1 Output 1 – Participatory resource management tools developed and practiced

Workshops with local community participation were conducted to collectively develop the action plan for specific villages and locations. These *Participatory Action Plan Development* (PAPD) process gave ownership of the interventions to local communities. Appraisal of the status of the physical, hydrological, biological and management status of project areas used the *Participatory Rural Appraisal* (PRA) approach. Environmentally sound and sustainable agricultural methods and practices were also demonstrated to the local communities. *Participatory Monitoring and Evaluation* (PM&E) was used as a tool to track the progress of the Project.

The RIE finds that many tools to establish, practice and disseminate community-based resource management in the *haor* and floodplain areas had been developed and used adaptively and successfully. In some instances the communities visited cited instances where the practices adopted by villages participating in the Project, (e.g. *baira* nurseries; medicinal plant nurseries), have been adopted by communities in other villages.

Training for local communities in participatory resource management in the Project sites included the conduct of a suite of workshops on general and specialized topics aimed to build technical capacity of the local communities. These workshops such as on problem census, action plan development, monitoring and evaluation of Project progress using indicators, provided the local communities with the tools to plan and make decisions collectively.

4.4.2 Output 2 – Ecosystems improved, restored or rehabilitated

Many examples of improved and rehabilitated ecosystems are evident and have been reported at all project sites. This included the unaided reestablishment of swamp vegetation cover, the return of previously rare fish, bird and mammal species (e.g. dolphins) and increased fish harvests. Additionally, the excavation of water channels that had degraded owing to sedimentation and neglect by local communities, restored canals that had in the past served the community as transportation and fish migration routes. The re-establishment of such canals not only improved fisheries in the local area by re-opening fish migration routes, but also helped reestablish traditional water-based communication routes that had been impaired.

Re-vegetation of barren areas with local wetland species was shown to also result in the return of species such as the Pallas's Fish Eagle and other species that had been lost from some of the Project sites. The establishment of sanctuaries for fish and other species has been shown to lead to better fish harvest in the following season.

Ecosystem restoration and rehabilitation is time consuming. Some of the revegetated areas are presently about 4 years old and it would be anticipated that these areas will have a more significant influence on the ecology of the local areas with time. Replanted *hijal* (*Barringtonia acutangula*) groves for example will reach maturity only in ten years. The RIE finds that the Project has been very successful in demonstrating the value of ecosystem restoration and rehabilitation to the local communities. Additionally there has been a significant start towards ecosystem restoration and rehabilitation that would not have been possible without the Project.

4.4.3 Output 3 – Local institutions for sustainable development established and functioning

Several institutions have been established in the project areas. These include the Village Environmental Committee (VEC), *haor* and floodplain Resource Management Committees (RMC) and at some locations Village Resource Management Committees (VRMC), and Village Group (VG). These groups have legal status as they have been registered with the Cooperative/Social Welfare

and Women Affairs Department of the GoB, and with the Upazilla Cooperative Department at the local government level.

In schools, Nature Clubs or Eco-clubs have been formed and teachers have been given training to organize activities and supervise the clubs. These clubs are also involved in managing and maintaining plant nursery plots on land donated by locals.

Wetland Management Training Centres (WMTC), have been established utilizing community resources and facilities donated by members of the community organizations at several floodplain Project sites. All Communities participating in the Project have been organized to benefit from the *Environment Fund* created under the Project to provide micro-credit facilities to enable them to start small income-generating activities that appear to continue to grow.

The RIE finds that a strong push has been made towards establishing the financial and institutional settings required for proper running of local institutions that can ensure the sustainability of the activities initiated under the Project.

4.4.4 Output 4 – Capacity, awareness and skills enhanced

A large number of training courses, study visits and participatory activities designed to increase awareness of local communities about sustainable wetland management strategies and options, have been conducted during the Project. Local communities have been trained so as to increase their capacity to manage wetland resources sustainably. They have been imparted the necessary knowledge and skills that would enable them to improve their livelihoods and economic standing.

The communities visited during the RIE appear to have the confidence and will to continue the activities initiated under this Project using the knowledge and resources they have acquired and accumulated by participating in the Project. Some of the communities visited had plans to disseminate their know-how to neighbouring communities that had not had the opportunity to participate in the Project. There was sufficient evidence that the capacity, awareness and skills of the communities have been enhanced by the Project.

5 Evaluation Of Key Results

The RIE's evaluation of key results achieved by the Project was based on field visits and several monitoring and reporting documents. This included the site-specific Project Target-Achievement Matrix produced by IUCNB that presented site-specific achievement records in relation to the targets set in the Project Workplan for each Project site for the duration of the Project from 2001 to 2005. These matrices are appended in Annex 5a – 5e.

In addition to the Target-Achievement Matrix the evaluation was also assisted by reports of site-specific achievement records prepared by the Partner Organizations for the purposes of the RIE. *Project Progress Reports* and draft *End-term Project Evaluation Report* that is under preparation by IUCNB were also consulted in preparing the evaluation of key results of the Project.

The evaluation is presented according to specific objectives of the Project as stated in the PIP of both the *haor* and floodplain Project sites. It summarises the achievements of the Project based on the RIE's assessment of how the key results of the Project contributed to the achievement of its specific objectives and is thus not site specific. Site-specific information is available in Annex 5a – 5e.

5.1 Preventing and Reversing Wetland Degradation

Preventing and reversing wetland degradation is one of the key aims of the Project. Degraded ecosystems are biotically impoverished and cannot provide the ecosystem goods and services needed by the local communities for their livelihoods and well being. Evaluation of the Project's efficacy is made under the following sub-topics.

5.1.1 Resource Baseline Mapping

Resource inventory surveys were conducted at all sites for social, economic, and biophysical resources. This included surveys of land-use patterns, fishery resources, and wildlife populations. In areas where there are special rare, endangered or threatened fauna and flora (e.g dolphins, Pallas Fish Eagle) were surveyed for population levels (see section 33.01 in Annex 5a – 5e).

