

---

## Impacts of Co-management Activities on Livelihoods in Satchari National Park

Mahmudah Rokseena Sultana<sup>1</sup>

### *Abstract*

*Under the Wildlife Preservation Amendment Act (1974), Bangladesh has declared nineteen protected areas including national parks, wildlife sanctuaries, and game reserves. To reduce the dependence of local people on protected areas the Forest Department initiated the Nishorgo Support Project (NSP) in 2004. NSP identified local stakeholders and formed forest users groups (FUGs), community patrolling groups, and community management committees to provide local people with alternative income generating activities consistent with conservation. This paper seeks to assess the effect of collaborative management activities on rural livelihoods in four villages outside Satchari National Park by comparing the livelihood status of FUG members to non-members; and to assess any change in the forest dependence of the four communities or in the condition of the forest following NSP activities. Drawing on data gathered through household surveys, focus group discussions, and key informants interviews, as well as secondary data, I show that FUG members received support to invest in alternative income generating activities such as plant nurseries, livestock rearing, and fish culture. These activities had a positive impact on the livelihoods of participants while reducing forest resource extraction. However, only 508 out of 17,836 households living in and around the park were FUG members, and among these only 189 households received support for alternative income generating activities. These results raise the question of whether alternative income generating activities can ever be sufficient to have a significant impact on forest conditions.*

### **Introduction**

One quarter of the world's poor depend directly or indirectly on forests for their livelihoods (World Bank 2000a cited by Uprety, 2004). Although still a low percentage overall, an increasing amount of forests worldwide are defined as protected areas (PAs). The International Union for Conservation of Nature defines a PA as, "an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means" (IUCN 2008). In Bangladesh and other developing countries PAs are often established on state lands and have historically been poorly managed. Most of the PAs in Bangladesh were declared by gazette notification; however, without effective management, these PAs essentially became 'paper parks'. Local people, especially those who live in and around PAs, depend on the resources of these areas for their livelihoods and cultural survival. In

---

<sup>1</sup>. Assistant Conservator of Forest, Forest Department, Dhaka, Bangladesh, (sultana\_rakhi@yahoo.com)

---

Bangladesh, as in other countries, there has been a tendency not to allow, or even consider, local people as participants in PA management. However, conservation managers worldwide increasingly recognize that local people, local knowledge, and local participation are key factors in realizing sustainable PA management (Svartad *et al* 2006), and have tried to develop new approaches for PA management. One such approach, first introduced in the 1980s, is 'collaborative management' or 'co-management'. This is a participatory approach to environmental conservation that seeks to enhance both natural resource conservation and local livelihoods.

Under the nation's Wildlife Preservation Amendment Act (1974), Bangladesh had designated nineteen protected areas including national parks, wildlife sanctuaries, and game reserves. These PAs cover only 1.67 percent of the country's territory. The simple declaration of various categories of PAs has not been sufficient to stop the steady loss of biodiversity in Bangladesh because people are dependent on PAs for their livelihoods through their use of timber, fuelwood, wildlife, and other forest products. Without the active involvement of local people, increased economic incentives for their collaboration in conservation, and more sustainable patterns of resource use, there is little chance for success of PA initiatives (Fox *et al* 2008). Conversely, the socio-economic condition of local people depends on the state of PAs. In 2004 the Forest Department (FD) initiated the Nishorgo Support Project (NSP) in five PA pilot sites to test methods for improving the livelihoods of local people who are directly and indirectly dependent on forest resources while promoting the conservation of biodiversity within the PAs.

As part of the NSP local stakeholders were identified and came together to form forest user groups (FUGs), community patrolling groups (CPGs) and community management committees (CMCs) to provide local people with alternative income generating activities consistent with the goals of conservation. Economic benefits from these activities are anticipated to reduce local people's dependence on protected area resources and therefore diminish their negative impacts on PAs (Svartad *et.al.* 2006). The main aim of this research is to reveal whether co-management practices were effective in reducing forest dependence, improving livelihoods of FUG members, as well as promoting the forest condition in *Satchari* National Park (SNP).

The specific objectives of this study are:

- 1) To assess the effect of collaborative management activities undertaken as part of the NSP on rural livelihoods in four villages outside *Satchari* National Park through a comparison of livelihood status between FUG and non-FUG members.
- 2) To assess forest conditions and whether there has been any change in forest dependence among the four local communities following the NSP activities.

## Background

*Satchari* National Park was established in 2005 to preserve the remaining natural hill forest patch of Raghunandan Hill Reserve Forest, an area of 243 hectares. However, the total area of *Satchari* Wildlife Range is about 1,760 hectares (IPAC 2009). The

park is situated in the Paikpara Union of Chunarughat Upazila in the district of Habigonj. The reserve forest is under the jurisdiction of *Satchari* Wildlife Range, which is part of the Wildlife Management and Nature Conservation Division of the Forest Department. The park is divided into two administrative sectors known as forest beats, namely *Satchari* Forest Beat and Telmachara Forest Beat. *Satchari* National Park stands on the old Dhaka-Sylhet Highway and is about 130-140 kilometers northeast of Dhaka, between *Teliapara* and Srimongal. The forest area is undulating with scattered slopes and hillocks (*tilla*) ranging from ten to fifteen meters in height. The forest is drained by a number of small streams with sandy beds.

