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NATURAL RESOURCE-BASED INCOME AND LIVELIHOOD IMPROVEMENT INITIATIVES IN NORTHEAST INDIA

BY

LIAN CHAWII

CONSULTANT

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1. Background

Northeastern India, despite its multifaceted potential, is one of the most underrated and least explored regions of the country. The region has an interesting sociocultural, ethnic, and linguistic diversity, with more than 200 dominant tribes and many subtribes that reflect the complex social structure. In terms of its natural resources, the region is identified as one of the world's biodiversity hotspots, with species-rich tropical rainforests supporting diverse flora and fauna, and is the center of origin of several species, including citrus, cereals, and orchids. Furthermore, there are large reserves of petroleum and gas in the region, which constitute a fifth of the country's total potential. Industrial raw materials such as coal, hydrocarbons, and mineral resources, including thorium and limestone, are also abundantly available.

This immense potential, however, is yet to be translated into economic prosperity. The poverty rate in the region is significantly higher than the national average; the human development indices show poor records, and lack of development plagues the region. The number of industries in the region is significantly low. This is mainly due to the absence or weakness of basic infrastructural facilities, the major constraint to the promotion of entrepreneurial ventures in the region. This is compounded by the protracted civil unrest in many of the northeastern states. The inadequate transport services and connectivity, including the poorly maintained highways and unreliable air connectivity, are some of the factors that debilitate development in the region. To add to this, a sense of psychological alienation from mainland India, whose poor understanding of the region exacerbates the current conditions, only creates a deeper disconnect between the two.

Agriculture is the mainstay of the economy of northeast India, where more than 80 percent of the total population is rural. *Jhum* (shifting) cultivation is the predominant land use system in the upland areas of Manipur, Meghalaya, Mizoram, and Nagaland, where 19 to 45 percent of the forest area is under jhum cultivation. Due to anthropogenic activities, such as loss of traditional jhum land to commercial tree plantations, and population pressure, the land available for cultivation has declined and jhum, which has long been a sustainable form of agriculture, is no longer able to meet the needs of most households. In many areas the jhum cycle has reduced drastically, leaving little time for soil regeneration. Timber logging was a supplementary source of livelihood for many, but unsustainable practices in several states resulted in a ban by the Supreme Court in 1996, which caused a drastic decline in the per capita income of the states in the region, particularly Nagaland and Arunachal Pradesh.

A lack of enterprise and the decline in local income generation in the once fairly self-sufficient villages resulted in large-scale migration of young people to cities and other urban areas, including outside the region. Consequently, the decline in the number of young people in the villages makes it more difficult to meet the labor-intensive requirements of most agricultural practices in the hilly regions. Further, poor market access and lack of opportunities for value addition for cash crops and locally abundant horticultural crops hinder the tapping of alternative sources of income.

State governments are the largest employers; much of the development in the region is government sponsored. But with the dismal employment scenario jobs are on the decline. There is only a handful of private sector jobs available in the organized sector. Although the young people in the northeastern states are comparatively more educated compared to the rest of India, a majority lack technical and employable skills. As a result, there is rising unemployment

among the educated, which poses a serious threat to the social, political, and economic stability of the region (Ray and Baishya 1998). Some of the problems that affect a number of the young people, including drug abuse and ongoing insurgency, can be attributed to the lack of employment opportunities and development in the region.

There is a perceived need to increase and diversify the sources of income at the community level to help arrest migration and reduce dependence on the government. Some argue that this change can be brought about by the revival and strengthening of traditional institutions for better management of resources and for building peace and development in the region. Governments are taking recourse to these traditional forms of governance and community decisionmaking, once treated as a constraint to development, and reorienting their policies to assign more powers to the local governing councils to rebuild society. Traditional societies and villages are being acknowledged as important functional units. Self-help and self-reliance and community sentiment are strong characteristics of the communities in the Northeastern Region that have helped them through many difficult periods.

This Background Paper attempts to elicit some general principles from the case studies from different parts of northeast India. It is important to note that this Paper is not representative of the entire scenario in the Northeastern Region, but rather a slice of a larger complex mosaic derived from the case studies (see appendices A to H). Having said this, the points that are elicited from the case studies are common and endemic to most of the northeast Indian states.

