

INTEGRATED ACTION PLAN - BUXA HIGHARCS (INDIA)

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Composite Complex Phase II

Jalpaiguri-735101

November 2011

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Executive Summary

The HighARCS¹ project focused assessment and research related to biodiversity and ecosystem services, institutions and livelihoods during the first phase of implementation. The second phase is the research phase covering selected areas within the overall framework of the project followed by stakeholders evaluation of the eco-system and their views. Based on results of the preceding investigations an Integrated Action Plan (IAP) has been developed in consultation with local stakeholders, including men, women, girls and boys which will be implemented and monitored during the third phase. The IAP includes activities (what), actors (who) and strategy (how) to be implemented within a given time frame.

The IAP is based on the outcome of assessment and research and is based on priorities and preferences indicated by different stakeholders. The research and assessment was guided using an integrated approach (Springate-Baginsky *et al.* 2009) and used different methodologies and tools including, biodiversity surveys, IUCN Red List assessments, research schedule, PRA tools such as resource mapping, historical transects and wealth ranking, Focused Group Discussion(FGDs) based on gender and age and case-studies. Outcomes of this integrated assessment were shared and discussed with stakeholders to facilitate authentication of data and their validation. Some of the similar tools were used, to ascertain and assess stakeholder preferences for the proposed actions in the light of the key findings of the assessment and research. This helped in identifying action components, strategies to be used and actors to be involved. A tentative time frame has been shown as indicated by the stakeholders. The actions should be considered in the context of their short term, medium term and long terms feasibility.

The IAP encompasses three components, biodiversity conservation and ecosystem services, livelihoods and institutions. Within conservation of biodiversity an important component relates to awareness building and education for different stakeholders and dissemination of relevant information to the concerned stakeholders. It is argued that information and education would help develop proper understanding and sensitivity about different species and their implication for sustainable livelihoods. The next set of plans includes activities related to institutional strengthening which regulate and sustain biodiversity and sustainable livelihoods. Sub-components include strengthening of self-help groups (SHGS) and fine tuning their agenda and activities with biodiversity and livelihoods. Panchayats in India are important institutions for governance covering a variety of components including livelihoods. Farmers Clubs are the other variants which impinge upon livelihoods of the people and they have therefore been included as important IAP components. IAP components related to livelihoods have been considered at both individual and collective levels and this includes components for skills and capacity development. Some of the important components include experiments with development of dairy and livestock. Strengthening of self-help groups and Farmers

1 Acknowledgement and Disclaimer: This publication is an output of the HighARCS project which received research funding from the European Community's Seventh Framework Programme [Grant Agreement No. 213015]; this publication reflects the authors' views and the European Community is not liable for any use that may be made of the information contained herein.

Clubs have been proposed as cross cutting institutional interventions to influence livelihoods based on eco-system services and forest biodiversity.

IAPs have evolved following a number of steps and processes. During the assessment, research and interactive sessions several issues emerged which became the reference points for action planning. These points helped during the focused group discussions to define, in greater detail, required actions in consultation with different stakeholders. The IAP should be considered not only as an outcome of the FGDs but as an outcome of the entire process followed during the project period.

The IAPS indicate the priorities of different groups disaggregated by location, gender and age but should not be considered as constituting the full commitment of stakeholders in supporting the implementation of the proposed actions. They offer an understanding of the possibilities to address the issues emerging out of the process. The nitty-gritty will need to be worked out subsequently before the implementation.

Most of the action plans are budget neutral except the time and limited budgetary allocations from the project as there is no clear budgetary commitment for implementing action plans. It is also not possible as some of the proposed actions are quite intensive requiring substantial financial commitments. The approach, as outlined, therefore, has been to develop collaboration and partnership with existing agencies and stakeholders and to dovetail the action with mainstream programs and activities. The action plan, therefore, should be considered flexible and evolving. Also the implementation of the action plans would require committed person power and resources which, as it exists now, does not seem to be adequate. CDHI has long presence in the area and has mobilized local leadership among the farmers and youths who have committed themselves to implement the programs in combination with several other programs concurrently going on as regular programs of the local Panchayats and Government. The outcome of the action plans would depend upon the compatibility of the program with the mainstream programs, financial mobilization, management and strategy adopted. Depending upon the initial trend only a few action plans may prove viable and successful. The action plans have been based on certain assumptions which may not stand up to overwhelming risks and uncertainties. However, the trend and processes would offer important insight into understanding and addressing the issues related to biodiversity and its conservation, institutions and policy and livelihoods.

Several of the actions are cross-cutting with an inter-sectoral interface and they support each other with constructive and positive overlap. Similarly, several of the actions have common stakeholders and support base. The actions have also been considered in relation to gendered and generational issues which affect men, women, girls and boys in different ways. The implementation of the action plans would offer insight into the dynamics of biodiversity conservation and wise-use of the resources. This would help understand limits and extent of institutional and policy support available to conserve biodiversity and sustainable livelihoods.

The final view that emerges sees institutions to mediate in reducing pressure on the aquatic ecosystem as well biodiversity to offer boost to livelihoods opportunity.

1.0 ACTION PLANS: GENERAL INTRODUCTION

The link between environmental degradation and increased vulnerability of poor communities is well known, particularly in the context of climate change and economic globalisation.(High ARCS,2009;Nayak P.2004) In this context however, only limited information is available concerning communities in highland areas, and even less regarding those dependent on aquatic resources and associated ecosystem services. Highland Aquatic Resources Conservation and Sustainable Development (HighARCS) is a project which seeks to better understand the patterns of resource use and livelihoods of communities who utilise highland natural resources in five sites across Vietnam, China and India, with a focus on aquatic resources. The integrated interdisciplinary approach employed by this project seeks to encourage sustainable and wise-use of aquatic and other natural resources while safeguarding ecosystem services, biodiversity and livelihoods of poor and vulnerable groups.

The project is using an integrated approach as defined by (Springate-Baginsky *et al.* 2009) to assess and value the wetland sites and to produce the IAPs. It is divided into three interrelated phases. The first phase is situation analysis phase, followed by assessment of biodiversity and ecosystem services, livelihoods, institutions and policies at the site (2nd phase) and the third phase, based on findings of the preceding work, is action planning and implementation of selected components concerning biodiversity and livelihoods, whilst assessing the interplay of institutions and policies.

1.1 Research Questions

Considering the objective of the project to reconcile biodiversity conservation and livelihoods the overall research question is: *how can highland aquatic resources be sustainably managed and conserved while accommodating the livelihoods of poor and food insecure communities?*

This is approached through considering a set of research questions formulated to guide research across the HighARCS (HighARCS 2009) which fall under four broad themes:

1) Biodiversity

- i) What is the existing aquatic biodiversity in the selected field sites?
- ii) How can these aquatic ecosystems be managed to secure the sustainable provision of ecosystem services and the conservation of biodiversity?

2) Livelihoods

- i) What are the dynamics of the multiple livelihood strategies in the selected field sites, how do these strategies utilise resources derived from aquatic ecosystems and what are the differences according to gender, age, ethnicity and class?
- ii) How can resource dependent livelihoods be ecologically sustainable and at the same time permit equitable local development opportunities?

3) Policies and Institutions

- i) In each selected field site, what are the existing institutions and legislations which mediate access to aquatic resources at multiple scales and levels of government?
- ii) What policies and institutional frameworks are needed to resolve conflicts between multiple stakeholders and ensure sustainable resource management whilst maximising local income generating activities?

4) Planning

- i) What is the best approach to facilitating interactive participation in assessment, decision-making and planning with respect to aquatic biodiversity conservation and wise-use and promotion of sustainable livelihoods? How do we ensure participation which includes individuals stratified by relations of gender, age, ethnicity and class,
- ii) What interventions both in the realms of policy and livelihoods, can be promoted to both protect aquatic biodiversity while offering sustainable livelihood opportunities and enhanced wellbeing for poor and vulnerable groups. How can these be sensitive to gender, age, ethnicity and class?
- iii) Can indicators be identified that are appropriate for local communities to assess change?
- iv) How can monitoring of aquatic ecosystems, livelihoods, and institutions be established and sustained locally? Who should be responsible? What can be done if something changes?

This report covers these four planning questions, but focuses on identifying the interventions that can be promoted in phase three. Based upon the completion of research dealing with biodiversity and ecosystem service (WP 3), livelihoods and policy (WP 4 and WP5) this report identifies an action plan which seeks to find *integrated* solutions to some of the problems identified. It outlines the process through which action plans were developed in conjunction with local stakeholders. It proceeds to examine the plans themselves, including the practicalities of interventions, how they will be monitored, and potential challenges.

1.2 Basic integrated approach and strategy to action planning

The basic objective of the project is to make an assessment of the aquatic resources, in the given project sites, and then test the efficacy of institutional and policy inputs in augmenting and regenerating aquatic resources, promote their wise-use and optimize access to and control over the resources of the resource dependent marginalized communities to strengthen and consolidate their livelihood endowments. The concept of wise-use has been adapted from the Ramsar Convention which equates wise use with the maintenance of ecosystems and continued delivery of eco-system services to maintain human well being (Ramsar, 2010). The action plan, therefore, would include all the three components of the project (1) biodiversity and ecosystem services, (2) livelihoods and (3) institutions and policy related to aquatic resources. Since this is a research project with limited scope for program implementation the proposed interventions would be dovetailed, as far as possible with existing schemes and programs governed by existing institutional and policy priorities. Wherever institutional and policy support are inadequate actions will be proposed to focus efforts on creating policy sensitivity using relevant advocacy. The process of stakeholders assessment using participatory tools such as PRA,FGD and also Delphi has evoked initial willingness on the part of the important

stakeholders like the forest officials, local community leaders, Panchayats and others from the line departments of the government to consider the issues seriously and proactively deal with the situation. Proposed interventions would, therefore, be a combination of collaborative, involving minimum cost, within the existing institutional and policy framework, whilst the action plan will be integrated to include the above three components. The activities would have a short, medium and long term perspective to be able to analyze the outcome within and beyond project period. For CDHI has a long term involvement in the area it would be possible to continue with some of the long term interventions and also their analysis beyond the formal project life.

1.3 The project location and its characteristics

The project site is located in Buxa, situated in the extreme north east of Kalchini Block under Jalpaiguri District of West Bengal (Figure 1). It lies at 26° 37' north and 91° 53' east. The area has rich natural resources with hilly terrain. The population is a mix of people with Nepali and Dhukpa origins. The 11 picturesque villages offer diversity of terrain and remoteness, with Adama being the farthest from Buxa which is the centre of all the 16 villages. All the villages fall under Rajabhatkhaba Gram Panchayat.