*Satchari* National Park is surrounded by a number of tea estates, villages, towns, and cultivated fields. Nine tea estates are located close to the park. A total of seventy-three villages with various degrees of connection or involvement in the park have been identified. The village of Tiprapara, a tribal community of about twenty-four households, is located inside park forest and its residents have a major interest in park management. The rest of the villages are located six to nine kilometers away from park forest. Residents of these villages have various levels of stakeholder status in terms of park management ranging from major to minor. The majority of forest resource users are fuelwood collectors and illegal loggers (IPAC 2009). Forest villagers, local poor people, tea estate laborers, and *Moholders* (auctioneers) are especially dependent on *Satchari* National Park's forests for their livelihoods. Local poor people, including Tripura community members, are involved in illegally extracting major resources from the forest. *Moholders* are rich and locally influential people, who are involved with legal tree felling but who also destroy forest biodiversity through harmful clear felling operations. Forest villagers are men, women, and adolescent boys who collect forest products such as fuelwood, bamboo, and fodder.

The overall livelihood situation of people living in and near *Satchari* National Park is not good. In *Satchari* National Park, the majority of people are poor (55-60%), followed by middle class (22-25%), and extremely poor (17-20%). Only about four to five percent of community members are classified as rich. In Tripura communities, approximately 65 percent of households are poor, 12 percent extremely poor, and the rest belong to the categories of rich (1%) and middle class (2%) (IPAC 2009). In terms of education, about eighty percent of people are illiterate; although the educational level of children is currently increasing. Approximately thirty to forty percent of children go to primary school, ten percent go to high school, and only one percent study in college (IPAC 2009).

Major occupation groups include farmers (65-70%), day laborers (20-25%), fuelwood collectors and timber poachers (3-5%), small businessmen (2-3%), service providers (3%), and overseas employment (2%). Secondary occupations include fuelwood and bamboo collectors (5-8%), and day laborers (5-10%). The occupation patterns of local people of *Satchari* National Park have been changing over time. Presently, the number of day laborers has increased with a trend of decreased involvement in agriculture. Illegal logging has greatly increased over the past 15 years as a local occupation. The occupations of some households have changed from

---

farming to day labor, fuelwood collection, timber poaching, and small businesses. Local people have also adopted other wood-based occupations like timber trading, furniture shops, and carpentry (IPAC 2009).

Training and credit support opportunities play a vital role in income generation for some local people, lessening their dependence on the forest in the *Satchari* National Park area. After completion of the NSP's training program, forest user groups received grants for different types of alternative income generation (AIG) activities. Existing AIG activities practiced in the area include fish cultivation, livestock rearing, ecotourist rickshaw operating, ecotourist shop operating, weaving, plant nursery operating, bamboo product development, and home gardening.

The purpose of this study is to assess the impacts of AIG activities associated with co-management in *Satchari* National Park. My assessment looks at the effects of AIGs on rural livelihoods and forest dependence. The assessment compares the livelihoods and forest dependence patterns of FUG members to non-FUG members (people within the communities who are not members of a forest user group). I also examine the perceptions of FUG members and non-FUG members about changes in forest conditions in the four villages located outside *Satchari* National Park that are involved in the NSP.

## Methods

AIG activities were undertaken with the support of the NSP with the goals of reducing the forest dependence of local people, improving their livelihoods, and changing their attitudes towards resource management. The NSP was implemented from July 2004 to June 2009 to advance co-management through various methods, including alternative income generating activities. The NSP involved local people through the formation of FUG. One of the first steps in developing FUGs was to identify the degree and nature of forest dependence and poverty among local people. This information was gathered through a participatory rural appraisal (PRA) (Kumar 2002). Based on the information gathered through the PRA, the NSP field organizer and/or the co-management committee members had discussions with stakeholder groups within communities, and eventually the co-management council gave permission for the communities to form a FUG. Forty-one forest user groups have been formed as part of the NSP (23 of which are female groups and 18 of which are male groups) across seventy-three villages in and around the *Satchari* National Park site.