2. Objective

This Background Paper on natural resource-based income and livelihood improvement initiatives is an attempt to acknowledge and highlight the successful income generation initiatives, through sustainable utilization of natural resources, by local communities in northeast India. It also seeks to capture the qualities and strength of the decisionmaking systems of traditional institutions that govern most of the communities in the region. Community-based conservation and management of common resources is an age-old practice under the traditional customary laws of northeast India. This acquires greater significance in the present day due to the decline in traditional value systems, destructive anthropogenic activities, and unsustainable exploitation of other rich forest resources of the region.

3. Description of case studies

3.1 Case studies and location

Some pertinent issues were considered during the selection of the case studies. These included:

- The unique and inherent strength of the traditional institutions and the nature of community decisionmaking
- The collaboration, or lack thereof, between the traditional and the state institutions, or the bureaucracy
- The problems and constraints in the diversification of sources of livelihood.

The case studies were analyzed and documented by several authors based in the region, and are included as appendices, as follows:

Appendix A. The self-help group movement in Assam, by Nava Thakuria, journalist based in Guwahati, Assam.

Appendix B. Community forest management and sustainable livelihood in Tokpa Kabui village, Henglep subdivision, Churachandpur District, Manipur, by Salam Rajesh, Manipur Nature Society, Sagolband Salam Leikai, Imphal.

Appendix C. Livelihood-based biodiversity conservation in selected villages in West Garo Hills District in Meghalaya and use of a participatory three-dimensional model in Sasatgre village for overcoming dependency on jhum cultivation, by Bidhayak Das, correspondent for the *Telegraph,* former research associate with the Centre for Environment Education and former biodiversity conservation project fellow in the Northeastern Biodiversity Research Cell supported by the Union Ministry of Environment and Forests, Shillong, Meghalaya.

Appendix D. Exploring the commercial prospects of squash as a source of livelihood in Sihphir village, Aizawl District, Mizoram, by Lian Chawii.

Appendix E. Community-based conservation and ecotourism in Khonoma village, Kohima District, Nagaland, by Lian Chawii.

Appendix F. Community income generation and the campaign against HIV/AIDS in Tuensang District, Nagaland, by Lian Chawii.

Appendix G. Community-based ecotourism and sustainable livelihoods in Sindrabong, West Sikkim District, Sikkim, by Dr. Dipankar Ghose, Program Director, WWF-India, Sikkim Program Office, Gangtok, Sikkim.

Appendix H. Joint Forest Management and sustainable livelihood in Boxanagar forest range, Sonamura subdivision, West Tripura District, Tripura, by Jayanta Bhattacharya, correspondent, Press Trust of India, and member, North East Centre for Policy Dialogue, Tripura.

The common themes in the above case studies include the manner in which:

- Communities took up the responsibility of managing the natural resources (or pursuing other livelihood activities) in a sustainable way
- The communities did this without much state institutional support in finding solutions to their problems, such as deforestation, soil erosion, livelihood needs, wildlife services, and alternative farming options.

Shifting focus slightly away from the primary objective of the study – natural resource conservation and livelihood improvement initiatives – is one case study related to HIV/AIDS in Tuensang, Nagaland, which emphasizes the role of the community at large, and the Church in particular, in directing a social awareness program to improve livelihood generation. The Church exerts enormous influence on most communities in the Northeastern Region. It is involved in numerous social welfare activities, as reflected in the case studies in Tokpa Kabui village, Manipur, and the West Garo Hills in Meghalaya.

3.2 Constraints in the case studies

In setting out to identify community initiatives for this Background Paper, the authors of these individual case studies faced a number of obstacles. Resource persons often refused or were hesitant to divulge information, while questioning the intention of the study at large. Some were forthright in their suspicions about the intentions of the Ministry of Development of North

Eastern Region (MoDONER) or the World Bank. These frequent dead ends unexpectedly prolonged the exploration, or scouting period.

4. Natural resources and livelihood security

Environmental problems in the Northeast have been influenced by the increasing population, the survival needs of the poor, and the economic greed that often typifies commercial interests. They are also aggravated by prevalent economic disparities and unemployment, which are deeply embedded in unsustainable patterns of production, consumption, and exchange; ill-informed policies and programs; and inappropriate development strategies.