The communities in the above villages are recognized as an integral part of the Buxa National Park and form strong partner in the protection of the forest through Forest Protection Committees (FPCs). During the implementation of the Eco-Development Project (World Bank and Government of India) they were offered livelihood support available under the project. During the implementation of the Eco-Development project they were offered training and material inputs for livelihoods. One of the project components was development of a fish pond in Buxa which could not materialize but the communities were given training (personal communication with the communities and the forest officials). This suggests that the Buxa National Park considered the communities as their responsibility to augment their material and skill endowments and at the same time maintain balance of the eco-system services-wise-use

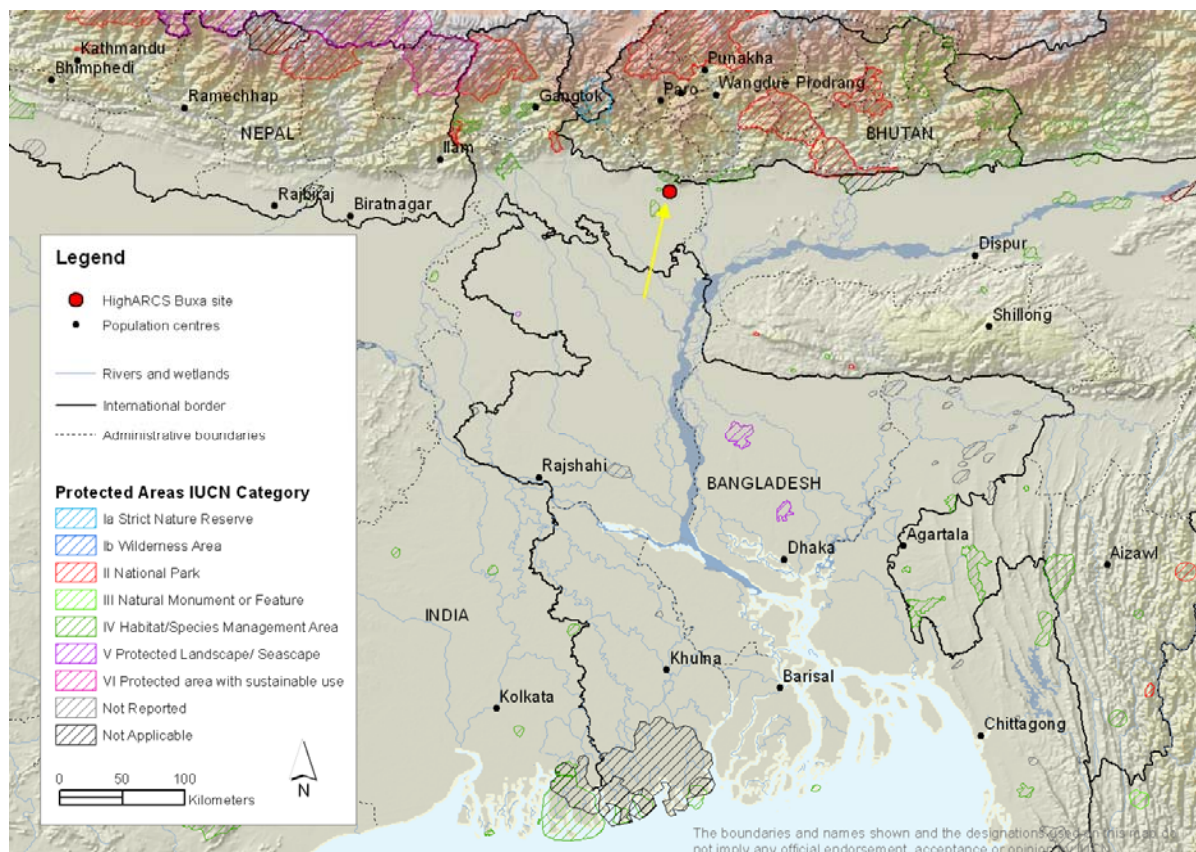


Figure 1. Map showing the location of the HighARCS site in Buxa within India.

Available primary data from the household survey indicate majority of the 681 households in Buxa practice Christianity followed by Buddhism and Hinduism. Religious composition is gradually changing. The majority of households enjoy Scheduled Tribe (ST) status. An interesting aspect of the population, as revealed during the study, is the gender ratio which is skewed in favor of women with the sex ratio being 1213 females for every 1000 males. This is in contrast to the West Bengal sex ratio of 934 females per 1000 males and the overall ratio across India of 933 females per 1000 males. The project site has been divided into three clusters depending upon topography, demographic characteristics, physical characteristics and aquatic resources characteristics (Figure 2). It is important to note that the division of the project site into three clusters has been based on the indicators set by the different stakeholders during focused group participatory exercises. For example Jaynati cluster is considered based on its population, relatively lower altitude and plane topography with a large river where as Buxa and some contiguous villages fall under the same range and has Nepali and Dhukpa population. Adma is the remotest, has predominantly Dhukpa population, several rivers and nomadic tradition with shifting cultivation and animal rearing. Adma also has milk and milk products as one of the important sources of their livelihoods.

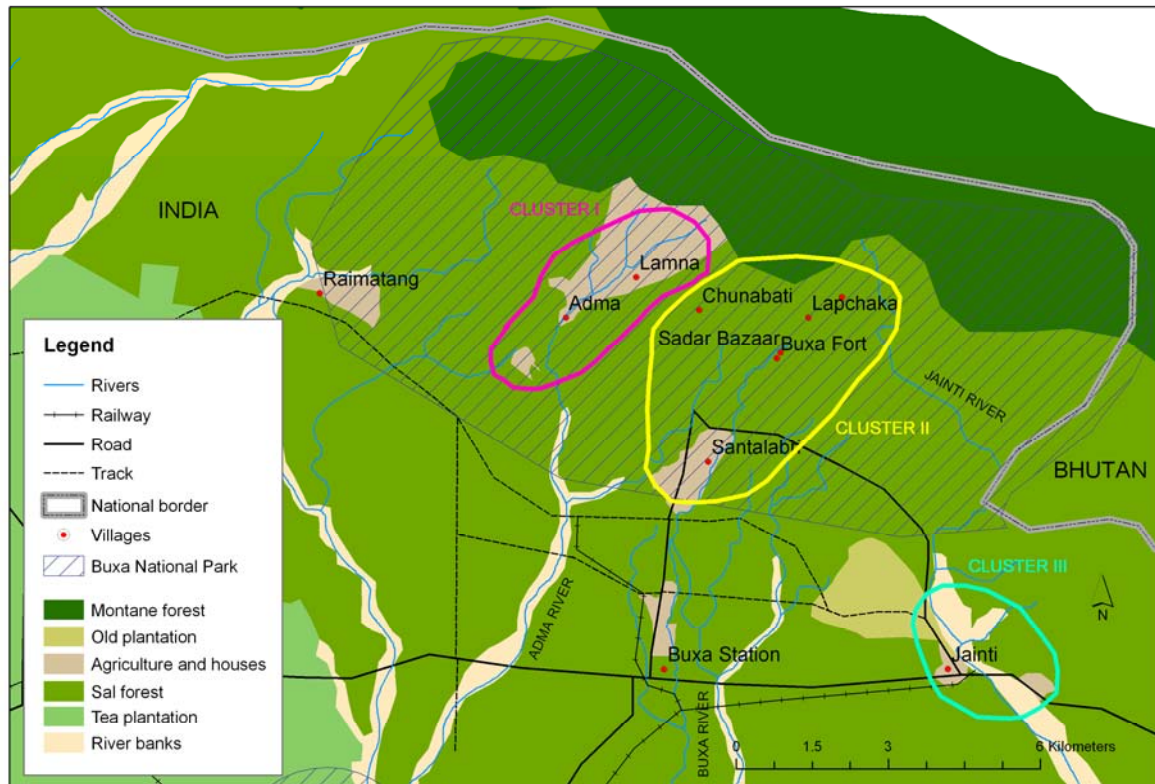


Figure 2. Map showing the Buxa site.

1.4 Situation analysis and site management issue(s)

The situation analysis indicates the presence of a multiethnic population distributed unevenly across the three clusters. One of the criteria for the division of cluster is demography. Cluster I (Adma) has a predominantly Dhukpa community combined with Nepalis. Cluster II (Buxa Fort) has mixed communities, almost equally divided into Nepalis and Dhukpas. Cluster III (Jayanti) has a mixed population of Bengalis, Tribals, Nepalis and migrants from other states. The socio-cultural system demonstrates a soft and synergetic culture wrapped in tradition. There is respect for natural resources and their conservation seems to be a shared societal value. The highly undulating terrain presents difficult livelihoods challenges. The small size of land holding and lack of irrigation does not allow planned agriculture. Other inputs for agriculture like technology and implements, manures and fertilizers and seeds are also not easily accessible because of the remoteness. The community in the clusters (I and II) have traditionally been dependent upon forest resources, and agriculture has not been a mainstay. The upper part of Buxa had orange cultivation as the main source of livelihoods for several years but suffered from termite infestation, leading to complete loss of this livelihood option. The Reserve Forest status of the region allows limited access to forest resources. The communities are reduced to labouring and menial work. The situation with regard to livelihoods for cluster III (Jayanti) are adversely effected by land degradation due to flooding and soil erosion and also limited access to forest products and resources.

There is rich biodiversity including aquatic resources. However, because of constant degradation of the water bodies (rivers and rivulets) the aquatic resources have witnessed constant degradation. The community members have indicated rich and diverse species of fish which was confirmed from our

observations in the case of clusters I and II. However, the communities from these clusters are not regular fish eaters and fish is not seen as a key component of their diet. During the field survey they indicated that previously fish constituted an important food item which is not the case now perhaps because of declining fish stock. They use fish as an occasional food supplement. Considering a cross-section of the communities in cluster III, the Bengalis prefer eating fish and are also catching fish for selling. For them fish and other aquatic resources are considered marketable commodities.

The situation analysis indicated that the community is permitted access to and control over natural resources although the government policy prescribes strict regulatory norms for use of local natural resources including aquatic resources. “Most households in the three ‘clusters’ rely upon water collected from seasonal streams for drinking whereas the majority of agriculture is rain fed, apart from ‘Jayanti’ where river water irrigation is also used. Harvesting of biodiversity in the BTR falls under the provisions of the Biodiversity Act and Rules but also the Indian Wildlife Protection Act (1972 amended 2003) which aims to control poaching and illegal trade in wildlife. Therefore harvesting is allowed in the BTR, but only by the local communities and only for subsistence use. However, the level of harvesting of aquatic species is relatively small and is ranked below agriculture, livestock and income generated from manual labour or employment gained outside the area(WP 3)

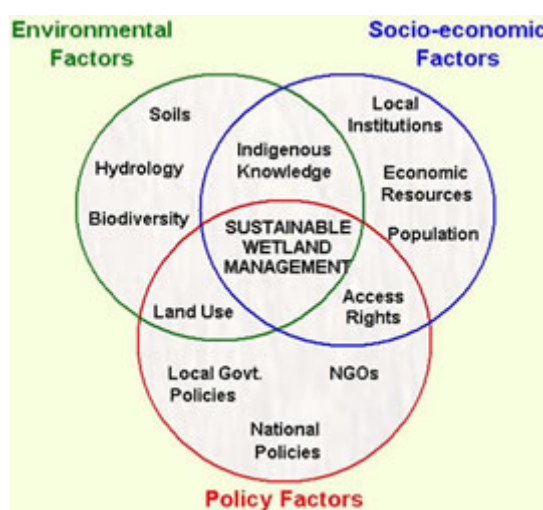
The government officials, however, are reported to be friendly and supportive to the interests of the communities. However, lack of awareness about the regulatory provisions often makes the communities vulnerable to over-stepping permissible limits and thereby falling into legal traps. In the midst of contradictory legislative provisions for and against eviction of the local communities from the reserve forest area (WP 3) there has been an institutional intervention aimed toward developing the area including development of physical infrastructure and social development. Development of drinking water facilities by the Boarder Area Development Agency has been a major program. Swaranayanti Gramin Swarojgar Yojana (SGSY) has helped the people in accessing credit and through development of infrastructure, the District Administration has constructed approach roads and installed non-conventional energy sources, notably solar lighting. NGOs have facilitated social development programs like providing education and health care. Under the National Rural Employment Guarantee Act (NREGA) the villagers have been claiming and getting assured employment for 100 days in a year. These various programmes and initiatives have helped the community develop better.

The area was selected considering its elevation, demographic characteristics of the community, biodiversity and CDHI’s experiences of working in the area in close collaboration with various stakeholders. The main objective of locating the project in the area was to use the experiences and expertise of a multidisciplinary professional team in understanding the rich highland aquatic resource base and be able to propose a number of interventions for conservation of aquatic resources and sustainable wise-use for the livelihoods of marginalized communities that will strengthen or improve the existing institutional and policy framework.