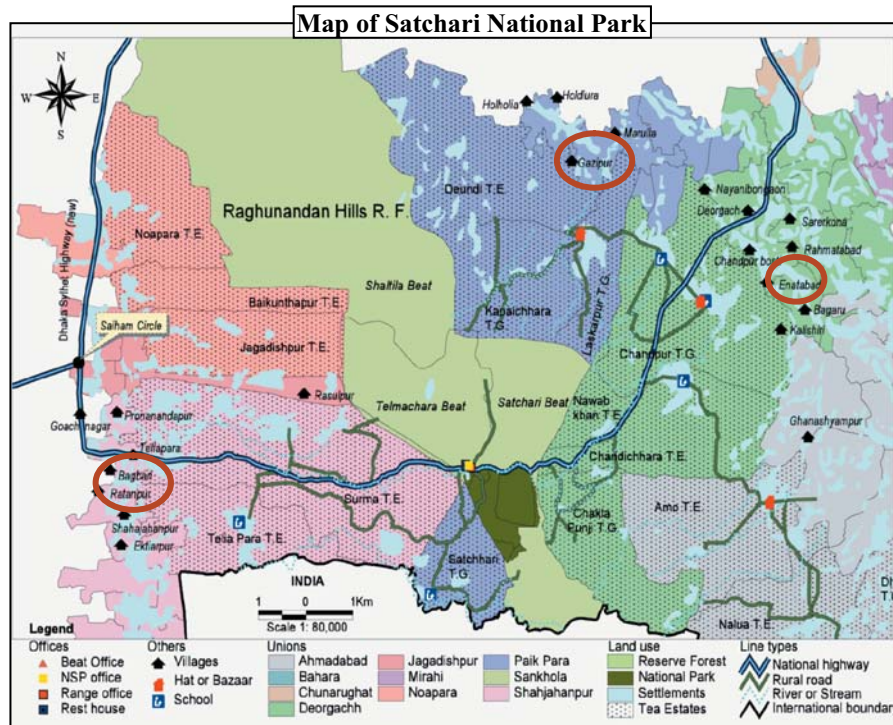


Figure 1: Map of Satchari National Park and Surroundings (Source: NSP, 2006).

After reviewing PRA reports and consulting with Forest Department (FD) officials and Integrated Protected Area Co-management (IPAC) project staff I chose four villages-Ratanpur, Bagbari, Gazipur, and Enatabad-as research sites. Ratanpur and Bagbari are situated in Sajhanpur Union, Gazipur in Paikpara Union, and Enatabad in Deworgachh Union. Nine of the forty-one FUGs formed under the NSP are based in the study area (four in Ratanpur, three in Bagbari, one in Gazipur, and one in Enatabad).

This paper draws on both primary and secondary data. I gathered primary data through household surveys, focus group discussions, and key informants interviews. Secondary data consists of relevant published and unpublished documents, participatory rural appraisal reports (IPAC 2009), the Management Plan for Satchari National Park (Sharma, 2006), NSP site information documents (NSP 2006), and other sources from the internet.

For household surveys I selected twenty households in each village (ten households with members belonging to forest user groups and ten households that are not part of forest user groups) and interviewed them using semi-structured questionnaires. In Bagbari and Ratanpur all FUG respondents were male while those in Gazipur and Enatabad were all female. Households were chosen using a random sampling method and I selected one adult (either male or female) from each household as a respondent.



In total, I interviewed 80 respondents, with each interview lasting thirty to sixty minutes.

**Table 1: Sample size for household survey**

Number of respondents

Village Name	Forest User Group Member, Male	Forest User Group Member, Female	Non-member, Male	Non-member, Female
Bagbari	10	0	8	2
Ratanpur	10	0	9	1
Gazipur	0	10	8	2
Enatabad	0	10	8	2

As part of the study I also conducted seven focus group discussions. These discussions consisted of one group discussion with co-management committees (CMCs), four group discussions with forest user groups who live in the research area, and two discussions with FD officials and IPAC staff. Using a checklist of topics, I asked discussants about the situation of *Satchari* National Park prior to implementing the NSP. I also asked if co-management practices under NSP brought fruitful results in the context of environmental conservation and the protection of *Satchari* National Park. With regard to AIG activities, I asked what types of AIG activities local people have engaged in and whether or not they are sufficient enough to improve local livelihoods.

I also interviewed one person from each village as a key informant. Key informants were chosen for their broad and in-depth knowledge about their area as well as the livelihoods of villagers. In Ratanpur and Enatabad the key informants were also FUG members; in Bagbari and Gazipur the key informants were not FUG members. Discussions with key informants focused on past conditions in *Satchari* National Park, village people, and their livelihoods. Key informants also spoke about forest dependence and collaborative activities under the NSP.

## Results and discussion

In this section I address three main questions: 1) Do co-management practices reduce the forest dependence of FUG members; 2) Do co-management practices improve the livelihoods of FUG members through AIG activities; and 3) Do co-management practices affect forest conditions.