Baseline mapping is crucial for preventing and reversing wetland degradation. The information obtained from the surveys were transferred to GIS maps and the actions plans developed for each Project site were based on these inventory data. A considerable amount of baseline information has also been captured in unpublished reports.

There appear to have been no attempt to make the baseline information generated by the Project more easily available through electronic access *via* the Internet, local area networks or specialist networks. Much of this baseline information could be “lost” in future as no permanent system of information storage and retrieval was established by the Project and knowledge of what information is available and where, resides largely among individuals who were not permanently employed by the Project nor the organizations engaged in implementing the project. The absence of such an information management system that could provide information about baseline conditions in the Project sites for monitoring and evaluating the state of the ecosystems in the long-term is a fundamental shortcoming of the Project. Without such an easily accessed information bank, monitoring, preventing and reversing degradation of the environment in the Project sites in future would be a more tedious process.

5.1.2 Tools, Mechanisms and Institutions for Community Participation and Empowerment

The tools, mechanisms and institutions for community participation and empowerment in preventing and reversing environmental degradation have all been put in place by the Project. A large number of meetings with the newly established community organizations have been held, and training sessions to introduce and familiarise the local communities of the tools, mechanisms and institutions have been held (see Section 33.02 of Annex 5a – 5e). This has been a major achievement of the Project.

5.1.3 Sustainable Farming Systems

Key members of communities in the Project sites have been given training in a variety of sustainable agricultural practices including integrated pest management, use of animal waste in biogas generation, *baira* vegetable nurseries, improved pit composting and in fish conservation and rearing techniques (see Section 33.02 of Annex 5a –5e).

Introduction of sustainable farming systems can prevent environmental degradation through more efficient use of resources and through reduced pollution of the environment. The Project was successful in introducing some sustainable farming practices to the communities in the Project sites. The number of demonstration activities on sustainable agricultural practices exceeded the

targeted number at all Project sites with the exception of the Hakaluki *Haor* where the numbers achieved matched the targeted number (see Annex 5a – 5e). This is highly commendable of the Project.

5.1.4 Curbing Soil Erosion

Soil erosion around village mounds is a serious problem in the *haor* and floodplain areas especially during the monsoon season. Wave action erodes the village mounds in the *haor* areas and whole villages have sometimes been swept away during floods in the floodplain areas.

The Project explored several approaches to erosion control. The first was the use of a combination of geo-textiles and *chialla* (*Hemarthria protensa*) grass mats to protect the vulnerable areas in two villages in Pagnar Haor. Traditionally villagers have used mats from *chialla* grass to protect such areas. However *chialla* grass is no longer easily available in the *haor* areas and there was a need to explore augmentation of their use by a synthetic material. Nurseries to produce the grass were established. Water hyacinth- and bamboo-based erosion proofing methods were also demonstrated in 4 other villages. At other locations, the GoB and aid agencies have used concrete walls, or dykes of boulders to protect the villages more severely threatened with soil erosion.

The second approach to erosion control explored was by the establishment of groves of water tolerant swamp vegetation such as *hijal* (*Barringtonia acutangula*) and *koroch* (*Pongamia pinnata*) along areas exposed to wave action. For example, a total of about 11 km of vegetative hedge had been planted around two villages in Pagnar *Haor*. This appeared to be a viable and sustainable lower-cost alternative compared to the other hard engineering approaches. In addition to protecting the village mound from erosion during the monsoon season, villagers are also able to collect fuel-wood from the trees once they are mature. Other than serve as a means of preventing erosion and reversing the degradation of the wetlands, the groves of trees also restores the ecology of the site by enhancing its biotic diversity.

5.1.5 Rehabilitating Degraded Water Bodies

A considerable degree of effort was directed at rehabilitating degraded water bodies in the Project sites. These activities included restoring swamp forest vegetation; re-excavating ponds

and canals to re-establish connectivity between *beels*, streams and rivers and rehabilitate the aquatic ecosystem; establishing fish conservation areas that was off-limits to fishing and enabled fish stocks to survive the dry season; and activities to rehabilitate biotic diversity and associated wildlife (see Annex 5a – 5e and IUCNB 2005¹⁰).

These interventions appear to have achieved resounding success at all locations that they have been undertaken. Anecdotal information from locals suggests that fish harvests have increased and where canals have been re-excavated, transportation from one part of the area to another has been made easier.

At several locations, wildlife that had not been seen for some time had begun to make a comeback (e.g. Pallas's Fish eagle, Ring Monitor Lizard *Varanus salvator*, the sarpunti *Puntius sarana*, and some freshwater turtle species). It is notable that as a result of the re-excavation of the Ranapasia Canal (Item 33.06 Annex 5c) in the Modhumoti Floodplain Project Site, an activity under this Project, the Ganges River Dolphin has since made a comeback to the confluence of the Ranapasia Canal with the Madaripur Beel Route Canal. Their re-appearance provides evidence as to the efficacy of the Project interventions in reversing the effects of wetland ecosystem degradation. It indicates that the health of the aquatic ecosystem in the Modhumoti floodplain has to some extent been restored.

5.2 Sustainable Resource Use

Sustainable resource use is the mainstay of development that is sustainable, the overarching goal of SEMP. This section provides the evaluation by the RIE, of the efficacy of the main interventions of the Project with regard to promoting and enhancing sustainable resource use in the selected *haor* and floodplain areas.