2.0 ASSESSMENT METHODOLOGY - INTEGRATED APPROACH

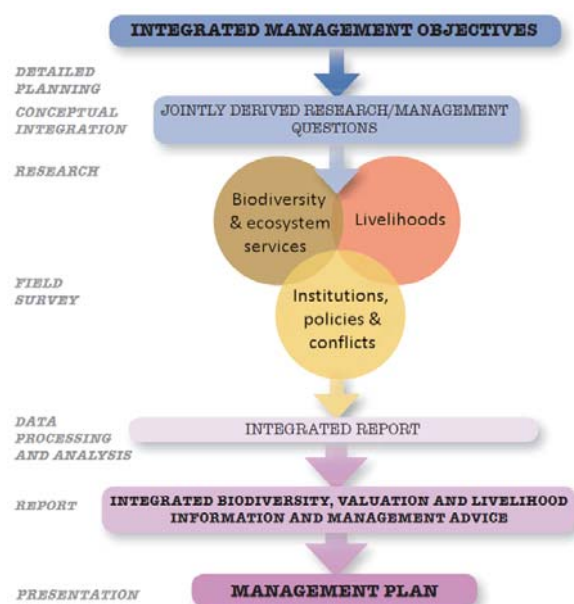
Bio-diversity and eco-system services have a number of components connected with each other. These inter linkages and interconnectivity mean that the relationships and drivers that affect local eco-system including wetland are extremely complex, concern both biophysical and socio-economic elements, and involve a series of interactions between them. Without simultaneously dealing with all of these elements it is neither possible to understand the conditions and status of an eco-system within the broader physical and human landscape, nor to assess the likely outcomes and implications of different policy and management scenarios. Such integration reflects an ecosystem approach to wetland management. The ecosystem approach, as established and defined in the Convention on Biological Diversity, recognises the need for a holistic approach to wetland assessment and management. The ecosystem approach is “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way” (Ramsar 1971). It supports participatory planning guided by adaptive management to respond to the dynamic nature of ecosystems, in doing so involving all stakeholders and balancing local interests with the wider public interest. It advocates the decentralization of management to the lowest appropriate level, to achieve greater efficiency, effectiveness and equity. These are integrated within an overall approach that focuses on the **interaction between human society and the physical environment**. Problem-solving activities are undertaken in an inter-disciplinary manner which focuses on how different aspects of the wetlands and their surrounding catchments interact. Considering the above IAP has been developed using an integrated approach.

The interconnectedness can be seen in the following diagram:



Source: Wetland Action 2008

The following diagram depicts the integrated management objectives



Source: Springate-Baginsky et al. (2009): A tool kit for Integrated Wetland Assessment

Even though integrated conservation and development are often both incorporated into the overarching wetland management objective, and an assessment process is instigated in order to identify ways to achieve that goal, the different thematic elements of this assessment tend to remain separated. Individual specialists are commissioned to carry out studies on conservation and development issues. The specialists identify research questions and they collect and analyse their own data. The different experts, then, exchange notes, compare agreements and disagreements and integrate action plans considering conservation as the focus. In case of differing opinions further research is carried out. Lack of integration makes very inefficient use of resources for assessment and analysis of information, erodes trust between conservation and development advocates and puts the onus of conceptual integration and analysis on decision makers (Springate-Baginsky et al. 2009). Following the above framework and considering the nature of conservation and sustainable development as the objective of High ARCS an integrated approach was used in which different elements such as biodiversity institution, livelihoods were studied and analysed by different experts to arrive at Integrated Action Plan (IAP)

2.1 Assessment survey methods

Assessment was carried out using multi-methods. They included questionnaire based quantitative methods, qualitative methods including PRAs, FGDs, case studies and others. For details refer to **WP 3, WP 4, and WP 5**.

2.2 Age and gender

Age and gender are important consideration for action planning as they form important part of the stakeholders. Also a boy or girl of today will assume adult hood next and assume the responsibilities from the preceding generation. While making priorities age and gender were taken into consideration and their views using different methods obtained-see for reference **WP 3, WP 4, WP 5 and D 5.2**.

3.0 OVERVIEW OF RESEARCH FINDINGS

3.1 OVERVIEW OF BIODIVERSITY AND ECOSYSTEM SERVICE VALUES (WP3)

Research findings suggest that Buxa has a rich biodiversity of both plants and animals (please refer to WP3 report). According to the IUCN Red List assessments undertaken by this project in collaboration with another project the Buxa wider catchment is one of the most freshwater species rich sub-catchments of the whole Ganges and Brahmaputra basin, containing 142 species of fish 81 molluscs and 82 odonate species (Allen *et al.* 2010). Most of these species are classed a Least Concern but three species (all fishes) are classed as threatened (assessed as Critically Endangered, Endangered, or Vulnerable); *Clarias magur* – known as the wagur (Endangered); *Botia rostrata* – known as the Dohser (Vulnerable); and *Cyprinion semiplotum* – known as the Assamese kingfish (Vulnerable).

Based on the field and market surveys 46 species of freshwater fish and 25 wetland plants were identified to be present within the High ARCS Buxa site. A key finding is that even though no fish species recorded are considered globally threatened, six are classed as Near Threatened (this is the category assigned to species that are very close to meeting the criteria for a threatened category). According to the Red Listing assessments, six species are impacted by over-exploitation (*Tor tor*, *Chitala chitala*, *Ailia coila*, *Ompok bimaculatus*, *Wallago attu*, *Bagarius bagarius*), one by pollution (*Chitala chitala*) and one by dams (*Tor tor*). However, based on discussions with villagers and fishermen it was identified that almost all the fishes in the Buxa area are declining in number and that nearly every species are utilised as food. Moreover, size and weight of the fishes is reportedly decreasing year by year due to different reasons including soil erosion. This was revealed through survey as well as oral history by the stakeholders. Therefore, although the nutritional value as well as economic value of fish in the project area are very high, the declining fish stocks has lessened the people's interest in fishing, and thus livelihood support from fishing has become weak. A total of 25 aquatic plant species were identified from the three cluster sites, none of which are of global conservation concern and nearly half of them being non-native species. .

Based on the observations taken during field work, and discussions with stakeholders the key threats to aquatic biodiversity, resources and ecosystem services were identified and have been mapped (see Ray and Mishra 2011 for a discussion of all threats and maps). The key threats are water pollution from domestic and agricultural sources, soil erosion due to deforestation and sand and boulder mining from river beds (see figures 3, 4 and 5).

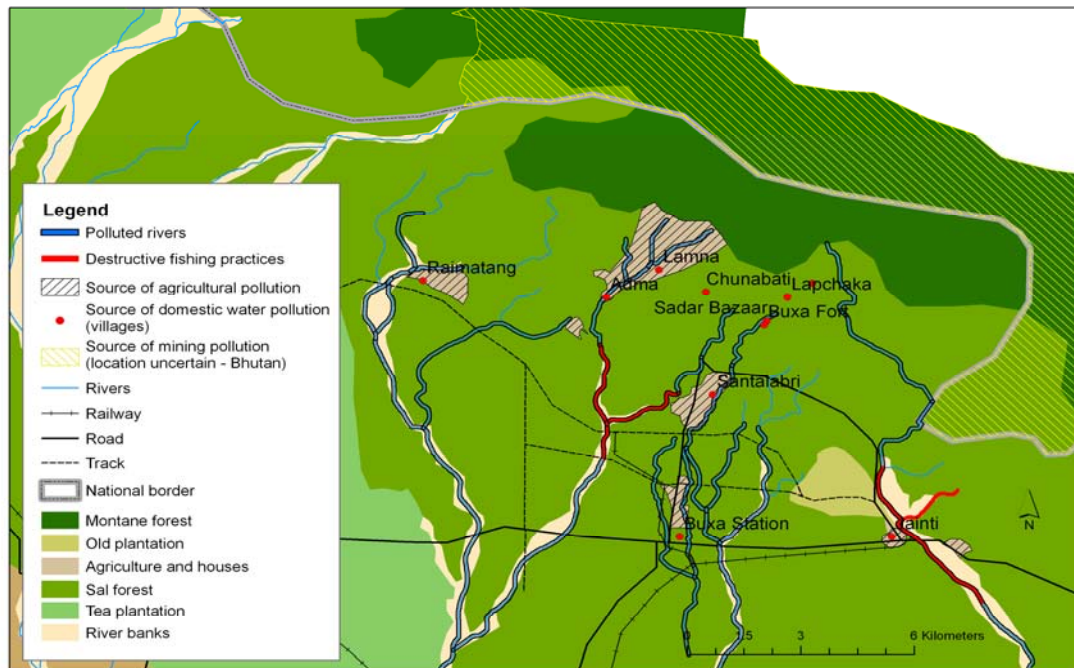


Figure 3. Sources of water pollution and areas impacted at the Buxa site.

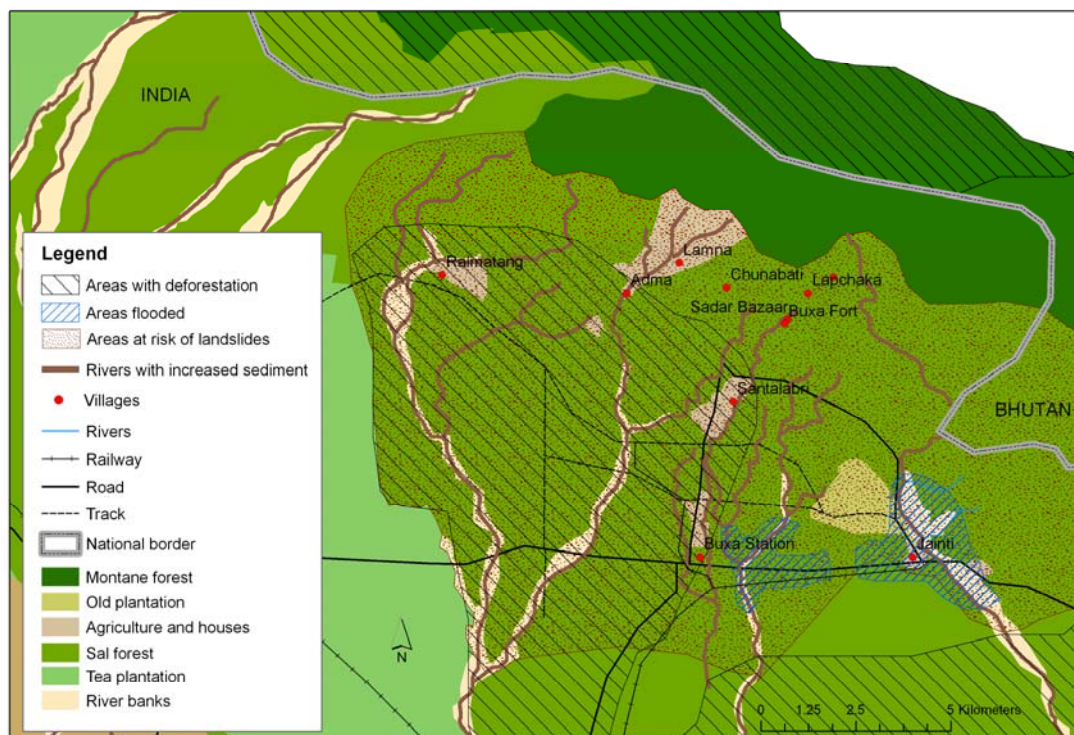


Figure 4. Sources of sedimentation and areas impacted at the Buxa site.