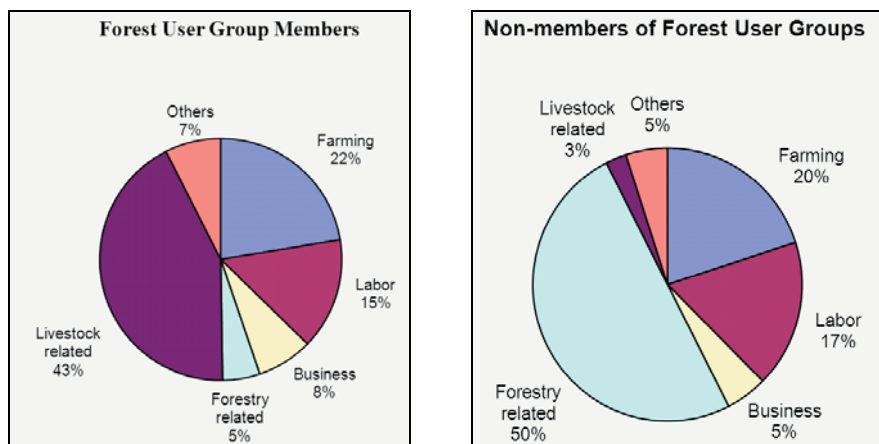
The majority of people in the study area are permanent residents, and almost all are Muslim. Among these villagers, approximately ninety percent live in mud (*katcha*) houses. Water supply facilities of local people are not sufficient but their sanitation facilities are adequate. About fifty percent of households consist of three to five members, twenty-five percent have one to three members, and the rest consist of five or more members. Sixty-nine percent of people in the study area are illiterate, twenty-four percent have a primary education, and the rest have a secondary school education. Although many residents are illiterate, they have a positive attitude concerning their children's education, but educational facilities vary from one village to another. Nearly all residents own homestead land, with an average size of .004 to

.08 hectares. However, few people have both homestead and agricultural land. People in the study area depend on forest resources for their livelihoods.

***Do Co-management Practices Reduce Forest Dependence among FUG Members?***

The NSP began initiating AIG projects at *Satchari* National Park after the formation of FUGs in 2005. In focus group discussions, I learned that FUG members became concerned about conservation issues and the protection of the national park through different types of awareness programs, trainings, and meetings. Their changing attitudes influenced their choice of professions. Based on individual interviews, I found that the main income sources of FUG members are livestock rearing (43%), farming (22%), day labor (15%), forest resource extraction (5%), bussiness (8%) and other forms of work (7%) (Figure 2). The number of people rearing livestock is higher than other professions because half the respondents in FUGs were female and livestock-related activities are one of only a few sources of income for housewives.

Among residents who are not members of FUGs, main sources of livelihood continue to be forestry-related activities (50%), followed by farming (20%), livestock rearing(3%), business (5%), day labor (17%) and other forms of work (5%). In other words, my findings show that non-members were still actively involved in forestry related activities. The co-management practices introduced through the NSP were effective in involving local FUG members, who were more motivated to shift their profession from forestry related activities to other professions like day labor, farming, and business entrepreneurship.

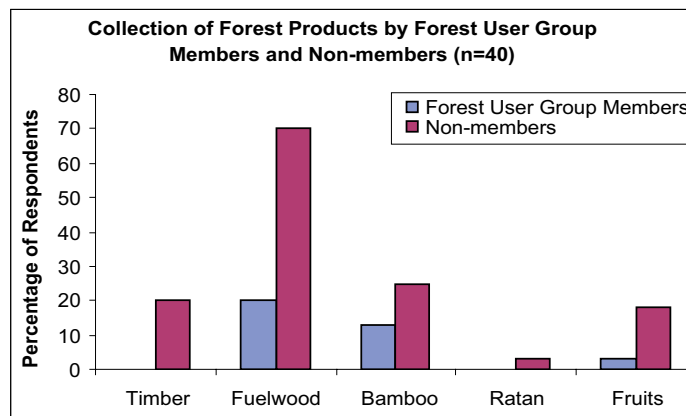


**Figure 2: Major occupations among FUG members and non-members**

Forests have historically played important roles both as a resource base and as a source of income for communities in *Satchari* National Park. Local people collect different types of forest resources to meet their daily subsistence needs and earn cash income. Among interview respondents, I observed that FUG members collect fuelwood (20%), bamboo (13%), and fruits (3%). Also FUG members do not appear

to be involved in illegal felling of timber. On the other hand, non-members of FUGs collect timber (20%), fuelwood (70%), bamboo (25%), rattan (3%), and fruits (18%) from the forest.

Figure 3 compares the responses of FUG members and non-members concerning involvement in the collection of forest resources in *Satchari* National Park. As the figure shows, fuelwood is the most commonly harvested forest product, followed by bamboo and then timber. All respondents, regardless of FUG membership status, collect fuelwood, bamboo, rattan and fruits for their own consumption as well as for sale. Both members and non-members also use traditional materials they collect from the forest and their homesteads. FUG members placed importance on gathering fuelwood from their homesteads rather than the forest. Indeed, my data indicate that forest fuelwood collection by FUG members is less than that of non-members due to awareness raised through training programs regarding the importance of forest protection and conservation.