5.2.1 Restoration of Swamp Vegetation

Restoration of swamp vegetation was a major initiative in the Project. Plantations of swamp forest trees, fruit and timber trees have been established successfully in *kandas*, along the sides of roads, around homesteads, canal and river banks, underutilised community land, and at the wetland restoration sites. The main species replanted are the *hijal*, *karoch*, *barun* and *batkarach* and a

¹⁰ IUCNB 2005. Draft Edited SEMP Activity Report.

full list is published in Choudhury 2005¹¹). Restoration of these forests resulted in the return of wildlife species such as the mongoose, fishing cat, snakes and frogs to the wetland areas. The trees also provide additional income to the local communities. It has been estimated that local communities can earn up to USD200,000 per year by pollarding 200,000 trees annually 5 to 7 years after planting. This is a major contribution to the income of the local communities and contributes to the SEMP objective of alleviating poverty in rural areas of Bangladesh.

5.2.2 Rehabilitating Fishery Resources

Steps undertaken to rehabilitate fishery resources in the Project sites included the excavation and protection of ditches to act as fish breeding and sanctuary areas during the dry season; the re-excavation of canals to restore the connectivity of diverse wetland areas (e.g. canals, streams, creeks, *beels*, *haors*, *jheels* and *baors*); and the planting of aquatic and flood tolerant plant species to enhance the quality of the aquatic ecosystem as fish habitat. Case studies from Pagnar and Sanuar-Dakuar Haors indicated that the interventions resulted in increased fish diversity and abundance; in the weight of harvested fish; and in the return of some rare and threatened fish to the sites (Case Study 4 Edited SEMP Activity Report, IUCNB 2005¹²). This contributes directly to the achievement of the Project objective of sustainable resource use.

5.2.3 Protecting Endangered Species

Use of the land for paddy cultivation and unsustainable resource use in the *haor* and floodplain areas had adversely impacted wildlife species. The community-based *haor* and floodplain resource management project aimed not only to sustain the productivity of the landscape but also to ensure sustainable resource use. Protecting endangered species from extinction is a prerequisite for sustainable resource use.

The Project successfully initiated awareness and education campaigns to alert local communities at the Project sites of the value of conserving endangered species of plants, amphibians and reptiles, fish, and mammals. Three turtle breeding hatcheries have been successfully established, and activities to illustrate the

¹¹ Choudhury, J. K. 2005. Plant Resources of Haor and Floodplains. An Overview. IUCN Bangladesh Country Office, Dhaka, Bangladesh, vii + 35 pp

¹² See Case Study 4 Edited SEMP Activity Report, IUCNB 2005.

measures needed to protect endangered species of plants (especially medicinal plants), rare fish such as the ekthota (*Dermogenys pussillus*), teri puti (*Puntius terio*), meni (*Nundus nundus*), rani (*Botia dario*), gora gutum (*Somileptis gongota*), kuna kumirer khil (*Doryichthys cuncalus*), birds such as the Pallas's Fish Eagle and Mammals such as the Ganges River Dolphins, were positively supported by the local communities.

5.2.4 Reintroduction of Locally Extinct Species

The reintroduction of locally extinct species is also an aspect of sustainable resource use successfully demonstrated by the Project. However these reintroductions were mostly confined to freshwater fish through for example, the release hatchlings of sarapunti (*Puntius sarana*), pabda (*Ompok pabda*), and magur (*Clarias batrachess*). Long-term monitoring is required to evaluate the efficacy of these reintroductions.

Locally extinct freshwater turtle species have been reintroduced through release of captive bred hatchlings raised by community run hatcheries. These included reintroductions of the spotted flap shell turtle (*Lessemys punctata*), yellow turtle (*Morenia petersi*), common roofed turtle (*Kachuga tecta*), median roofed turtle (*K. tantoria*), brown roofed turtle (*K. smithii*), and the Indian peacock soft shelled turtle (*Aspideretes hurum*).

5.2.5 Promotion of Medicinal Plant Nurseries

Many plants in the *haor* and floodplains of the Project sites are used as medicinal plants. Some of these plants are no longer easily available because of unsustainable resource use in the past. The Project successfully demonstrated the establishment of medicinal plant nurseries in a majority of the communities involved in the project and more than 350 plots of medicinal plants were established. The maintenance of such plots contributes towards sustainable use of the resource in the Project areas. This is a notable achievement of the Project.

5.2.6 Use of renewable energy

Many *haor* and floodplain communities in the Project sites face problems with the availability of energy for cooking lighting and other uses. Traditionally wood and other combustible materials

(bamboo, reeds, palm leaf mid-rib, cow dung) are collected for cooking. Under the Project, initiatives were undertaken to introduce a more efficient stove for burning local plant materials for cooking, as well as to introduce new and non-traditional sources of energy. This included successful demonstration of the generation of biogas and its use for cooking in the gas stove and in the installation of solar energy panels for electricity generation in remote villages not connected to the electricity grid.

All demonstration projects were successful and highly appreciated by the local communities involved. Use of more efficient stoves, energy from biogas and generating electricity from the sun relieves some pressure on the natural resources harvested for energy generation. They contribute towards a more sustainable pattern of resource use by the local communities.

5.3 Promoting Institutions for Sustainable Development

Establishing and maintaining sound and lasting local institutions for sustainable development is a crucial step in ensuring that the interventions initiated under the Project will continue to be practiced after its end. Other than that investment in building awareness and providing environmental education to the next generation are strong prerequisites for sustainability of the community based wetland resources management initiatives started by the Project. Evaluation of the efficacy of the Project in promoting institutions for sustainable development is made under the following topics.

5.3.1 Community-based Institutions

The Project successfully organised local communities into viable groups and registered these groups with the authorities to give them legal status. Groups were structured according to the structure shown in Figure 2. Village Environment Committees (VEC) were all accorded legal recognition by registering them with the Department of Cooperative or Department of Social Welfare at the *upazila* level. Vulnerable Groups (usually women) were registered with government's Women Affairs Department.

Wherever possible all groups were given training to build their capacity to work independently and to continue the activities of the group after the Project has ended.