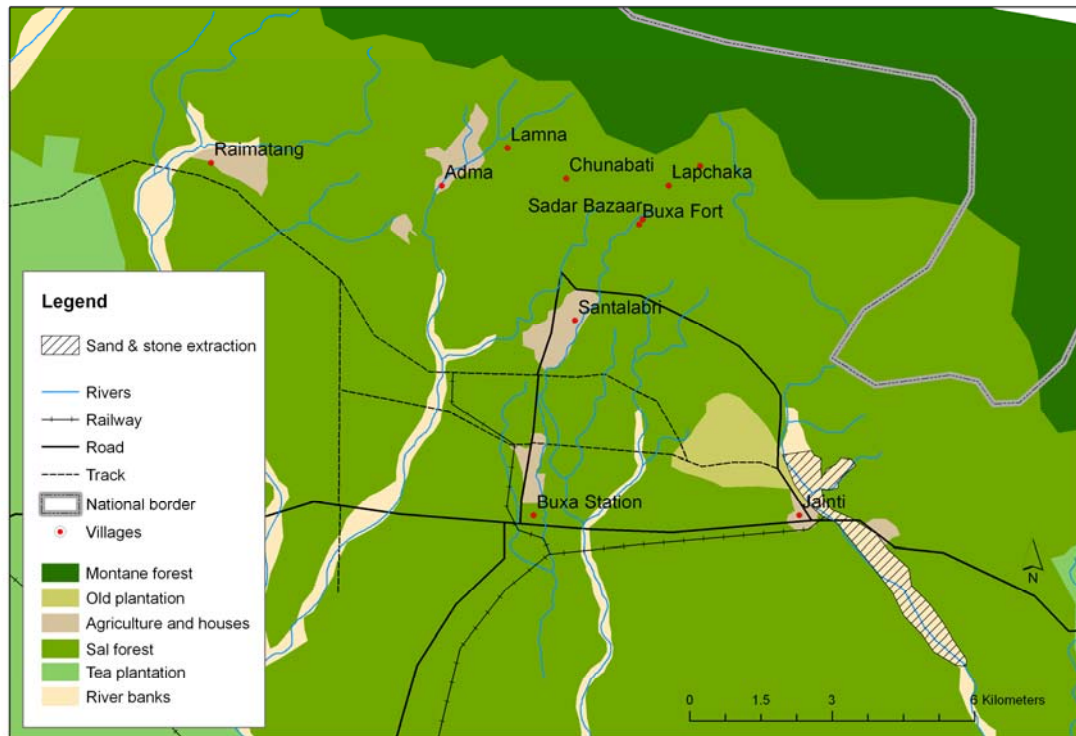


Figure 5. Sources of sand and stone mining at the Buxa site.

Based on the ecosystem service identification, valuation and mapping work undertaken, the services ‘fishes for commercial use’ and ‘disease regulation’ were valued the highest by the communities at the site. Figure 6 shows that these two services had the greatest proportion of ‘high value’ preferences given to them by the respondents. ‘Tourism’ and sand and ‘stone mining’, were the least valued with the greatest proportion of ‘low value’ preferences. Water for human consumption was not highlighted as a highly valued service through the valuation work, however based on the results of focus group discussions common priorities were shared across many of the different stakeholder groups, including the poor water quality for drinking and declining fishes.

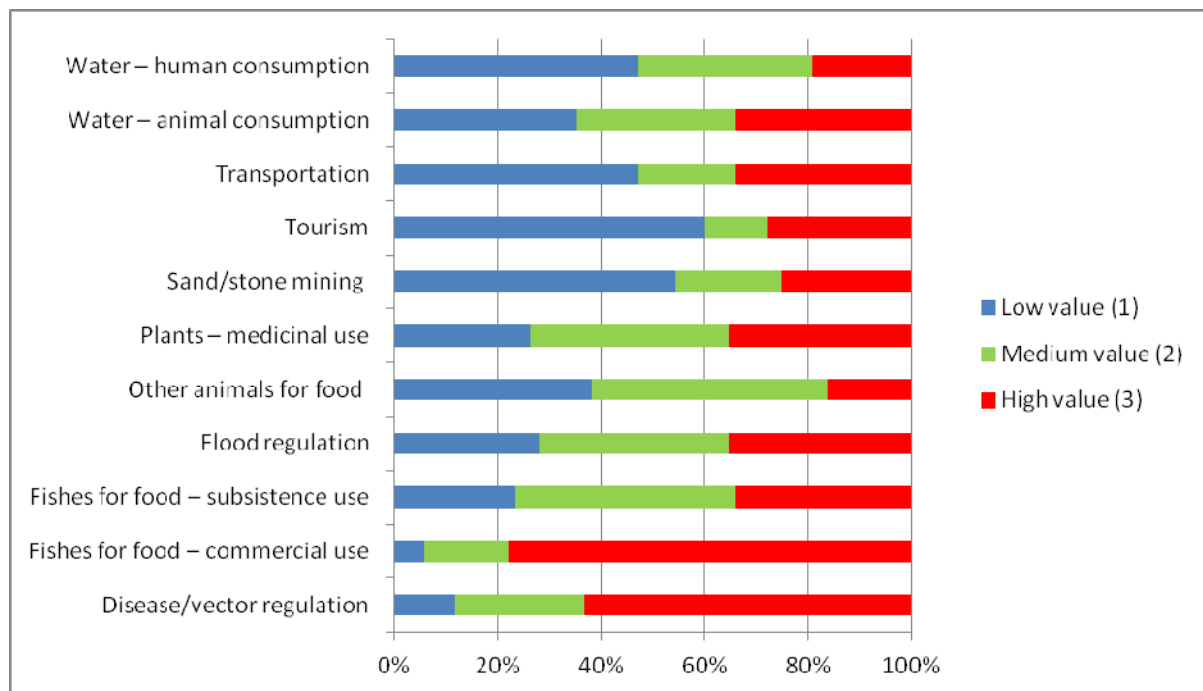


Figure 6. Proportion of low, medium and high value scores given to each ecosystem service at the Buxa site

The highly valued ecosystem services identified through the valuation work and focus group discussions (water provision for human use, fishes for food) were mapped to show the areas generating the services and the areas benefiting from the services (figures 7 and 8).

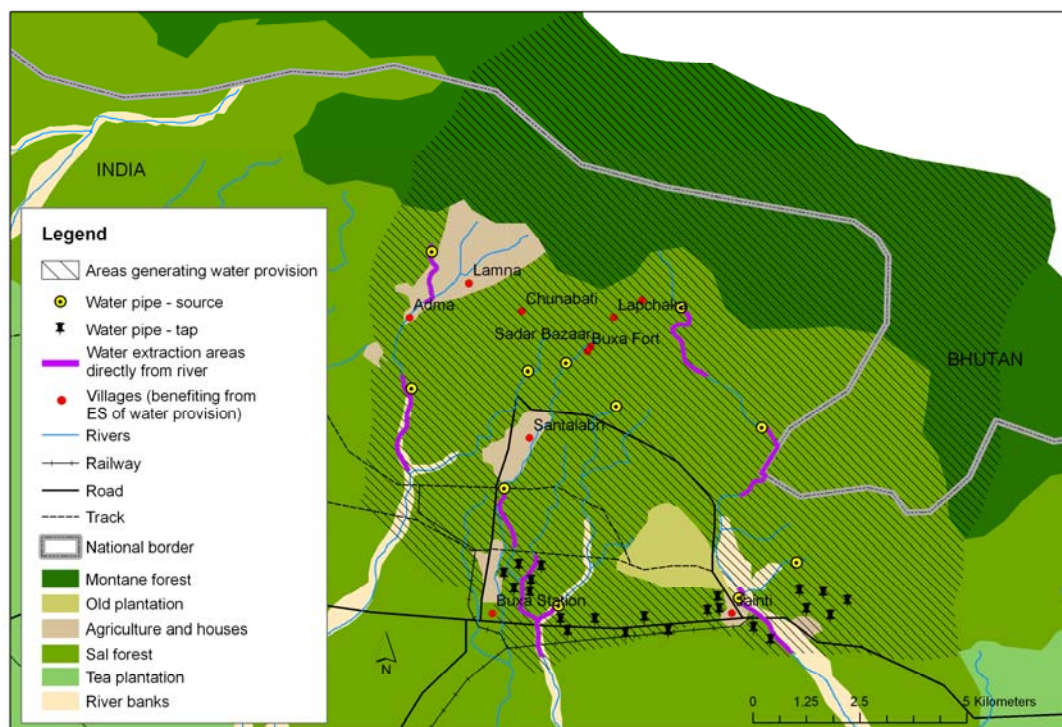


Figure 7. Areas generating and benefiting from the ecosystem service of water provision for human use.

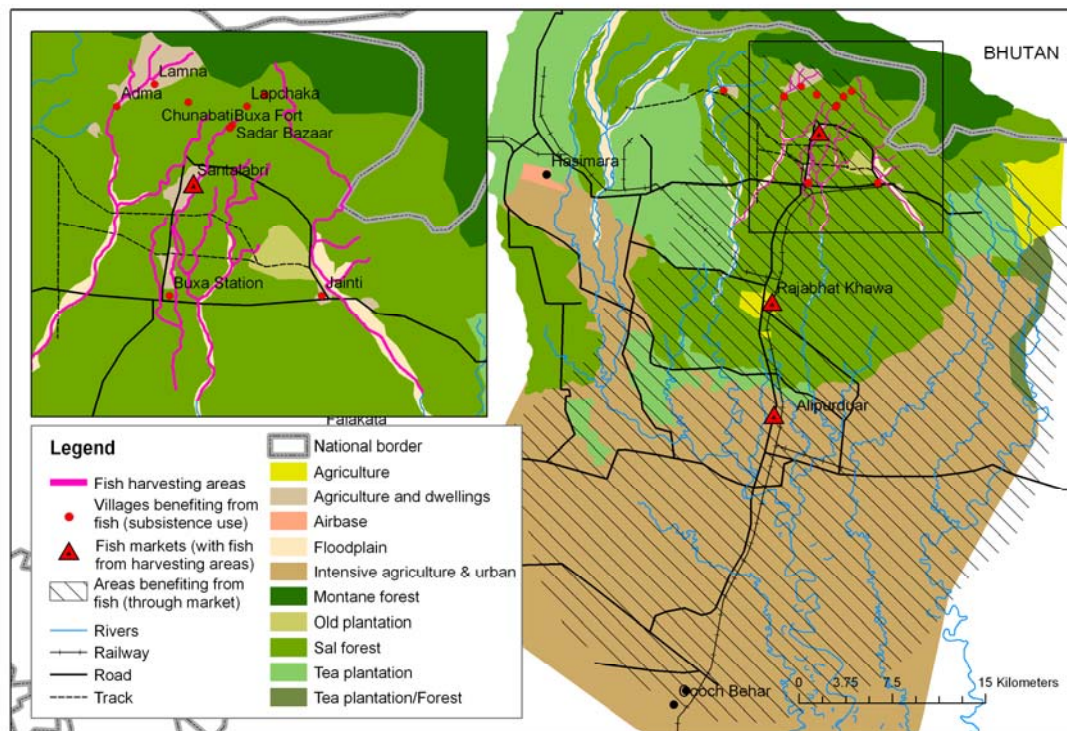


Figure 8. Areas benefiting from the ecosystem service of fishes for subsistence and commercial use.

3.2 OVERVIEW OF LIVELIHOODS (WP4)

Research findings and our general understanding suggest that Buxa region has a predominantly forest-based and agricultural economy. There used to be rich aquatic resources which people used to exploit for their livelihood. The Bengalis population in Jayanti are fish lovers. Fish, however, is also preferred by all the communities in the three clusters. In Buxa Fort cluster which is home, primarily, to Nepali and Dhukpa communities, labouring remains the primary livelihood activity, and the Department of Forest is the primary employer. ‘Construction labour’ and ‘other labour’ are the most significant income sources, the latter including jobs such as maintaining roads and trails. Much of this work is available through NREGA, which ensures individuals get 100 days work a year, or compensation pay- for the period when a job is not offered after application for registration. Actually NREGA is an employment assurance scheme of the Government to ensure that the unemployed population has access to job opportunities locally. There is also a considerable amount of out-migration, not abroad, but to urban centres such as Siliguri, Kolkata and Delhi. Jobs include working as machine operatives in factories or work in hotels (general notes from HH interviews, Buxa, Oct 2010). Some of the Dhukpa community who are familiar with the language and culture regularly migrate to Bhutan for work. In Lepchakha, for example, it was suggested that up to 90% of the local men work as labourers in Bhutan. This opportunity however is reportedly only available to the Dhukpa community who know the language and can merge into the local population without official documents. Given their lack of citizenship papers however, they can only secure menial employment (interview in Lepchakha village, Oct 2010). In addition to labouring, households raise livestock in the forest, which is mostly for household consumption. Agriculture is limited, given the steep terrain,

damage from wild animals, and restrictions imposed from the Department of Forestry. Nevertheless, there is some maize production in most villages, and some production of cash crops such as garlic, ginger and turmeric which are sold to merchants in Santalabari at the foot of the hills on the weekly market days. The weekly market does not ensure remunerative price for their product.