Unsustainable extraction of timber for local industries and export markets has disrupted forest ecosystems in states such as Meghalaya and Arunachal Pradesh, resulting in tremendous loss of biodiversity. Other than forestry, fragile hilly slopes have been extensively used for unsustainable agriculture, mining, and cash crops. These unplanned interventions have had a disturbing impact on the environment. The imperatives of specific local socioeconomic and ecological conditions, which alone can determine the relevance and effectiveness of interventions in the hilly states, are seldom incorporated into development policies and programs for these areas. Besides, most existing policies and programs relating to these areas do not address the needs and priorities of traditional resource users at the grass-roots level. Furthermore, there are inadequate data about the availability, location, and distribution of forest and mineral resources and the level, pattern, and rate of resource consumption and environmental degradation. Lack of applied research and extension services have also resulted in unsuitable land use. Finally, loss of traditional methods in resource management and lack of appropriate institutional arrangements have had adverse effects on people's control over the resources on which they depend for their sustenance (Karki 2001).

The case studies indicate the willingness of communities to engage in biodiversity conservation when they have a stake in it. A sense of ownership of the natural resources also encourages the communities in sustainable utilization of common resources.

5. Role of traditional institutions and wisdom

5.1 Local self-governance institutions

5.1.1 Traditional institutions

Prior to British rule, many of the northeastern states were characterized by little hamlets with independent self-governing institutions, which presided over every aspect of village life. Most of these institutions were administered under the system of chieftainship in which the management differed according to each tribe. Even today, in most of the Kuki villages of Manipur, the entire land ownership is under the control of the village chiefs, to whom the local people are obliged to pay a portion of their produce. All the residents of the village are entitled to hold land. However, the ultimate ownership and rights lie with the chief, who effectively has the power to give or take away the land.

In a traditional Mizo village, the chief had absolute decisionmaking powers. The Mizo or Lushai had a custom of shifting villages frequently. The chief selected sites for his village and all the land in the village was controlled and owned by him. However, he did not restrict the local people from using the resources. Reserved forests were located in the proximity of each village and were protected and managed by the chief and his advisers, or village elders. It is said that the customary laws of the Mizos were so evolved that there was a method of dealing with different types of potential conflicts. Interestingly, there were no rules regarding the use of forest produce, hunting, or jhum (Singh 1996). This seems to indicate the abundance of forest resources and absence of pressure on them.

Today, customary laws govern land ownership in parts of northeast India. In Meghalaya and Nagaland, more than 90 percent of the forests are directly controlled by traditional institutions, communities, or private individuals, whereas in Assam and Tripura, it is about 30 to 40 percent. Traditionally, the management of forestland is under the *gaonbura* or village chief in parts of Nagaland, the *doloi* in the Jaintia Hills, the *syiem* (or raja) of the Khasi Hills, and the *nokma* or head person among the Garo tribes in Meghalaya. In most of these traditional systems of governance, the village chief or head plays a significant role in decisionmaking and in the effective functioning and management of village welfare. The *thoubei* is the traditional institution composed of village elders and heads of respective clan families in parts of Manipur. The thoubei settles issues within the village structure that cannot be settled by the village authority. The village authority, chaired by the head, is in charge of the overall supervision and control of village affairs. Similarly, the Monpa in Tawang District of Arunachal Pradesh have well-developed traditional institutions based on democratic principles.

5.1.2 Creation of new formal local government structures

District councils were instituted in the tribal areas of Assam, Meghalaya, Tripura, and Mizoram under the Sixth Schedule of the Indian Constitution in order to protect the rights of the tribal communities. The district councils are authorized to manage the forests for the purposes of agriculture or grazing, for residential and nonagricultural purposes, and also for the regulation of jhum and the establishment of village or town committees or councils (National Commission to Review the Working of the Constitution 2001).

The establishment and evolution of district councils, contrary to the expected outcome of recognizing and strengthening the traditional systems of governance, has generally resulted in more alienation of the communities from the state governments. The reasons cited by the communities include:

- The district councils were established and operated following a uniform set of rules that did not accommodate local variations, including differences among tribes and traditional practices.
- The district councils were promoted as a democratic setup, mostly alien to the tribal communities, and there has been cases of elite capture.
- A district is a large entity, and could be home to a number of tribal communities. The traditional systems of intertribe dialogue and conflict resolution have not been integrated into the district councils.

- District councils were created as parallel institutions, and many of these councils have been managed through official bureaucracy. Yet, the district councils lack full autonomy or power.