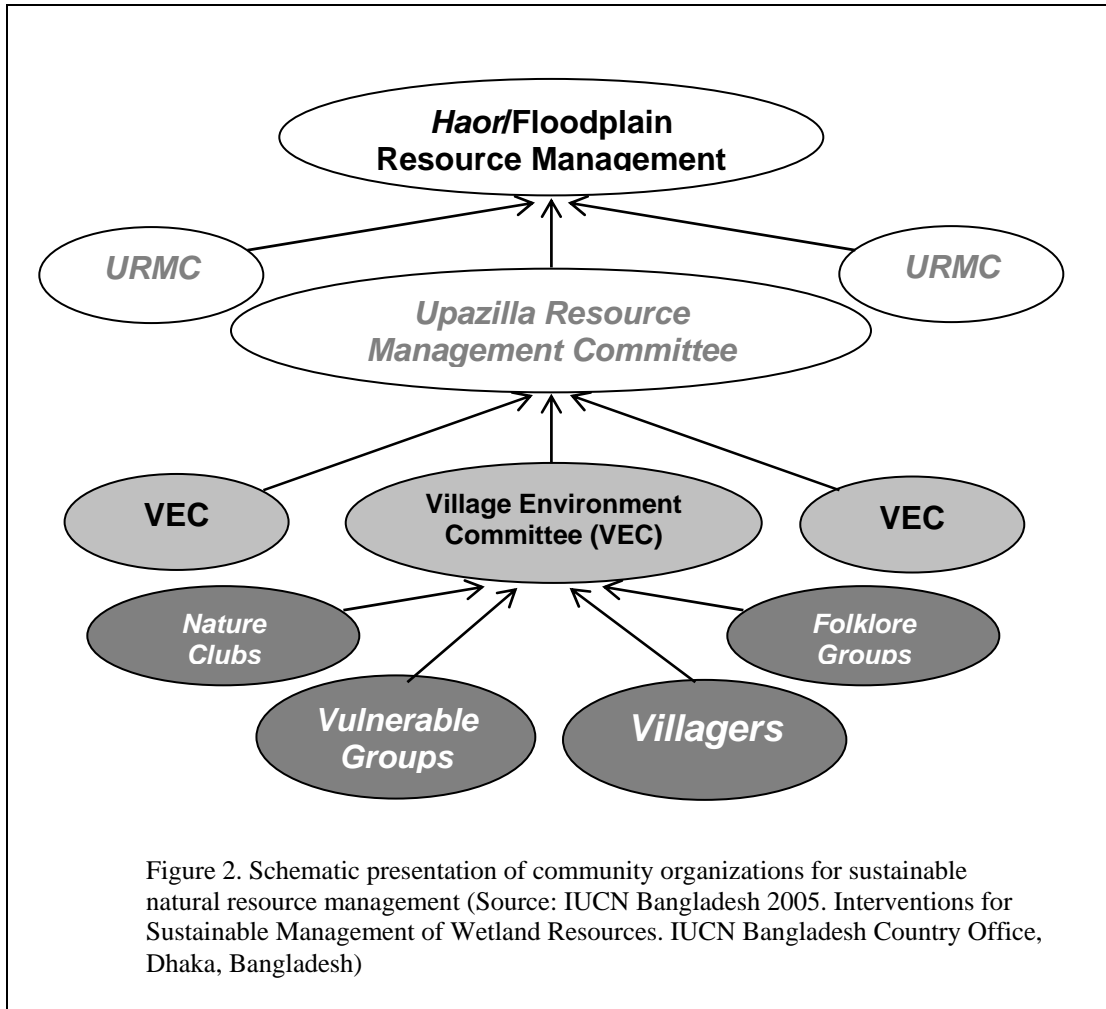


Figure 2. Schematic presentation of community organizations for sustainable natural resource management (Source: IUCN Bangladesh 2005. Interventions for Sustainable Management of Wetland Resources. IUCN Bangladesh Country Office, Dhaka, Bangladesh)

5.3.2 Environment Funds and Microcredit Facilities

The Project successfully established mechanisms to provide financial support from the SEMP Environment Fund at the Project sites. This enabled vulnerable groups comprising primarily of women in the communities, to start income generating activities (such as tailoring, livestock rearing) as additional and alternative sources of income that made them less dependent on the wetland resources.

5.3.3 Clubs and Folk Groups

For future generations the Project focussed on activities that were targeted at school children and youths. These clubs were called Nature Clubs or Environmental Clubs and they organised debates, established nature trails, conducted bird watching field trips, organized meetings and seminars, observed significant environment days, and organised competitions such as book-reading, essay-writing, art and quiz competitions, folk drama performance, and landscape gardening activities. The Project successfully established a total of about 31 such clubs with a total of more than 2000 members.

Also established were two Folk Groups. The establishment of these groups enabled the Project to explore the effectiveness of folk drama as a medium for promoting environmental and nature conservation and their relationship to livelihood enhancement. The folk groups were based in the Padma-Jamuna and Brahmaputra Floodplains. They travelled widely making presentations and have met with considerable success and acknowledgement as an effective medium for raising awareness in community-based wetland resource management.

5.4 Community-based Resource Management

Promoting community-based resource management is the central objective to the Project. To a large extent, the Project has been very successful in engaging local communities at all stages of project development, planning, implementation, monitoring and evaluation. Local communities were involved in the baseline studies to determine *inter alia* the demographic characteristics of communities, their socio-economic background and status, land-use, poverty rate, and resource availability and utilization. They actively participated in the preparation of actions plans and in providing inputs to the Special Studies on the conservation status of the Pallas's Fish

Eagle (*Heliaeetus leucoryphus*), Ganges River Dolphin (*Platanista gangetica*), snails, bats and butterflies of the wetlands. The success of the initiative as a whole hinged strongly on the adequate provision of the following inputs to the local communities.