Jayanti cluster is currently home to predominantly Nepali, Adivasi Bengali and Bihari migrants who settled to work in the now abandoned mines. The livelihoods, however, are somewhat similar to the Buxa Fort cluster. Labouring is the primary source of income, along with migration to urban centres. Agriculture is limited to a few fields of maize on the far side of the river, and these are often damaged by elephants. Being a plain, Jaynati has livestock raising as one of the important livelihoods sources.

It is only in Adma cluster, which is populated entirely by the Dhukpa community, where livelihoods follow a more traditional pattern. Although shifting cultivation is less common, local people operate fixed fields of maize and millet, and there is even some rice in the lower valleys. Their livelihood is semi-nomadic. Most households have large herds of cattle which they tend in the lower valleys at the foot of the plains during the monsoon when the upper forests are abundant with leaches, then moving up to the level of the villages in the autumn, and then returning to villages in winter to tend the harvests of millet. In the early spring they move to pastures on the high ridges on the Bhutan border (HH interview, Adma, Nov 2010). They produce cheese, butter, ghee and milk, and sell these in Bhutan, or locally at the surrounding hills. Although some people work as labourers, no out-migration pattern exists in the other two clusters, and much work is simply carried out locally for other villagers. This community however, displays a greater level of self-sufficiency than the other villages in the Buxa region.

In all the three clusters there is a seasonal variation in the availability of livelihoods opportunity. In terms of access to and control over livelihoods resources, there does not seem to be much difference, especially in the Adma and Buxa clusters, where cultural beliefs and practices are favourable to women.

3.3 OVERVIEW OF INSTITUTIONS, POLICY AND CONFLICT (WP5)

The report on institutions (WP) suggests that biodiversity conservation is guided by an international treaty (WP 5) which is ratified by India as well. The State of West Bengal is committed to the implementation of the provisions of Biodiversity Act as promulgated by Government of India (GoI, Biodiversity Act, 2002). The project site of HighARCS is situated in the hilly terrain of Buxa (located in North Bengal, the northern part of the State of West Bengal). Buxa is situated in the Reserved Forest famously known as Buxa Tiger Reserve (BTR). BTR recently implemented a World Bank supported eco-development project aimed at reducing biotic pressure on the local biodiversity.

The basic institutional framework on governance follows the federal governance structure and strategy as prevalent in India. The federal governance strategy emphasizes local planning as a tool for sustainable development. The Government of West Bengal also follows a similar strategy. Under the local governance arrangements (through Panchayati Raj Institutions) village planning for Buxa is done by the Gramsabha and Gram Unnyan Sammittees (GUSs). All plans are to be locally done and organized. Since the area falls under the Reserve Forest, governance of the area is influenced by the Department of Forestry on subjects related to forest and natural resources management. This makes things complex. On the one hand where there is the possibility of resources optimization there is

always an avoidable conflict between the Department of Forestry and other local agencies including Department of Panchayat. For example, local planning may indicate that the construction of a fish tank at a common place is desirable. However, this can not be done unless ratified by the Department of Forestry. Such coordination takes a lot of time and energy and several useful local initiatives have been sacrificed. The institutional and policy framework, as it exists in Buxa, often comes in to conflict with the local actions people might take for the conservation of biodiversity and livelihoods. For example people can not take such actions without going through a complex system of obtaining permission from the Department of Forestry and other related line departments. Ideally according to current provisions even if a small pond has to be developed for an experimental fish culture permission is required to be obtained. It is another matter that officers who may not trust the local communities' intentions tend to overlook such well meaning overtures. This is the context for testing the feasibility of local actions related to aquatic resources management taking the community as the anchor. Research findings suggest that although there is the possibility of convergence and synergy among different actors, including communities, this is not achieved because of a number of constraints including lack of awareness about various policy perspectives, conflicting legal regimes and policies and lack of trust among the agencies and individuals. Consequently it was proposed that Integrated Action Planning would hold this as a critical consideration while evolving testable and feasible Integrated Action Plans during the current phase of the project.

3.4 SYNTHESIS OF RESULTS

Research results suggest that Buxa has a rich but declining aquatic resource-base which, historically, has been a source of sustenance for the local communities. The institutional and policy framework has mediated access and control over such resources in order for the community to have sustainable livelihoods. Therefore, from the research, it was evident that access to livelihood resources, policy and institutional issues, and biodiversity, are organically connected which this action planning phase will take in to consideration. For example, the multiple livelihood strategies and power relations which shape them are grounded in particular ecosystems, both aquatic and non-aquatic. Livelihood activities impact ecosystems while ecosystem change feeds back to shape livelihood options. At the same time, policies and institutions which have the capacity to regulate natural resources while enhancing as well as limiting access to livelihood resources, play a critical role in mediating this relationship between communities and their environment. The action planning phase will, therefore, seek to work through this framework and see if wise-use of aquatic resources can ensure sustainable livelihoods within the existing institutional and policy environment.

4.0 ACTION PLANNING METHODOLOGY

In the context of highly interconnected processes, it is clear that any action planning which seeks to strengthen livelihoods while protecting biodiversity, must take an integrated approach, combining livelihoods, institutional and biodiversity issues. Drawing together data from the reports (WP 3, WP 4 and WP 5) a series of Integrated Action Plans (IAPs) have evolved for the site to meet this strategic goal of the HighARCS project.

The first stage of action planning involved brainstorming within the HighARCS team regarding potential interventions. Ideas were based upon previous fieldwork as well as CDHI's past experiences of working in the Buxa region. The CDHI team has been intensively using PRA tools and multi stakeholders consultations and the outcomes of these were used for action planning. Some initial proposals emerged, which are discussed below. Over the course of several field visits to Buxa, a series of action planning focus groups were carried out. As during the primary data collection for HighARCS, separate groups were carried out for women, men, girls and boys. Ranking exercises with participants were carried out where they were asked to go through each intervention one by one, deciding where it would be placed on a scale. Then participants were asked to discuss the position each potential intervention was given, and the potential opportunities, practicalities and problems surrounding each intervention. The ranks and positions should be considered indicative in the given time and space and should not be considered strictly.

The action plan was subsequently shared and discussed among the stakeholders, primarily the community members and some selected officials and Gram Panchayat members who offered suggestions and even came out with independent action plans. In the final analysis the action plans, as suggested, are based on the combined outcomes of different steps and processes used during the research and analysis. In the following section we present the action plans formulated during the process. The action plans address issues related to conservation and biodiversity, improved livelihoods and institutional strengthening.

5.0 ACTION PLANNING PROPOSALS

5.1) BUILD CAPACITY OF EXISTING SELF-HELP GROUPS FOR BIODIVERSITY CONSERVATION

ACTIVITIES

Much of the success of proposed interventions depends upon the active collaboration of local institutions with adequate information, sensitivity and capacity. In a decentralized form of governance local people's institutions as well as local institutions of governance (Panchayats in case of Buxa, India) are important. Among local institutions, self-help groups (SHGS) are particularly valuable. SHGS have emerged as important institutions in contemporary India, as an effective instrument for dealing credit and saving issues for the local marginalized communities. The SHGS have, primarily, emerged as institutions for financial intermediation for excluded communities. As an entry point the SHGS, which usually have 10-12 members from among the local communities, begin with saving schemes. The SHGS are supposed to deal with social and empowerment issues and are expected to expand their areas of activities to cover all other relevant subjects which affect people's lives. There are examples of SHGS taking up gender-men and women-boys and girls and environmental issues within their locality seriously and systematically. Building on this potential it is planned to involve SHGS in the HighARCS project. Buxa has a substantial number of SHGS in the three clusters with some variation in their number. It is planned to involve SHGS in proactively promoting and conserving biodiversity. In specific SHGS are to be oriented and their capacity built to achieve this objective by checking, reducing and regulating discharge of household pollutants and chemicals from the fields into the river. They are to be involved in reviewing their own bio-diversity stock and embed the implication of a degraded ecology on their life. Adequate capacity would be built among the members by exposing them to appropriate training modules or by fine tuning the existing capacity building inputs already available for SHGS.

ACTIONS

Existing SHGS will be mobilised to carry out several activities:

1. Encourage local people-led by the SHG members - in each village to prepare a biodiversity register to assess local ecology and harness indigenous ecological knowledge. Women's SHGS will be mobilised for this activity, although children will also be asked to undertake biodiversity mapping of the area around their school. The process of preparing bio-diversity register would help the community, more so young boys and girls, reflect and compare the existing stock with what the area had in the past. Presentation of the bio-diversity register, before the stakeholders, would help them authenticate their findings. The community members doing the biodiversity register would be trained by the local experts from the Department of Forest, Fishery and experts from the University and colleges. Such activities have really enthused them and enhanced their level of awareness. The bio-diversity register would be given to the government departments for their awareness and sensitization about the current trend of bio-diversity in the given area.
2. Through the SHG, offer training to help local people plant certain species which can allow regeneration of biodiversity. Children will, in particular, be encouraged to plant saplings around their school. . Also through lobby and advocacy concerned departments would be impressed upon to check soil erosion and sedimentation by adopting appropriate technology.

Already the Panchayats have included plans to check soil erosion by vigorously undertaking plantation and embanking some water courses and offering channel for smooth flow using a detour.

3. Offer training in the production of medicinal plants-native non invasive species. Again, as a rich floral reserve, Buxa includes important medicinal plants which the local community uses for treatment of different ailments. The current understanding about the medicinal plants are reported to decline over time which would be reversed through fresh plantation of medicinal plants adding further to their conservation and growth. Care will be taken to use only native non invasive species. The local community have indicated the need for training in the use of different plants for medicinal and nutritional purposes. Let us consider community preferences for this component. There are two interventions which were suggested by respondents. One was for training in the identification and use of medicinal plants, in which case they could be collected from the forest. This needs to be followed by an authentication exercise by experts. Another was training in the setting up of gardens for plants surrounding houses. It will be important to make training as participatory as possible, as local people also have rich ecological knowledge of medicinal plants. Perhaps local experts could themselves give training in each of the villages, allowing for a sharing of knowledge between communities. Farmers Clubs are other institutions which can have this as one of their important agenda items. Farmers Clubs can develop action plan for agricultural activities and access credit from the bank. In fact this has emerged as one of the priorities which the banks support.
4. Develop a small fish pond. Request NREGA (2-3 manpower days) with the involvement of the local Panchayat. Some training can be offered in fish culture of native non invasive species. The survey has brought to the fore availability of important aquatic species in the respective clusters of the project site. The local communities may not be quite informed about their ecological and economic values. It is felt that the local communities should be systematically informed about important species with the guidance of the local experts and help them support in laying demonstrations of important species. It is planned to develop a fish pond in Sadarbazar and Jayanti. For successful development the Department of Fisheries should be enlisted to help and provide technical support.

Throughout the process the HighARCS team will:

- Play a mediating role to ensure the groups are participatory in nature
- Raise awareness during training of SHGS by bringing in bio-diversity components and the benefits they can generate.

GEOGRAPHICAL SCALE

Existing SHGS will be mobilised in all the three clusters. However, training on growing medicinal plants and maintaining a wetland area (household level pond) can be developed and managed through the SHGS in Sadar Bazar. The activity will continue through the project period of two years, until 2013 but from experience, we suggest that this should be integrated into the local milieu.

REASONS FOR PRIORITISATION

There was a perception amongst some respondents that the activities of SHGS, which currently exist in the region, are too limited. Eight to ten years ago there was a movement to set up SHGS. They initially received a subsidy from the government, but after a few years the subsidies were stopped and Local NGOs, who were facilitating coordination and capacity building, also have lost interest; now many groups are not functioning. During the eco-development project implemented by CDHI in Buxa, SHGS were quite active in forest protection, promotion of efficient cook stoves and exploring alternative livelihoods strategies to reduce biotic pressure on the local forest. Over the period there has been some slackness on the part of the SHG members and also on the part of the agencies supporting them. Women in particular valued the opportunities to strengthen SHGS for developing micro-enterprises. This is something they can pursue in their spare time. Earlier the members of the SHGS have worked on making brooms and have also enjoyed income. The same can happen now under HighARCS. A sample of men and women in Buxa cluster and women in Jayanti, gave strengthening SHGS a high priority. Women in Adma and girls in Jayanti gave it a medium priority.