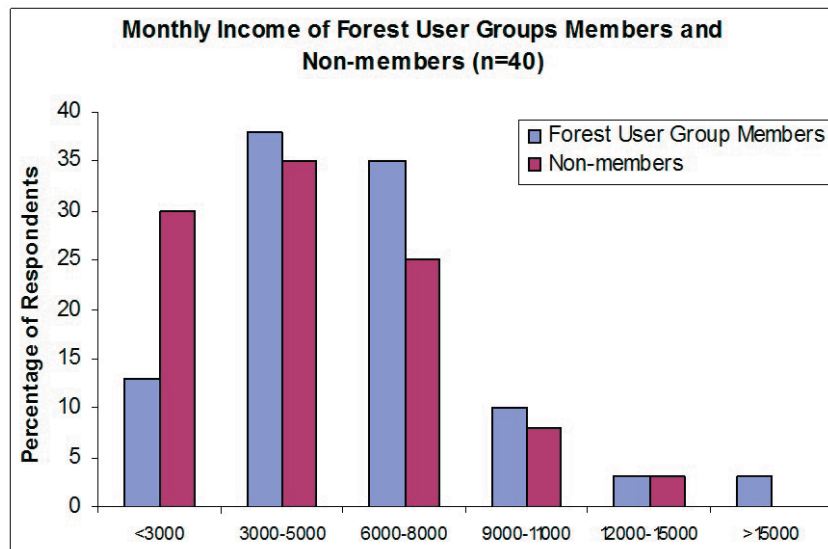


**Figure 3: Percentage of forest products collected from *Satchari* National Park by forest user group members and non-members.**

***Do AIG Activities Improve the Livelihoods of FUG Members?***

I analyzed improvements in livelihoods in terms of the monthly cash income of respondent households. Figure 4 shows that only three percent of FUG members earned monthly cash incomes in the highest range (>15,000 BDT) (>215.83 USD). Regardless of FUG membership status, the income of three percent of respondents was between 12,000-15,000 BDT (172.66-215.83 USD). However, higher percentages of FUG members earned incomes in the ranges of 3,000-5,000 BDT (43.17-71.94 USD), 6,000-8,000 BDT (86.33-115.11 USD), and 9,000-11,000 BDT (129.50-158.27 USD). The reverse was found in terms of lowest income range (<3,000 BDT) (<43.17 USD), in which nearly 30% the income of non-members falls, whereas only that of 13% of FUG members does.

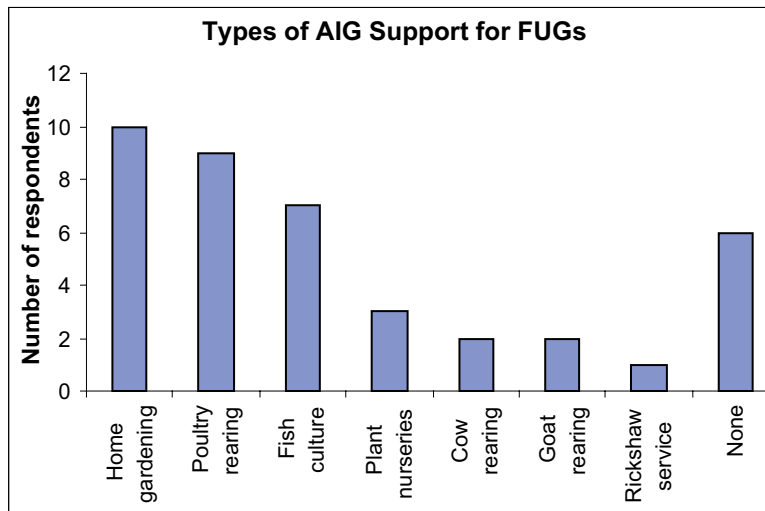




**Figure 4: Percentage of monthly income of forest user group members and non-members**

This differential income structure reveals that the financial status of FUG members is better than non-members, which suggests that the NSP has been successful in creating alternative income generating activities for FUG members. Under the NSP members receive various types of training and earn extra money from AIG activities, which in turn helps them to improve their livelihoods. One of the six components of the NSP is to create AIG opportunities for local people who are dependent on forest resources. By bettering socio-economic conditions and improving people's ability to practice sustainable forest management AIG opportunities facilitate the protection and conservation of forests. Based on this data, it is apparent that NSP activities have been gradually improving the livelihoods of FUG members.

In 2005, the NSP began initiating AIG activities with participants at *Satchari* National Park. Thirty-four out of forty FUG member respondents have received support for AIG activities during the project period. Plant nurseries are one of the most successful AIG activities at *Satchari* National Park. In the study area, three respondents were involved in plant nursery activities with an initial allocation of 4,000 BDT (57.55 USD). These farmers have developed and improved their nurseries and have earned a good income from nursery activities. Among these three respondents, one FUG member (also a community management committee member) earned 150,000 BDT (2,158.27 USD) over the last three years and another two FUG members earned 15,000 BDT (215.83 USD) and 11,000 BDT (158.27 USD) respectively last year from selling tree seedlings they had grown in their nurseries (Figure 5).