5.4.1 Technical Know-how

The Project successfully enhanced technical skills in activities crucial for community-based wetland resource management in all participating communities. Training were successfully provided in twelve key activities, processes and issues as follows:

- o Plantation and swamp forest regeneration
- o Swamp nursery development and management
- o Accounts keeping and management
- o Basic concepts of organizational development
- o Capacity building on organizational development and management

- o Women in wetlands
- o Gender issues
- o Training of trainers on wetland resource management
- o Participatory monitoring and evaluation
- o Duck rearing
- o Vegetable gardening
- o *Baira* practice

The Project was instrumental in making training by Government Departments such as that by the Department of Livestock, Fisheries, Agriculture & Extension, and by the Bangladesh Centre for Scientific and Industrial Research (BCSIR) available to the communities who would otherwise have had no knowledge of the existence of these training courses and of how to secure the training services provided by these departments.

5.4.2 Supporting Resources

The Project provided quite considerable supporting resources to the local communities. These included items such as planting materials used to re-establish areas of swamp forests, materials for

erosion protection, seed fish, solar panels and other equipment for solar electrification, materials for nesting sites of the Pallas's Fish Eagle, and billboards for raising conservation awareness. The provision of such resources is crucial to the success of community participation because they provide tangible benefits that local communities can depend on. Provision of resources is also indicative of the commitment of the organizations to the ultimate and longer-term goals of the communities.

5.4.3 Facilitators and Extension Agents

Staff of the Partner Organizations, IUCNB and other organizations and government departments were involved and acted as facilitators and extension agents for the changes that were suggested to the practice of resource management in the Project sites. The chances are that the local communities are more likely to change the traditional way they managed the resources in the wetlands, with the help and assistance of these facilitators and extension agents.

5.4.4 Awareness Raising

A varied range of awareness raising activities was undertaken by the Project. This included awareness programmes in the schools, nature clubs, use of the folk drama groups mentioned in Section 5.3.3, video shows, circulation of posters and "wall papers", observances of national and world environment days, erection of conservation and management billboards, art competitions, and nature trips. Overall, more than 800 awareness meetings were held under the auspices of the Project. The field visits suggest that the Project was successful in raising awareness of the local communities to the benefits of utilizing wetland resources in their area in a more sustainable way and of the need to collectively manage the resources as a community.

5.5. Improving Quality of Life

Improving the quality of life of communities in the *haor* and floodplain areas is one of the key aims of the Project. In doing this, the role of women has been given special emphasis. Women in rural areas have always been involved in the utilization of resources and the welfare of families. Overall, the Project has paid close attention to these issues. The Project undertook detailed studies of

the problems faced by women around six villages in the Chanda Beel area, Kadambari, Majam para, Maluchi, Rajpur and Fenerbak.

The report by Shuriya Farzana et al 2004¹³ on gender perspectives in wetland resource management provides a comprehensive summary of the analysis of gender issues in the Project sites. In general, support from the Project received overwhelming support from women groups. Key interventions are in the following main areas.

5.5.1 Financial and In-kind Support

Women groups in the Project sites, were given access to a Project initiated Environment Fund. The fund essentially provides micro-credit to women groups to start income generating activities that were intended to reduce their dependence on natural resources. It was observed during the RIE that there was strong and positive response to the funds. Communities receiving funds had bank accounts and had accumulated savings. Also they have successfully issued credit to individual members from the savings and profits made collectively from earlier use of the credit provided by the Project. All communities interviewed had ambitious plans for future use of existing funds.

In-kind support provided by the Project included the provision of nursery planting materials for homestead plantation establishment such as *hijal*, *karoch*, *barun* and *kadom*, and of fish seeds and fingerlings for stocking of ponds and *beels*. These also served to build trust and confidence between the communities and staff of the Project.

5.5.2 Technical Support

Technical support was provided especially to the women groups by project staff from the Partner Organizations, personnel from government departments, consultants and IUCNB staff. This included assistance that enabled them to start a seed bank, enhance handicraft production, and increase vegetable and fish production. In some villages, technical support was also provided that enabled the community to produce biogas from animal waste as fuel and in the construction of more efficient stoves for cooking.

¹³ Shuriya Farzana, Ainun Nishat, Mir Waliuzzaman and Rashiduzzaman Ahmed 2004. Community Based Haor and Floodplain Resource Management: The Gender Perspectives. IUCN Bangladesh Country Office, Dhaka, Bangladesh , xii+62pp.

5.5.3 Enhancing the Role of Women

The role of women appears to have been enhanced through participation in the Project. Although women in rural Areas of Bangladesh has always had a role in the social fabric of the local communities, the women in the communities visited during the RIE appear to have gained confidence and trust in their own capacity to generate additional income for their families. This is especially true among the women groups that had successfully managed the Environment Fund they received from the Project. The majority of the groups visited concurred that any economic gains they make will be re-invested in the education of their children.

The IUCNB report on gender perspectives (Shuriya Farzana *et al.* 2004¹⁴) provides a comparative evaluation of the gender sensitivity of the Project. It notes that as a result of the Project, there has been increased involvement of women in resource enhancement and rehabilitation but their involvement in workshops and training sessions remain inadequate.

6 Project Continuity

6.1 Sustainability and Replicability

The Project has demonstrated that community-based *haor* and floodplain resource management can be successfully promoted and implemented amongst the rural communities of Bangladesh. It should however be noted that the process is time consuming and highly dependent on many factors including:

- a. availability of sources of financial support from outside the communities;
- b. favourable local governance environment that views changes to the *status quo* of resource management arrangements favourably;
- c. capacity and technical capability building training courses aimed at enhancing the technical, management and problem solving skills of the local communities;

¹⁴ Shuriya Farzana, Ainun Nishat, Mir Waliuzzaman and Rashiduzzaman Ahmed 2004. Community Based Haor and Floodplain Resource Management: The Gender Perspectives. IUCN Bangladesh Country Office, Dhaka, Bangladesh , xii+62pp.