Interestingly, SHGS were considered a low priority by some men in Adma. This was because they felt that it would be difficult to bring together local people and coordinate arrangements among themselves. They also thought that illiteracy may be a constraint. Adma is also remote that makes it inaccessible by the outside agencies to visit and support with lower level of exposure among the people. In Jayanti, however, they have shown strong preference for SHGS which earlier also witnessed a strong SHG movement.

Regarding interventions to be carried out through SHGS, local people expressed keen interest in developing a fish pond and learning about fish raising, which is why it has been included as one of the SHG activities. Similarly, collecting medicinal plants was considered important as respondents in all the hill villages emphasised that they were far away from hospitals and dispensaries. This situation was particularly acute in villages such as Adma. Both men and women gave it a high priority during PRA ranking. They could use the medicinal plants to cure minor ailments and whatever are left could be sold. Women in Lapchaka gave SHGS a lower priority, not because they considered it unimportant, but because there were other issues which took precedent over this.

GENDER AND AGE MAINSTREAMING

Only women's SHGS will be mobilised out of the adult population. This will increase women's empowerment and will harness their existing ecological knowledge acquired through day to day engagement with the ecosystem as identified in the livelihoods report (Mishra et al., 2011; Sugden and Punch, 2011). It will also expand their ecological knowledge. Young people will be involved not as members of SHGS, but will participate in the first two programmes, namely creating a biodiversity register and planting trees around the school. This will help to improve local people's ecological knowledge. In the context of out-migration, the livelihoods assessment suggested that young people's ecological knowledge is declining (Mishra et al., 2011; Sugden and Punch, 2011). Involving them directly in environmental preservation activities will help to strengthen their understanding of the environment for future generations. It will also expand the curriculum of schools which sometimes has limited relevance to local lives and livelihoods.

IMPLEMENTATION

Owing to its strategic positioning and past experiences CDHI is well placed to facilitate the process and training etc. It will be technically supported by local agencies. CDHI has developed local youth workers who would be involved in the mobilization of the groups. This program will also continue as the regular activity in the region. If the SHGS are strengthened credit generation can take place. Since CDHI has been involved in this region for long this activity will be a long term program to have multi-agency support.

INDICATORS OF SUCCESS

Indicators of success will initially be the number of SHGS before the implementation of the Integrated Action Plan, and the number which are still operating up to one year after implementation. However, qualitative analysis will be needed to assess how effective these SHGS are in supporting multiple livelihood activities. Monitoring would continue for at least one year after implementation.

CDHI, with its continued presence, would monitor the functioning of SHGS against the following indicators:

- Number of members present in different meetings
- Issues on HighARCS (livelihoods, conservation and institutions) taken up and resolved
- Number of members participating in different conservation programs
- Number of bio-diversity prepared and used by different agencies
- Number/area of plantation
- Financial spin offs

POTENTIAL ISSUES

A key problem with all interventions such as this is ensuring they are participatory and are not dominated by more powerful members of the community (Cleaver, 1999, 2001), particularly when the groups are involved in the sharing of resources e.g. water for aquaculture. It would probably make sense to have separate SHGS for men and women, in accordance with the dominant division of labour. For example, men play a more important role in fishing so could take a lead in aquaculture, while women play a more important role in vegetable cultivation, so could take a lead in farming and cash crop schemes. We need to consider the issue of illiteracy, and take measures to ensure those who are illiterate are not excluded from these schemes. This is particularly important in the Adma cluster.

In the Dhukpa community and Nepali community, women often lead the household, especially with migration. However, in the plain area such as in Jayanti, men have more control. These considerations will have to be taken into account when designing any plan in terms of how we prioritise the interventions by clusters.

Another issue is that local people have to take ownership of these programs, they need to have the incentive to continue these projects on their own accord in the long term. Many schemes which have been set up in the past in Buxa reportedly disintegrate after the departure of the initiating organisation. One example was a bee keeping scheme which failed in the past. The local person with overview

responsibilities for the scheme had given up. He felt that he was not being paid for this, why he should take responsibility. If communities feel ownership for interventions, these problems are less likely to occur. There are examples of sustainable programs facilitated by CDHI. In this case sustainability will depend upon the strategy for facilitation adopted.

There are problems with some of the SHG initiatives. For example, identifying medicinal plants carries a certain degree of risk, whereby the wrong species may be consumed. This would need to be considered prior to offering training. Furthermore, we would also need to be careful not to undermine local people's faith in existing medical facilities, particularly when it comes to treating emergency cases. The biggest problem with this idea raised in Jayanti was that the Department of Forestry prohibits collection of medicinal plants from the forest; collection for sale is strictly forbidden. Forest officials can be brought in for their support to the domestic use which is permissible under the existing Forest Act (WP 4).

Objective	Build capacity of existing self-help groups for biodiversity conservation activities regulations.				
Activities	Measurable outputs	Implementer	Indicators (monitoring)		Timescale
Encourage, support and capacity build the SHGS	-number of SHGS Number of women involved -attendance at the meetings and training programs	CDHI	• Meetings • Training events • Members		One year
Encourage, support and capacity build farmers clubs	Farmers mobilized People preparing for farmers clubs	CDHI	• Farmers • Farmers clubs		One year
Encourage local people in each village to prepare a biodiversity register	-bio-diversity registers	CDHI	• Local people • Bio-diversity registers		One year
Planting trees	Number of trees	CDHI-SHGS-Panchayats plus forest department	• Trees and plants • Community		Continuous

		functionaries	members	
Training in medicinal plants	Number of training Nature of trainings	CDHI-SHGS-Panchayats plus forest department functionaries	- Events - Types of training - Training modules	One year
Build small fish pond	Number of ponds Species nurtured	NREGA-Panchayat-SHGS-CDHI-local community	- Ponds - Fishes	One year

5.2 AWARENESS BUILDING AND INFORMATION DISSEMINATION ABOUT BIODIVERSITY AND PREVENTION OF PROVISIONS AND ACTS

The objective of this activity is to raise the awareness of local officials and the community to have better (clear) understanding of the acts and their provisions and be able to relate to each other. We have realized that there is missing understanding of specific acts and provisions. Also Government officials at the ground level blindly follow the seniors and in the absence of clear specific understanding they tend to misinterpret Acts and provisions. There have been occasions when the community and the officials have worked collaboratively under clear understanding of provisions. For example, earlier during the Eco-development project both the community and the officials agreed to develop a fish pond and experiment with some activities. A clear understanding is likely to offer such opportunities of collaboration. A number of dissemination activities at the ground level will be prepared to increase awareness about government biodiversity regulations. The focus audiences will be Department of Forestry staff at the ground level, Panchayat members, SHGS and Farmers Clubs.

Preparation of materials will be undertaken as a joint exercise by the different stakeholders. A cultural troupe has already started training the school children on different aspects of biodiversity. The activity shall be extended and spread to all three clusters. Preparation of posters through the school children has started and will be continued. Some more information brochures will be prepared and distributed together with local level consultation and reflection meetings.

Activities:

- 1) Collation and collection of laws and Acts
- 2) Translation of such laws and Acts in the local language
- 3) Dissemination among the stakeholders
- 4) Discussion among them among the stakeholder

- 5) Preparation of posters and pamphlets for mass public distribution
- 6) Discussion and seminars at the local level
- 7) Encouragement and holding of paintings and debates among the students on the above

TEMPORAL AND GEOGRAPHICAL SCALE

This will be carried out across all three clusters and for at least two years of the project period.

REASONS FOR PRIORITISATION

During the stakeholders consultation it emerged that there was limited awareness about the provisions of the Biodiversity Act (WP 4). This was causing avoidable confusion resulting in overzealous reactions and animosity between the local community and the government officials. For the government officials, Panchayat Members and SHGS members, awareness building and dissemination of information was considered as number one priority. Adequacy of information could lead to appropriate action without apprehension of being officially charged. Preparation of education and information brochure is considered important. CDHI, earlier, has already prepared pamphlets and posters which should be continued and diversified.

This action has a cross-cutting edge as it will influence orientation of the institutions and policies and has the potential to reduce conflict between different stakeholders who may carry a perception of conflict of interest. Awareness about provisions may also lead to enhanced access to livelihoods resources and their wise-use. A clear understanding of the provisions would sensitize the communities not to over use and exploit the bio-diversity and eco-system services.

GENDER AND AGE MAINSTREAMING

The level of literacy differs across male, female and children (boys and girls). While preparing materials different levels of education, gender, age and ethnicity must be accounted for.

IMPLEMENTATION

As earlier said CDHI will facilitate linkages and collaboration with different agencies and will either publish the materials on its own or encourage the agencies to use their resources based on ideas generated by the project.

INDICATORS OF SUCCESS

- Level of awareness created which can be measured by explanation of provisions by the stakeholders on various occasions.
- Number of agencies involved
- Resources and collaboration generated
- Policy integration of some of our activities to be measured by government showing interest and accepting the learning in the regular programs.
-

Objective	Awareness building and information dissemination.				
Activities	Measurable outputs	Implementer	Indicators (monitoring)	Timescale	
Collection and collation of laws and rules	Collected works	CDHI	Quantity	One year	
Translation in local languages	Number of translations	CDHI	Quantity	One year	
Dissemination among stakeholders	Materials disseminated	CDHI/local Panchayats	Number and population/	One year	
Development of posters and pamphlets	Number/nature of posters	CDHI/Forest Department	Number Nature	Continuous	
Discussion and seminars at the local levels	Events and participants	CDHI/local institutions	Number	Continuous	
Painting competition among children	Events and participants	CDHI/schools	Number	Continuous	

5.3 CATALYZE SETTING UP COMMUNITY OWNED FARMERS CLUBS/ INNOVATION FORUMS

Our experience of working in the area suggests that people are not quite organized around meaningful and structured activities. Lack of organization deprives people of their various entitlements and at the same time limits their range of negotiation with different agencies and individuals. State sponsored local institutions have not gone beyond implementing the prescriptions of the government. Officially constituted Forest Protection Committees, Cooperatives and Farmers Clubs have not worked effectively. Livelihoods and biodiversity issues cannot be addressed adequately by state interventions alone; they have to be carried out by self-evolving and self-regulating community-based interest groups/institutions. Farmers' clubs offer organized platform to the farmers to access credit through banks and other inputs from different institutions. Farmers clubs help the members strengthen and improve their agricultural activities and through this help augment their livelihoods endowments. In case of HighARCS they may help reduce pressure on the aquatic environment by offering additional endowment. The additional opportunity may also help the communities to replace their income loss because of the declining fish stock in the area.

In the present context Farmers Clubs are quite relevant to addressing the issues of livelihoods. Farmers Clubs are formed with a membership of 12-16 farmers around the service areas of a given nationalized banks. The members deposit a fixed amount every month which is collected. The banks, based on their credit worthiness offer credit support to the members of the Clubs.

The money is used to give loans to members for agricultural activities at low interest rates as well as to set up small businesses, the profits of which are shared amongst members. This could be one means through which new agricultural production systems could be promoted.

The National Bank of Agriculture and Rural Development (NABARD) supports such clubs through lead banks. The support includes training and credit to the club which is considered as collateral to the members when they want to take credit or have the benefits of holding a Kisan Credit Card (KCC).

Discussion with the local communities, in 28 Busty, Jayanti, suggests there is potential for a Farmers Club or Cooperative. It has rich agricultural land, unlike many of the other communities, making such an activity viable. Respondents suggested that introducing new crops or improving production of existing crops would offer valuable income generating opportunities. Around half of household income comes from farming. Therefore it was considered very important to increase yields on the few plots that they were allowed to farm. A focus will therefore be placed on developing horticulture and floriculture, as well as increasing yields of existing crops.