**Figure 5: FUG member respondents who received benefits from alternative income generating activities.**

Eco-rickshaws have been the most successful AIG activities in the study area, although only seven people are currently involved. I observed that the program to introduce eco-rickshaws as AIG activities in Ratanpur was well received and that one participant earned nearly 60,000 BDT (USD 863.31) in a year.

Many of the respondents (25%) are involved in home gardening as an AIG activity. Under the NSP members are given an allocation of 2,000 BDT (28.78 USD) for gardening. However, the results of this activity have not been as successful. FUG members are provided with seeds for homestead gardening; however respondents suggested that the seeds they received were inferior and not suitable for planting. Among the ten respondents involved in homestead gardening, one FUG members from Bagbari earned 10,000 BDT (143.89 USD) last year from selling vegetables. Another respondent from Gazipur earned 4,000 BDT (57.55 USD), but the rest of the respondents lost their principal investment money. Better quality seeds are required to improve this AIG activity.

Poultry rearing is another AIG activity promoted under the NSP. During the study period this program produced both successful and unsuccessful results. Hatchery chickens were provided to FUG members through the NSP. However, during this period bird flu was widespread in Bangladesh and the variety of chickens provided was prone to attacks by bird flu (avian influenza); as a result most of the birds died. Thus, participants from Bagbari could not earn money from this AIG activity. On the other hand, FUG members in Ratanpur had greater success because they took precautions to save their chickens from bird flu. Precautionary measures against bird flu are necessary in order to gain more benefits from poultry rearing as an AIG activity.

Fish cultivation has also been ineffective as an AIG activity. Most of the seven supported individuals have not earned significant returns from the activity. For this reason, FUG members in Bagbari, Gazipur, and Enatabad have abandoned their fish cultivation activities. Failures have occurred for several reasons; among them: fish fingerlings were not distributed at the proper time; people's ponds were not adequate for fish cultivation; and technical support was inadequate. Cultivating fish is time-sensitive work and program recipients must be careful about the timing of the activity. At the Ratanpur site, one NSP fish cultivator is doing quite well and has received some return from selling his fish products. This is because he had previous experience with fish rearing and knew how to properly manage his pond. The success of this activity depends on the time consciousness of the participants, their previous experience with fish rearing, and proper technical support.

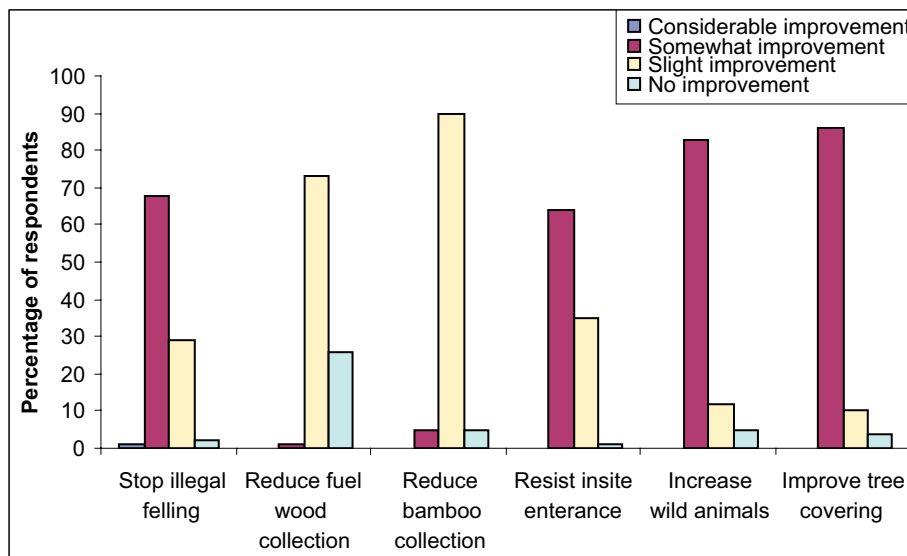
Cow rearing has been successful as an AIG activity, but goat rearing has been unsuccessful. I found that cow rearing AIG activities have been going well at Bagbari Village. The participants earn a good income from the activity, but it is a slow process. In the case of goat rearing, the participants have not earned money due to the inferiority of the goats provided. Better quality goats are needed for this program to succeed.

A total of 17,836 households are situated in and around *Satchari* National Park. Among them, 508 families are involved in NSP activities as members of FUGs, community patrolling groups, and/or community management committees. However, the number of AIG activity projects is limited. From 2005 to 2007, only 189 families received support for AIG activities. At the time of this study, most residents who were not FUG members were dependent on forest resources. Considering that the goal is to reduce dependence on forest resources and improve livelihoods, the amount of AIG activity support provided to accomplish this goal is negligible. Having said that, AIG activities have definitely had a positive impact on local livelihoods and have reduce dependence on forest resources. Based on these findings, I suggest that more local people should become involved in FUGs so that they can benefit from AIG activities as part of the IPAC project.