- d. availability of facilitators, change agents and trainers to provide the impetus for self and collective improvement within the communities;
- e. existence of viable community-based organizations (CBOs) that have legal standing and support from local community leaders at several levels, government officials and other stakeholders such as the commercial and business community; and
- f. communities that live in harmony and are not preoccupied with local conflicts and/or are caught in unfavourable resource tenure systems.

While the Project has shown that it is possible to establish community-based resource management frameworks in the Project sites, the sustainability of the initiatives appears to be quite dependent on continued infusion of funds through environment fund facilities, technical assistance, and supervisory and management support by organizations as IUCNB and the Partner Organizations. Nevertheless, in most of the villages visited, the communities indicated that they were confident that they could continue with the activities started by the Project after it has ended.

Many of the measures towards community-based resource management introduced by the Project appear to be replicable in other locations. Some of the practices introduced, such as the establishment and legal registration of village groups and resource management committees, publication and dissemination of technical manuals, and conduct of training courses, can be easily replicated for the benefit of other sites and communities. Some techniques and practices such as *baira* culture, and livestock rearing, have been widely replicated. It was reported during the RIE that some local communities have made plans to extend their successful projects to other localities. Such replications will ensure the sustainability of activities and further promote community-based resource management.

6.2 Documentation of Best Practices

Many elements of the Project have been documented and the reports published. A list of published reports and those that are in the process of being published is given in Annex 3. In addition numerous guidelines and materials for training and awareness initiatives for use by the local communities have been produced and used during the Project. A list of these unpublished reports is given at the end of Annex 6.

Most of the reports were published at the end of the Project in November or December 2005. They are well written and comprehensive in coverage. These are intended to permanently record the outcomes and outputs of the Project as well as to disseminate and share the knowledge gained through the Project.

It would have been better if report roll-out had been progressive rather than concentrated at the end of the Project. Better timing of publications release would have ensured greater use of the information generated by all stakeholders and other agencies planning or preparing project proposals in the same area or submitting proposals for follow-up work. These reports could have also contribute to project development and management in other countries such as in the wetlands of the Mekong River Basin.

6.3 Policy Integration

All the interventions undertaken under the Project are the result of the GoB's policy of sustainable environmental management (outlined in SEMP) that has been designed to stop and where possible reverse environmental degradation in Bangladesh as a first step towards sustainable development. A total of USD 26 million was spent over a period of almost seven years to implement SEMP of which the Project is financially a small part (about USD 3.21 million).

Feedback from the SEMP Programme Coordinator indicates that many of the achievements of the Project are widely appreciated within the GoB circles at the national level. The GoB continues to develop follow-up projects with international organizations to further empower the local communities and promote community-based natural resource management throughout the country. It was learnt that in future greater emphasis will be placed on issues related to environmental governance as a means of ensuring that the benefits of community-based wetland resource management brings benefits directly to local communities and facilitate sustainable development.

The RIE also found good examples of the Project's influence on policies at the district level. Traditional systems of resource allocations and utilization are being reviewed to enable the long-term interests of local communities to be better protected by firmer government policies and legal institutions that enable long-term lease of government land to poor communities for livelihood enhancement and income generation¹⁵. A more open environmental governance structure that involves the participation of poor local communities in decision processes, would be a prerequisite to lasting change in the *haor* and floodplain resource management system.

¹⁵ Interview with Deputy Commissioner, Sunamganj District.

It should however be noted that the review of legislation and policies at all levels of government was a specific focus of another project of SEMP and hence the role of this Project in influencing legislation and policies were indirect in nature. At the national level, it was learnt that Bangladesh has prepared a Draft Wetlands Policy that is in the process of being finalized and implemented.

At the local government level (Union Parishad - UP), the Project has been successful in harnessing support from the Parishad in many ways. In some Unions, the Chair of the UP are members of the VRMC. In others a member of the UP is the member of the VRMC. At some locations, UP members do not become members of the VRMC, but they provide support to assist the implementation of project activities of the VRMC or any other group involved in efforts to promote sustainable natural resource management. At some locations the Chair of the UP had donated land or a building to enable training or awareness activities to be held. Such involvement has a two-way effect on policies. It enables GoB policies to be transmitted to the local communities while enabling the views and responses of the local communities to influence policies at the GoB level. Close rapport with local Member of Parliaments (MPs) in some areas had also facilitated the implementation of the Project and the communication of vital policy requirements to GoB and *vice versa*.

The RIE concludes that the Project has had some significant impacts on the policy process and has contributed meaningfully to the integration of policies designed to prevent and reverse wetland degradation, ensure sustainable use of wetlands, enhance community participation in the formulation and implementation of plans for sustainable utilization of wetland resources, and in promoting sustainable development.

7 Project Impact Assessment and Potential Future Projects

7.1 Project Impact Assessment

A draft internal End-term Impact Evaluation report has been prepared by IUCNB (Neyamat *et al.* 2005¹⁶). It views the Project favourably while highlighting some of the major difficulties faced. However, it identifies widespread illiteracy as one of the two main obstacles to the Project. The other main obstacle relates to land tenure systems and resistance by the local elites currently controlling land and resource utilization activities, to any change towards a more transparent system that involves the participation of local communities in resource management.

¹⁶ Neyamat, H, M R Haq, and M Waliuzzaman 2005. End-term Impact Evaluation, Community Based Haor and Floodplain Resource Management Project, SEMP Component 2.2.1 A and 2.2.1 B. Draft.

The draft End-Term Evaluation report provides quantitative and qualitative details of the status of activities at each Project site for each of the four outputs listed in the Project's logical framework. It assessed the Project for efficiency (what target activities have been achieved) and efficacy (what objectives have been met), and coverage (how many people the Project was able to reach) based on the objectives and outputs listed in the Project LFA. The evaluation focussed mainly on the successes of the Project. Lessons can also be learnt from examples of what did not work out as planned. For completeness, the evaluation should also include this aspect.