Farmers Club would encourage and support an 'innovation forum' which would be a platform for the local farming communities to try innovation of their activities related to livelihoods and aquatic resources. They can also be encouraged to try process innovations. For example the local communities can agree to try home-based fish culture of rare species (for example ornamental varieties but native non-invasive) and backyard organic manure production for use in their domestic vegetable farms. Such innovations shall be indicators for the success of Farmers Club

Activities :

- 1) Mobilization of farmers
- 2) Training and other capacity building inputs
- 3) Facilitating linkage with banks and other institutions
- 4) Linking the farmers with the experts and professionals and professional groups
- 5) Counselling them not to use non-native and invasive species
- 6) Creating awareness about the existing provisions of conservation using the earlier action plans (5.2)
- 7) Disseminating the learning to other communities and the government agencies

TEMPORAL AND GEOGRAPHICAL SCALE

This will only be implemented in Jayanti cluster for the full project period. Many farmers from Jayanti cluster are fully dependent on agriculture and the total number of agricultural farmers is greater than the other clusters. The Jayanti cluster has larger land holding farmers than other clusters and therefore the activity would be the priority for Jayanti cluster -28 Basti village. Although Adma and Buxa clusters have shown interest in the clubs their location offers constraint of accessibility. Therefore the farmers club would be initiated in the Jayanti cluster (28 basti) and allowed the learning to spread further to Buxa and Adma if the banks show interest.

REASONS FOR PRIORITISATION

This was considered important as everyone has a little land, usually in the jungle. Respondents suggested that introducing new crops or improving production of existing crops would offer valuable income generating opportunities. Around half of household income comes from farming in Buxa cluster for example, and plots are limited. Therefore it was considered very important to increase

yields on the few plots that they were allowed to farm. Also the results of various studies show decline in fish stock and other flora intensification of agriculture would help compensate for the losses because of the decline.

GENDER AND AGE MAINSTREAMING

Young people (both boys and girls) will participate in the activities, and members of the women's SHGS can collaborate and offer their experience and learning. Thus the activities will consider both gendered and generational issues.

IMPLEMENTATION

The first stage would be for CDHI to link up with the local Agricultural Development Office (ADO) to gain a commitment to support training. Buxa Vikash Abhiyan (BVA) a citizen development forum would galvanize the farmers and take-up linkages with the banks and other agencies.

The second stage would be to decide what particular training is necessary: a series of PRA (Participatory Rural Appraisal) tools may be used to have training need assessment and subsequent requirements. Some respondents wanted to improve productivity of existing cash crops. Cash crops such as ginger in particular, require specific skills to produce, and if it is done wrong, the entire crop can be ruined. One respondent stated that you have to *"look after it like a child"*. This is an important cash crop and respondents said they would like to learn how to maximise production. Reintroduction of previously cultivated crops such as oranges was also suggested. Training on how to effectively use manure was also suggested. Considering forest area and menace of wild animals intercropping can be a better option. Intercropping is the cropping of different species using the vacant land under the trees. Ginger has been used as important crop for intercropping. The HighARCS team could investigate possibilities for initiatives such as drip irrigation, which are very low technology and reduce water lost due to evaporation (Upadhyay et al., 2005). Water is stored in a large enclosed drum which can be refilled manually from any source, and is released gradually through a pipe with small holes in it. According to Upadhyay et al (2005), in a study from Nepal in 2005, the capital investment necessary for a drip kit was about \$13 and maintenance costs are small. Another option would be to introduce training on medicinal plant production as is proposed for the SHG initiatives (Action 4.1). Use of environmentally friendly fertilisers and pesticides have earlier been tried which can be tried further.

Financing can be arranged through banks using the Farmers Club as the arm of the farmers. Farmer Clubs are operated as businesses and are funded by loans. Clubs can give proposals for loans for cooperative agricultural-based activities as well as to expand their borrowing capacity for small-scale loans to individual households. They use their own funds and approach the bank, the closest of banks are in Rajabhatkhawa, Alipurduar or Kalchini. The head of the Farmers Club has to contact the DDM (District Development Manager, the coordinator for NBARD in Jalpaiguri). DDM will look at accounts, existing activities of the club etc. If they assess that the Club are following the rules and regulations and have capacity, they will make a proposal to the local level branch. That bank will give the loan as well as training. Each branch has a field officer. The program will continue for a long time as this is a regular program.

INDICATORS OF SUCCESS

At the time of implementation, initial data would need to be collected on the income of participating households (or a sample of participating households). A follow-up survey could be carried out after six months and one year after implementation to assess the increase in income for households from producing the new crops. Bioeconomic models could perhaps be used to look at income before and after the intervention.

The indicators would include:

- Membership
- Regularity of meetings
- Trainings organized and capacity building
- Activities organized
- Innovations carried out
- Type of crops tried as intercropping
- Economic activities undertaken and economic benefits incurred

POTENTIAL ISSUES

Although open to training in new crops, respondents emphasised that it must be proper training with follow up, or they risk losing their investment in seeds and labour.

Another issue relates to how profits would be shared, particularly in the case of large Farmers Clubs. There are two types of Farmer Club, one where everyone has equal shares, and another where there is a core group of 15-16 who have a stronger role, and thus, get more benefits. In such context, the other members usually join to facilitate access to loans. It is the core group however that are managing it as a business and profiting, while often other members are either notional or employees. If the latter option was chosen, it would be important to ensure wealthier more dominant farmers do not take control. Normally clubs initially begin with members sharing equal ownership, but after 6 months or 1 year, core members evolve, notably those who contribute the most time and labour.

Some respondents made it clear that training should be for the entire agricultural cycle. Schemes in the past have offered initial training in planting a specific crop, but they are no follow-up support training at the later stages of crop production, such as tending the growing crop and harvesting. They also emphasised that follow-up training are necessary to address any problems arising during the production period.

Objective	Catalyzing farmers' clubs innovation forums ---			
Activities	Measurable outputs	Implementer	Indicators (monitoring)	Timescale

1) Mobilization of farmers	Membership Regularity of meeting (no)	CDHI-Panchayts-farmers clubs and Buxa vikash abhiyan Banks and agriculture department	Number of farmers Attendance at the meetings	One year to begin with and then continue
2) Training and other capacity building inputs	Number and types of events	CDHI-Panchayts-farmers clubs and Buxa vikash abhiyan Banks and Agriculture Department	Training events Farmers trained	Continuous
3) Facilitating linkage with banks and other institutions	Linkages facilitated	CDHI-panchayts-farmers clubs and Buxa vikash abhiyan Banks and Agriculture Department	Visit of by the bankers Visit and collaboration of departments Bank facilities –kcc others obtained	Continuous
4) Counselling them not to use non-native and invasive species	Counselling events	CDHI-panchayts-farmers clubs and buxa vikash abhiyan Banks and agriculture department	Number of counselling events Benefitted farmers Issues	One year then continuous
5) Creating awareness about the existing provisions of conservation using the earlier action plans (5.2)	Innovations carried out	CDHI-Panchayts-farmers clubs and Buxa vikash abhiyan Banks and Agriculture Department	Number of farmers Subjects	
6) Disseminating the learning to	Communities	CDHI-Panchayts-farmers clubs and	Communities and	Continuous

other communities and the government agencies		Buxa vikash abhiyan Banks and Agriculture Department	population covered Activities adopted New activities taken up	
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5.4. WORK WITH PANCHAYAT TO REORIENT AND SHARPEN THEIR GOVERNANCE EFFICIENCY

This is a cross-cutting deliverable rather than stand alone intervention which will influence the achievement of other plans. This activity will help develop and implement all other activities.

Panchayats are the local level self-governance institutions which, in India, cover virtually all development programmes and activities. They have a strong interface with the Department of Forestry and others related to agriculture, fish culture, horticulture, livestock, etc. The Indian planning system follows a bottom-up approach which would mean that priority for different programmes and activities would evolve from the bottom, Gram Sabha (Village Assembly) and shall form part of the larger planning process. It is said that quality of governance would be determined by the robustness of Gram Sabhas.

The functionaries of the Panchayati Raj Institutions (PRIs), however, lack awareness and capacity to evolve bottom-up processes and programmes, articulate and analyse various priorities and monitor functioning of different programs objectively. Implementation of various action plans would depend largely on the efficacy of the Panchayats. The FGDs and different levels of consultations bring to the fore the need to orient and strengthen the Panchayat system.

Temporal and geographical Scale

The focus will be on the local Panchayat in Rajabhatkhawa. This would be long term program and would continue beyond the formal project period.

REASONS FOR PRIORITISATION

Strengthening the local Panchayat was considered a high priority by men and women in Buxa and women in Jayanti, and medium priority by men in Adma.

There has been a feeling among the stakeholders especially the local communities that:

- Panchayat Raj Institutions (PRIs) are not working properly in delivering adequate services to the people whom they represent,
- Citing examples the communities felt that the most famous employment guarantee scheme of the government has not been able to reach the beneficiaries in good proportion (equitably?),
- The governance efficiency of the functionaries needed to be enhanced,
- Their level of awareness about the diverse subjects including biodiversity and livelihoods is far from being adequate as a result they are not able to relate to the issues properly, and

- They lack comprehensive understanding of the development issues and as a result, they are not able to integrate them.

GENDER AND AGE MAINSTREAMING

This is a cross-cutting deliverable which will affect men, women, girls and boys. Panchayats in West Bengal are deeply entrenched with significant number of women as officials and members of the Panchayat. Improving and strengthening Panchayats would lead to improving the situation of men-women and boys and girls.

ACTIVITIES

Following activities have emerged as the priority:

- Creation of awareness about the objectives and expected outcome of HighARCS research,
- Help them integrate the HighARCS components into their priority
- Training for micro-planning and helping them fine tune their agenda to support the planned activities of HighARCS under their regular programs
- To help them take the learning of the HighARCS to higher levels of their governance system, Panchayat Samittee at the Block level and Zila Parishad at the District level
- Catalyze interfacing with different agencies and departments

More specifically the team will:

- Organize awareness building events and activities for the Panchayats
- Training on micro-planning and integrating HighARCS components into their agenda
- Organize training for the Panchayat staff on the aspects of aquatic resources and their relationship with the livelihoods and institutions,
- Organize joint consultations with them on different actions as being proposed
- Enlist their commitment to support various actions
- Systematically share with them the outcome of the actions and
- Involve them in bridging the gap
- Produce information and training materials

The training etc can be implemented by the government as part of their regular programme. Since this is an integral part of local governance it would continue indefinitely.

INDICATORS OF SUCCESS

- Awareness building events organized
- Number of training programs organized for them,
- Number of actions integrated through Gram Sabhas,
- Number of components supported by the Panchayats,

- Number of innovative programs supported by them and integrated into their mainstream programs
- Number of Farmers Clubs/Cooperatives supported by them
- Number of days employment offered to the villagers through NAREGA

POTENTIAL ISSUES

Not much. Availability of resource person may be an issue as many people do not want to traverse the long arduous distance.

Summary

Objective	reorienting Panchayats				
Activities	measurable outputs	implementer	indicators (monitoring)	timescale	
awareness building on bio-diversity for the Panchayats	-aspects on which awareness built	CDHI line Departments of the government Panchayats	number of Panchayat members subjects	one year	
training on micro-planning for fine tuning high arcs project components into their mainstream programs	-micro-planning events organized higharcs components linked and integrated	CDHI line Departments of the government Panchayats	number of micro-planning events organized number of subjects integrated	one year	
facilitating linkages of different agencies with Panchayats	agencies and actors	CDHI line Departments of the government Panchayats	agencies linked with	continuous	

5.5 SET UP A LIVESTOCK PROMOTION AND INSURANCE PROGRAMME

Livestock promotion has emerged as one of the important interventions to strengthen and supplement livelihoods endowments of the local communities in Buxa. The augmented livelihoods could help the community reduce their dependence on the floral and faunal resources. The animal dung can be an important resource to offer nutritional support to the soil and milk and meat produce would offer nutritional inputs to the community. Use of dung is considered useful supplement for supporting soil fertility and thereby conservation. In the neighbouring area livestock promotion is being attempted through medical care and insurance for the livestock to recover cost in case of death and illness. Insurance has been suggested to be an effective tool to deal with the vulnerability livestock and the local communities face in the event of illness and death of the livestock.