### ***Do People perceive that Co-management Practices affect Forest Conditions?***

Figure 6 indicates that people's perceptions regarding forest conditions in *Satchari* National Park vary. During individual interviews, I encountered different opinions from local people about fuelwood and bamboo collection, illegal felling, entrance of outsiders, number of wild animals, and tree coverage. The majority of respondents expressed opinions that forest conditions have improved somewhat in regard to stopping illegal felling (approximately 68% of respondents), resisting entrance by outsiders (64%), increasing the number of wild animals (83%), and improving tree cover (86%). In regard to reducing wood collection, respondents expressed the opinion that conditions have slightly improved in terms of fuelwood (73%) and bamboo (90%); whereas some respondents expressed the opinion that there has been no improvement (26% for fuelwood and 5% for bamboo). Many unemployed people

are particularly dependent on forest resources in the park area. In light of this reality, it is arguable that co-management activities generate opportunities for local people to meet their basic needs without degrading protected areas.



**Figure 6: Local perceptions concerning forest management outcomes (n=80)**

If people's perceptions are accurate, these results indicate a slight reduction in the collection of fuelwood and bamboo and an improvement in halting illegal felling. The park's CMC supported initiatives to stop fuelwood and bamboo collection. The entrance of outsiders into the park and local communities also appears to be decreasing.

In group discussions respondents suggested that support for AIG activities and the awareness of local people are the main factors that contribute to reducing forest dependence and improve forest conditions. However, other steps are important as well. Coordination should be considerably enhanced among Forest Department personnel, International Resources Group staff, and members of local management committees. Patrolling should be strengthened with the help of forest villagers and Forest Department staff. Honorarium funds are needed as a salary for villager patrolling groups. Ecotourism facilities and other sources of income are important for local people. In *Satchari* National Park ecotourism facilities have already developed. The income generated by ecotourism needs to be properly managed, and a portion of the proceeds should be used for the wellbeing of local people. Overall, the results of this research suggest that co-management activities are playing an effective role in reducing forest dependence, improving the livelihoods of local people, and improving forest conditions.

## Conclusion

In this paper I looked at the effects of AIG activities on the livelihoods of rural residents and forest dependence, and also compared the livelihoods and forest dependence patterns of FUG members to non-members. I also examined perceptions of FUG members and non-members about forest conditions in *Satchari* National Park under the NSP. I also examined if the creation of alternative income generating opportunities can reduce the forest dependence of local people.

Study results suggest that only five percent of FUG members are involved in forest resource extraction whereas fifty percent of non-members are engaged in forestry related activities. There is a noticeable difference in the forest dependent income of FUG members and non-members. Alternative income generating opportunities have changed the attitude of FUG members, redirected their occupations away from forestry-related activities to other professions, and also reduced their forest dependence. Dependence on forests has also been reduced as a result of alternative sources of income and livelihood (Gunatilake 1998).

In the region of *Satchari* National Park, the forest has historically played an important role as a source of income and a basis for the livelihoods of local communities. Local people collect different types of forest resources to meet their daily subsistence needs and earn cash income. Local people collect forest products from park forests, as well as their own homesteads, for consumption as well as for sale. The results of this study show that FUG members are less dependent upon forests than non-members. This is most likely due to the creation of awareness about forest issues and AIGs through the NSP. After joining co-management activities, FUG members were made aware of forest protection and conservation through different training programs.

AIG programs have definitely had a positive impact on the livelihoods of local people. The NSP started introducing AIG activities to participants in and around *Satchari* National Park in 2005. FUG member respondents have received support for plant nurseries, livestock rearing, fish culture, and other AIG activities; however, this support has been limited and inconsistent. Only a small percentage of local people are involved in AIG activities. To be sustainable, co-management activities need the involvement of more local people (non-members of FUGs) in FUG initiatives and needs to provide these people with consistent AIG support. The monthly income structure of residents shows that the financial status of FUG members is better than non-members because the NSP has created more AIG activities for FUG members. Members receive various types of training and get extra money from AIG activities. This extra money helps to improve their livelihoods. AIG activities can influence socio-economic conditions and improve people's ability to practice sustainable forest management.

Local people's perceptions of the condition of the forest vary. They perceive slight reductions in the collection of fuelwood and bamboo and considerable improvement in the reduction of illegal felling. The entrance of outsiders into the national park and

---

local communities also appears to be decreasing, while the number of wild animals is increasing and tree quantity and quality are also improving. The perceptions of local people indicate a changing situation at *Satchari* National Park.

Co-management approaches to natural resource management are recognized in many areas of the world (Ostrom 1990, Bromley 1992, Connor *et al* 1996, UNDP 1999, Borrini-Feyerabend *et al* 2000, Keen and Lal 2002). However, in Bangladesh the co-management approach was introduced as recently as 2005. During this short period different types of research have been completed on co-management activities. The overall results of this research suggest that co-management activities have a positive impact in reducing forest dependency and improving the livelihoods of local people in *Satchari* National Park.