Two questions not thus far addressed in relation to the Project as a whole relates to the performance of the Project against the Principles of the Ecosystem Approach of the Convention on Biological Diversity, and against the Wise Use Guidelines of the Ramsar Convention on Wetlands. These principles and guidelines are becoming increasingly important in the design of projects and the evaluation their potential contribution to sustainable development. The following sections provides evaluations of the performance of the Project in relation to these principles and guidelines.

a. Evaluation of Performance Against Principles of the Ecosystem Approach

The 12 Principles of the Ecosystem Approach was adopted by countries party to the Convention On Biological Diversity (CBD) as Decision V6 at the 7th Conference of Parties (COP-7). Because of its nature, the Project was in full compliance (see Annex 8) with Principle 1 (objectives of management a societal choice), Principle 2 (management decentralised to the lowest level), Principle 7 (ecosystem approach undertaken at the appropriate spatial and temporal scale), Principle 8 (objectives for ecosystem management set for long term), Principle 9 (management recognises that change is inevitable), Principle 10 (the ecosystem approach seek appropriate balance between use and conservation), Principle 11 (consider all forms of relevant information), and Principle 12 (the approach should involve all relevant sectors of society and scientific disciplines).

The Project is also in close conformity of the ecosystem approach with the remaining principles. There was ample evidence that the communities were careful in evaluating the effects of their activities on adjacent ecosystems (Principle 3), the wetland ecosystems in the *haors* and floodplains were managed in an economic context (Principle 4), the conservation of ecosystem structure and function was a priority target (Principle 5), and that the ecosystems were managed within the limits of their functioning (Principle 6).

Compliance with these Principles of the Ecosystem Approach in as far as wetlands are concerned marks a significant achievement towards the implementation of the approach in Bangladesh. It is a good example of progress in responding to COP Decision VII/11 of the Convention on Biological Diversity.

b. Evaluation of Performance Against Wise Use Guidelines of the Ramsar Convention on Wetlands

The Ramsar guidelines on wise-use of wetlands highlight five main points. The Project is in conformity with all but one of these guidelines points (see Annex 9) i.e. Guideline 2 that relates to actions to address legislation and government policies. This was outside the scope of the Project's terms of reference.

Other than the above exception, the Project was in full conformance with Guideline 1 (actions to improve institutional and organizational arrangements), Guideline 3 (actions to increase knowledge and awareness and their values), Guideline 4 (Actions to review status of and identify priorities for wetlands in the national context), and Guideline 5 (Actions to address problems at particular wetland sites).

Taking into account the Project has the potential to make a lasting impact not only on the communities participating but on the country as a whole, and that most of the funds for implementing similar projects would normally be derived from United Nations and other multilateral and bilateral organizations, the compliance of the Project approach to the CBD Principles of the Ecosystem Approach and the Wise-use Guidelines of the Ramsar Convention are positive points in its favour. With these achievements, these compliance would be a good basis upon which can be based leverage in securing funding for other related projects.

7.2 Termination Reports

IUCNB is required to submit a Project Termination Report (PTR) to the Implementation Monitoring and Evaluation Division (IMED) of the Ministry of Planning, GoB, and a Terminal Report to UNDP. The IMED PTR requires a detailed account of all the technical and financial details of the Project, a report on its achievements, an analysis of its benefits, and a descriptive report that includes assessments of the post-implementation situation and results of the Project. The format of the UNDP report is largely descriptive and includes sections on major findings and recommendations arising from the Project. Templates for the IMED and UNDP reports were obtained from the office of the Programme Coordinator during the RIE for reference.

The Task Manger is well aware of the requirements for these reports and is fully prepared to submit the reports as required at the end of the Project. Other than these reports, IUCNB has published and will continue to publish a wide range of specific baseline, activity and technical reports of particular aspects of the Project (see Annex 3). These are highly informative reports that represent the corpus of knowledge about wetland resource management derived from the Project. They would be valuable as future reference for others embarking on similar initiatives.

7.3 Concluding Workshop

A Concluding Workshop is planned for the end of the Project and is expected to be held in early 2006. Participants will be drawn *inter alia* from the following organizations:

1. Ministry of Environment and Forest
2. Sub-Implementing Agencies (SIA) of SEMP
3. Forest Department
3. Department of Environment
4. United Nations Development Programme UNDP
5. Canadian International Development Agency CIDA
6. Coastal and Wetlands Biodiversity Management Project
7. IUCN members in Bangladesh
8. Other related Ministries
9. Other NGOs who are working in Wetland Resource Management
10. Selected beneficiaries from the project sites
11. Selected village committee members

The Workshop will in essence serve to draw the attention of the funding agencies, the GoB, NGOs and other stakeholders on the achievements of the Project and on possible directions for follow-up actions.

7.4 Potential Follow-up Projects

There was a strong desire at IUCNB to maintain the continuity of the Project. Future projects arising out of the current Project that IUCNB can pursue to develop and seek funding support are roughly described in the following sections. These preliminary project ideas were mooted in discussions with the Task Manager of the Project and the IUCNB Country Representative. Some input was also obtained from discussions with the staff of Partner Organizations and the SEMP Programme Coordinator. They are clustered into three major categories *viz.* projects aimed at establishing knowledge networks on community-based natural resource management; projects aimed at

promoting sustainable environmental governance in Bangladesh; and projects to understand better workable conflict resolution methods and techniques.

a. Project to Establish Knowledge Networks on Community-based Natural Resource Management

The Project produced a wealth of information, some of which have been captured in published and unpublished reports. These reports will enter the library of materials at IUCNB and much will be difficult to access by those not based at IUCNB and those unfamiliar with the outputs of the Project. Also, it could be possible that many aspects of the Project may not have been adequately documented. For example what were the successful and unsuccessful approaches to community-based wetland resource management, what species were successfully reintroduced or used in re-vegetating which *haor* or floodplain area, what other species could have been used, and what methods of resource-use conflict resolution were effective and which not, with which community and why.