The main objective of the livestock is to promote additional livelihoods to the local communities and enable opportunity for enriched soil fertility. Insurance is proposed to deal with vulnerability livestock may eventually face.

REASONS FOR PRIORITISATION

Livestock has been and continues to be an important livelihoods source. The breed, however, is local and vulnerable to various risks including attacks by wild animals and illness of various kinds. In one of our projects in the nearby Turturikhand we found that basic medical health support and insurance against diseases for cattle can be a useful intervention.

In Buxa, this was considered particularly important amongst the Dhukpa community of Adma cluster. This is because they keep large herds of cattle to make churpi, yoghurt etc, much of which are sold. These are crucial livelihood assets. The female respondents in Jayanti also saw this as a high priority; given that there is so little agricultural land people are disproportionately dependent upon livestock. They also face many problems due to animal disease so would like any intervention combined with veterinary training. This was considered a big priority by men and women in Jayanti and men in Adma. It was considered a medium priority in most other focus groups.

GENDER AND AGE MAINSTREAMING

Women and young people play a disproportionate role in livestock raising, so it is important that they are present where possible at training schemes and approaches adopted are responsive to their needs.

To begin with Cattle Health Camp (CHC) would be organized in 28 Basti of Jayanti (a hamlet in Jayanti) which would serve multiple purposes of diagnosis and treatment and the range of diseases that afflict the local breed would be identified. At another level the community members would learn about the basic care and first aid for the cattle. The process may lead to placing some of the paramedics to the areas to offer guidance and treatment. These meetings will be organised as part of Farmer Clubs in the case of Jayanti. In Buxa and Adma separate independent training will be offered, with a focus on pig and goat rearing in Adma.

Insurance is an important instrument, offered by different agencies in the government and the non-government sectors, to recover the cost of the cattle in case they die. However, to receive compensation there is a set norms and procedures which farmers must follow. A training event will, therefore, be organized to create awareness about the existing provisions applicable to different insurance agencies and their products.

Another way to cushion this exigency is to set-up/constitute and maintain an emergency fund. This would operate through mechanisms whereby each member pays a fixed amount, say Rs10 per month to a centralised fund. If someone's animals die, then they could get money back as insurance. Some respondents also said they would like veterinary training to reduce animal illnesses. This could go side by side with the insurance.

This scheme could form part of the remit for one of the SHGS or Farmers Clubs mobilised for other initiatives outlined in this plan. The intervention can start immediately in all the three clusters where community volunteers can take the lead. CDHI would invite the experts and meet part of their expenses.

INDICATORS OF SUCCESS

We would need to collect data before the intervention, including the number of livestock held by a sample of households, and the number of livestock deaths over a given period. Then 6 months and 1 year after implementation of the scheme, we could ask follow-up questions relating to animal deaths, and whether or not insurance money was received (and the value of the payment) to ensure the scheme is operating effectively.

POTENTIAL ISSUES

We would need to ensure the payments are acceptable and sustainable for participants and agree how money should be collected. Furthermore, a failed scheme previously had made some respondents a little doubtful. There had been a UCO livestock insurance scheme before. One respondent had claimed that he never received the money for a cow of his that had died. He had to take the cow's ear as proof it had died, but the bank refused to pay out the money.

Women in Jayanti also said that there was a Department of Forestry scheme before offering livestock with insurance papers. However, the local people did not know how to make the monthly instalments, and what the procedure was, and as a result when animals died they did not receive the payments.

Summary

Objective	- livestock promotion and insurance ...				
Activities	Measurable outputs	Implementer	Indicators (monitoring)	Timescale	
Organization of livestock	Number of camps	CDHI/Livestock Department/	Number of	One year	

health camp		Panchayat	camps Number of cattle examined and treated Difference in availability of milk/ meat	
Training to the cattle owners	Number and type of training	CDHI/Livestock Department/ Panchayat	Number of owners Type of training	One year
Training in composting and organic manure preparation	Number and type of training	CDHI/Livestock Department/ Panchayat	Number of community members trained	One year
Application of manure in plantation and fishery	Amount of manure used	CDHI/Livestock Department/ Panchayat	Quantity of manure Nature of use	Continuous
Insurance plan launched	Plan	CDHI/SHG/Panchayat	Plan	One year
Implementation of insurance plan	Implementation plan	CDHI/SHG/Panchayat	Persons helped Amount of risk cover	Continuous

6.0 REJECTED PLANS

The process of evolving IAP enthused the local communities and some of the local Panchayat members who suggested several activities. On further scrutiny they were rejected because of several factors –impractical and time taking, being cost intensive, interfering with the local native flora and fauna because of their invasive nature and so forth. They were subsequently dropped. Some of the activities earlier planned included:

- Build kitchen gardens in schools
- Building small water storage catchment facility and
- Aquaculture

7.0 SUMMARY AND ASSUMPTIONS OF ACTION PLANS

The Integrated Action Plan relates to the three components: conservation and biodiversity; institutions; livelihoods. These are the primary components of the project. The action plans have evolved following a number of steps and processes the project has followed. During the assessment, research and interactive sessions, several issues emerged which became the reference points for action plans. Brainstorming on these points during the focused group discussions (based on gender and age) helped to refine proposed actions in consultation with the different stakeholders. The action plan should be considered not only as outcome of the FGDs but as outcome of the entire methodological process being followed in the course of the implementing the project.

Furthermore, the action plans, indicate priority as emerged out the project process and as such, should not be considered as getting the full commitment of the stakeholders in supporting the implementation of the action plans. Rather, they offer an understanding of the possibilities to address the issues emerging out of the process. Finer details of the action plans will need to be worked out subsequently before implementation.

Most of the action plans suffer limitations of budgetary commitment. The approach, as outlined, therefore, was taken to develop collaboration and partnership with existing agencies and stakeholders, and to dovetail the action with mainstream programmes and activities. The action plan, therefore, is flexible and includes several actions which may not be viable so far testing them on the ground is concerned. Also the implementation of the action plans will require committed person power and resources which, as it exists now, does not seem to be adequate. The outcome of the action plans would depend upon the compatibility of the program with the mainstream programs, financial management and strategy adopted. Depending upon the initial trend only a few action plans may prove viable and successful. The action plans have been based on certain assumptions which may not stand the test of overwhelming risks and uncertainties. However, the trend and processes would offer important insights into understanding and addressing the issues related to biodiversity and its conservation, institutions and policy and livelihoods.

Although it is likely that not all interventions will be able to be followed-up, efforts have been made to ensure the action plan is integrated in character, as Figure 9 demonstrates. Each proposed intervention ties into other interventions, while enhancing livelihoods, institutional efficacy and biodiversity in more than one way. For example, the review of proposed interventions above has demonstrated how the creation of and strengthening of SHGS can potentially be used to facilitate the implementation of other interventions such as livestock insurance as well as training in bee keeping, handloom crafts (first mentioned here in the conclusion, please insert in previous text), non-conventional crops and medicinal plant collection. SHGS can also be used to facilitate sourcing of materials for these activities, as well as for the marketing of produce. The creation of a facility for water storage could enhance the effectiveness of non-conventional crop production through providing a source of irrigation, while also providing water for fish culture. Building of water catchment facilities and fish ponds meanwhile, could mobilise local labour under the NREGA (100 days work) scheme, offering the HighARCS team the opportunity to work with the Panchayat to improve the efficiency of this programme.

How can the proposed action plan meet the overall goals of HighARCS to strengthen rural livelihoods while protecting aquatic biodiversity? Figure 9 shows that each intervention can potentially strengthen rural livelihoods both directly and indirectly. There also has to be sensitivity towards

gendered and generational differences. The strengthening of rural livelihoods through activities not dependent upon forest and river resources such as non-conventional crop production and micro-enterprises can also reduce human pressure on fragile aquatic and non-aquatic ecosystems in the Buxa reserve. At the same time however, there are risks which must be accounted for, particularly with the construction of small water catchment facilities and aquaculture development, which could potentially harm aquatic biodiversity. With regard to institutions, it is evident from Figure 9 that work with the Panchayat on the NREGA scheme and the development of SHGS can enhance local institutions. These same institutions could potentially play a role in activities to manage natural resources in the future.

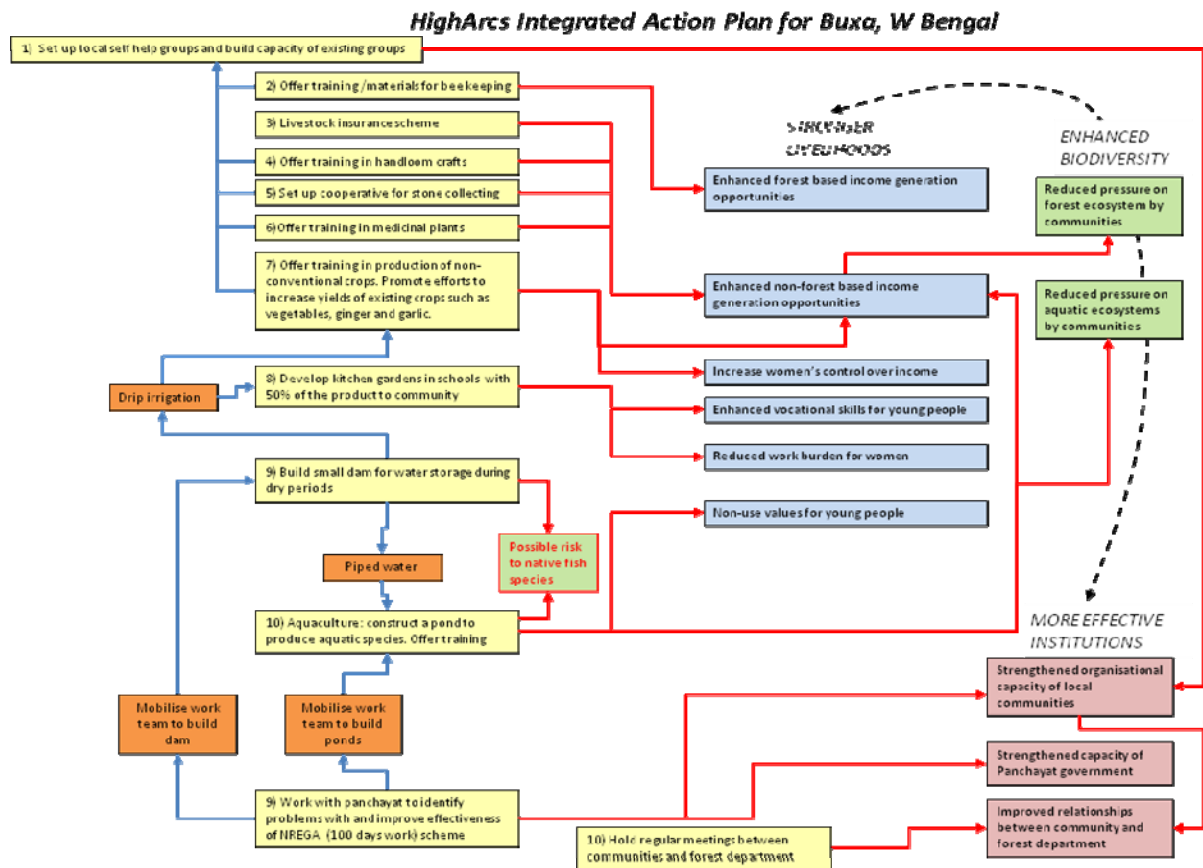


Figure 9: Diagram mapping the Integrated Action Plan for Buxa, West Bengal, India

The above diagram (Figure 9) has evolved in the process of participatory planning in which various kinds of activities were seen as possible options. Some are dabbles and achievable while others are partially doable and achievable. However, the activities as shown in the diagram represent realities of Buxa. The central theme suggests effective institutions as necessary condition for enhanced bio-diversity leading to enhanced livelihoods opportunities. The institutions are supposed to mediate reduction of pressure on the aquatic as well as forest eco-systems of Buxa. Activities as suggested in the plan are the possible ways to achieve this reduction in the pressure on ecosystems.

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Annexure

One of the posters showing integrated eco-system prepared and disseminated among the community in Buxa