## Recommendations

Based on my research findings, I suggest the following recommendations for reducing forest dependence, improving local livelihoods, and promoting positive forest conditions in *Satchari* National Park.

1. Only a small percentage of households are involved in FUGs; there needs to be more involvement in FUG initiatives.
2. The financial benefits of AIG activities for FUG members were limited and insufficient. AIG activity projects should be increased.
3. The distribution of funds for AIG activities should be changed to a micro-credit program so that a revolving fund can be created to sustain the program.
4. Capacity building training is needed for all local people including non-members. Forest managers also need training in sustainable management of forest resources and biodiversity conservation.
5. Due to inadequate staffing to patrol *Satchari* National Park, there needs to be increased staff recruitment.
6. Patrolling should be strengthened with the help of forest villagers and Forest Department staff. Honorarium funds are needed to pay villager patrolling groups.

## Acknowledgements

I would like to thank International Resources Group (IRG) for arranging this study. I am indebted to Dr. Jefferson Fox, Shimona Quazi, and Wendy B. Miles from the East-West Center for their wholehearted support throughout the development of the study. My heartfelt gratitude goes to Dr. M. G. Mustafa of WorldFish Center for his assistance and suggestions during the study. I am also grateful to all of the respondents who helped me in collecting field data. I would like to give thanks to all of the levels of field staff from the FD and the NSP who helped me in collecting field data. In addition I would like to thank the chief conservator of Forests, the FD, the Chief of Party, the NSP and the Divisional Forest Officer, wildlife and nature conservation division, Sylhet. My special thanks go to my family members for supporting me throughout this endeavor.



## References

- Borrini-Feyerabend, G., Farvar, M.T., Nguingiri, J.C. and Ndangang, V.A. 2000. Co-management of Natural Resources: Organizing, Negotiating and Learning-by-Doing. The World Conservation Union (IUCN): Gland, Switzerland.
- Bromley, D.(ed). 1992. The Commons, Property and Common Property Regimes. In Making the Commons Work: Theory, Practice and Policy. Institute of Contemporary Studies, San Francisco.
- Connor, R., Houlbrook, R. and Tarihao, F. 1996. Local Conservation Area Ownership Traditional Management, in Wallace, H. (ed), Developing Alternatives: Community Development Strategies and Environmental Issues in the Pacific, Victoria University, Melbourne.
- Fox, J., B. R. Bushley, W. B. Miles, and S. A. Quazi, eds. 2008. Connecting Communities and Conservation: Collaborative Management of Protected Areas in Bangladesh. Honolulu: East-West Center.
- GOB (Government of Bangladesh). 1974. Bangladesh Wildlife (Preservation) (Amendment) Act. 1974. Forest Directorate, Government of Bangladesh.
- Gunatilake, H. M. 1998. The role of rural development in protecting tropical rainforests: evidence from Sri Lanka. *Journal of Environmental Management* 53(3): 273-292.
- IPAC (Integrated Protected Area Co-Management) North-East Cluster Team. 2009. Site-Level Field Appraisal for Integrated Protected Area Co-Management: Satchari National Park.
- IUCN (International Union for Conservation of Nature). 2008. Overview. URL [Accessed July 16, 2010]: [http://www.iucn.org/about/union/commissions/wcpa/wcpa\\_overview/](http://www.iucn.org/about/union/commissions/wcpa/wcpa_overview/)
- Kumar, S., 2002, Does Participation in Common Pool Resource Management Help the Poor? A Social Cost-Benefit Analysis of Joint Forest Management in Jharkhand, India. *World Development*, 30, pp. 763-782.
- Keen, M. and Lal, P. 2002. Creating Supportive Frameworks for Community Based Resource Management. *Development Bulletin* 58: 46-51.
- Nishrigo Support Project 2006. Site information Brochure; Satchari National Park. Dhaka, Bangladesh.
- Ostrom, E. 1990. Governing the Commons: *The Evolution of institutions of Collective Action*. Cambridge University Press: Cambridge.
- Sharma, R. 2006. Management Plan for Satchari National Park. Nishrigo Support Project, Forest Department, Government of the People's Republic of Bangladesh.
- Svartad. H.K. Daugstad. Ol Vistad. and I. Gulvik. 2006. New protected areas in Norway: Local participation without gender equality. *Mountain Research and Development* 26(1): 48-54.
- UNDP. 1999. Pacific Human Development Report 1999: Creating Opportunities United Nations Development Programme: Suva.
- Uprety, Dharam. 2004. Role of Community Forestry in Sustainable Rural Livelihoods: A case study of some Community Forest Users' Groups in Nepal. Vienna, Austria: PhD thesis, University of Natural Resources and Applied Life Sciences (BOKU).