As a follow-up, IUCNB could propose that a project be undertaken to further strengthen the understanding of key elements of community-based resource management and to establish an electronic database and management information system that would hold all of the information generated by the Project in a way that will enable easier access to detailed and complex information to enable better analysis of existing data for multi-disciplinary cross-sectoral synthesis towards generating more useful knowledge to assist community-based resource management initiatives irrespective of project locations. Such a database, akin to the knowledge network of IUCN Headquarters in Gland, would be a valuable resource that can be accessed by researchers, not only from Bangladesh but also from other parts of the world via the internet. In this way, knowledge gained from the Project will be fully utilised and shared across the globe. It will act as a knowledge creation network that will benefit conservation and development on a global scale.

b. Projects on Sustainable Environmental Governance in Rural Bangladesh

The Project has been successful in introducing community-based natural resource management to extremely poor rural communities highly dependent for their livelihoods on the harvest of natural resources that are becoming increasingly scarce and rare. Environmental degradation and over-harvesting of these resources

increasingly limit the ability of the ecosystem to provide the goods and services sustainably. The Project has shown how this can change by empowering local communities in activities that are planned and implemented in a participatory manner.

As a follow-up project IUCNB should undertake work to further the ideals and practice of community-based resource management within the context of promoting sustainable environmental governance. Two approaches should be adopted as follows:

i. Project to Provide Long-term Monitoring and Evaluation of the Impacts of the Current Project

There was no provision in the current Project for long-term monitoring and evaluation of any nature. Although the Project was started in 1998, the majority of interventions are currently only about 3 to 4 years old. Ecosystem recovery is a slow process and long-term monitoring is essential to a full understanding of the implications of the interventions introduced in the project under evaluation. Additionally, although some monitoring of biodiversity was done in the current Project, the data has not been analysed fully. This is true, for example, with the fisheries data. Although fishery data were collected, the data has not been analysed and there is no firm scientific basis upon which the impact of all the interventions can be assessed. The proposed follow-up project should address this deficiency.

The proposed project should focus on participatory monitoring and evaluation by the communities involved. Although some groundwork for participatory monitoring and evaluation was established by the Project for such a process, it has not been tested for sustainability over the longer-term. Through the design of the proposed project, funds could be requested to assist in the design of participatory monitoring programmes to track the recovery of the biological system and what that means in economic terms. Livelihood changes should also be tracked and be related to the changes in governance from the traditional system to one that involved community empowerment and participation. In this way the true value of community-based resource management can be gauged.

ii. Project to Extend Community-based Resource Management to Other Communities

While the Project has been successful in promoting the community-based approach in natural resource management in communities in the *haor* and floodplain areas, the approach should be extended to other communities either with similar or different ecological and social settings. This would be the acid test as to the applicability of the model on a wider scale. Owing to the experience gained through the Project the period required to mobilize communities could be anticipated to be considerably shorter than was needed in the current Project. Pitfalls experienced by the current Project can be avoided and suitable local NGOs that can act as facilitators can be quickly selected and engaged for the proposed project. Such support for local groups would also serve to empower local communities for participatory environmental governance.

iii. Project on Capacity Building for Community-based Environmental Governance

Capacity building activities for community-based natural resource management should be an on-going process. Much is required in terms of expertise that is available within local communities. A project should be developed to ensure that local communities continue to receive training to build capacity so as to be self reliant and sustainable. Training for capacity building should include courses that can develop better understanding of local ecological systems, sustainable resource use and the economics of sustainability. Training is also required to make participatory project monitoring and evaluation a success.

iv. Project on Legal and Institutional Requirements for Sustainable Environmental Governance at the Local Level

Promoting sustainable environmental governance requires changes in the way the local governments are constituted and how they operate. A possible follow-up project could be designed to examine the changes needed to the legislative and institutional framework in order to support a paradigm shift towards sustainable environmental governance. This will include an examination of existing land tenure and leasing systems and of the changes required to bring forth not only a more sustainable tenure and land

lease system but also a more transparent resource use governance structure.

This project would also need to examine concurrent policy interventions by the local and national governments that would be necessary if access to natural resources by the poor is to be improved towards alleviating poverty and enabling sustainable livelihoods. Changing access to benefits accruing to poor communities may also require changes to the existing regulatory framework. The goal of this project is to explore, document and suggest the appropriate regulatory framework that would be ensure better access to resources by the poor.

v. Project on Sustainable Environmental Governance Mechanisms

Sustainable environmental governance implies full involvement of local communities. The current Project has started the process of establishing local Community Based Organizations (CBO) that has legal status through registration with the appropriate government authority. In order to promote sustainable environment governance, these CBOs must be linked to the local government structure. The purpose of this proposed project is to examine how this linked may be forged and achieved.

c. Projects to Better Understand Conflict Resolution Methods and Techniques

Many of the interventions implemented in the current Project were made after careful consideration of all their positive and negative impacts on the environment, the people and their livelihoods. For example, the depth of re-excavation of the Ranapasa Canal that had become sedimented and no longer connected the large Madaripur Beel Route Canal with Chanda Beel, was a compromise between the conflicting needs of the boat operators who wanted a deeper canal so that larger boats could ply the route, and the fisher communities who wanted a shallower canal so that the water from Chanda Beel would not completely drain out during the dry season thereby destroying the fish stocks in the area. Similarly there were conflicts to be resolved between the interests of cattle owners who wanted more grazing land, as opposed to those in the community who wanted to re-establish plantations of swamp trees so as to protect the land from erosion while at the same time improving the quality of the habitat for fish and wildlife.

As follow-up, a project should be designed to document the nature of conflicts and how they were resolved in the *haor* and floodplain areas of the Project. The project should include a large local community training component so that those involved in projects to sustainably govern the environment and natural resources will be well versed with available methods and techniques for conflict resolution.