5.1.3 Decline and resurrection of the traditional institutions

Though some traditional institutions are still functional in parts of the Northeastern Region, modern influences have diluted their significance and there are signs of declining control all over the region. In Mizoram, the abolition of the chieftainship in 1954 and its control by the district council led to major changes in the administration of forests and regulation of jhum cultivation. The traditional institutions of management were also severely affected by the traumatic events of the insurgency movement in the 1960s, when the existing village structure was broken down and regrouped by the Indian Army. With the abolition of chieftainship in Mizoram, respective village councils are authorized to allot land that is subsequently verified by the state Land Revenue Department. Similarly, in the hill areas of Manipur, the rights and titles of the chiefs over the lands in the hill areas were relinquished and handed over to the government under the Manipur Hill Areas (Acquisition of Chiefs' Rights) Act, 1967. But this act is not yet fully operational due to a variety of reasons, and the chiefs still command authority in most Kuki villages.

With the nationalization of policies and laws pertaining to forests, state governments asserted greater control over the forests while the strength of traditional institutions weakened in most parts of the region. No clear distinctions or boundaries exist regarding the authority of the traditional institutions and the government-introduced systems with regards to the management of natural resources. The bureaucracy showed little faith in the communities' ability to manage their forests, but at the same time, government or private agencies lacked sufficient resources to become custodians of the forests. In many parts of the region, the communities have now been prevented from exercising their traditional rights. Such cases include the vast network of (wildlife) protected areas and government reserve forests, which has been created without recognition of traditional rights. There are, however, other vast tracts of forests that are not directly controlled by the states, and where customary laws are recognized.

In recent times, some of the state governments have come to realize the futility of an exclusivist approach, with little or no participation from the community, and the need to work with the traditional institutions to ensure effective governance at the grass-roots level. As a result, they have started to harness the unique elements of these traditional institutions and are reforming their development policies to this end. The Nagaland Government has invoked these traditional systems to solve some difficult political crises and issues of ethnicity. The traditional ecological wisdom that has been applied for centuries in biodiversity conservation in many parts of the region is also increasingly acknowledged by policymakers and academics.

5.1.4 Local government institutions and natural resource management

Many experts blame the traditional systems of management and the lack of government control over the forests for the rampant destruction and degradation. The case study of Khonoma village in Nagaland proves otherwise. The solidarity of the community, with the strong leadership of the village elders, withstood pressure from the logging mafia to impose and effectively implement a ban on logging, and to subsequently restore a degraded community forest, which is now protected as the Khonoma Nature Conservation and Tragopan Sanctuary.

Similarly, the thoubei played an important role in the regeneration of degraded forestlands and in income generation among the local community in Tokpa Kabui village of Churachandpur District in Manipur.

Under the Sixth Schedule of the Constitution, all forests other than the government reserved forests are to be managed by the district council, but the bulk of the forestland is in the hilly areas where customary laws are applicable. This hinders effective management of the forests for both the district council and the communities. In the West Garo Hills (Meghalaya), the two parallel governing institutions – the tribal customary laws under the nokmas and the statutory laws of the district council – have overlapping authority over management of the forests. This prohibitive overlap is seen as one of the reasons for the mismanagement of forests in the Garo Hills.

These community initiatives documented in this Background Paper reflect the strength of the traditional institutions and their role as the main agents of change and conservation at the grass-roots level. Also, the case studies indicate that local communities still place a lot of trust upon traditional institutions; and there are possibilities of scaling up these efforts.

However, the case studies together do not deny that a large portion of community-owned forests have been degraded over the last five decades. Not all communities were able to withstand the lure of money, when commercial logging (both legal and illegal) was rampant in the Northeastern Region. There have been several instances of misuse of traditional rights by village leaders and reports of their connivance with the timber or land mafia. However, the general opinion in the region is that such degradation and deforestation was not abetted by a large majority of the villages with functioning traditional institutions. Reliance on traditional systems of governance, as diluted as they are in many parts of the region, does not automatically exclude possible misuse of power and resources, and therefore there is a need to enable the traditional community institutions for greater accountability.

5.2 Traditional ecological knowledge and resource management

5.2.1 Traditional knowledge base

Northeast India, known for its wealth of traditional ecological knowledge, can offer many lessons in land use and management. Practical experiences gained over many centuries helped the communities in building their knowledge, much of which has scientific legitimacy. In recent years, experts and policymakers have gradually acknowledged the significance of traditional ecological knowledge.

Prior to the advent of Christianity in the region, many tribes followed animism; forests were preserved, trees were worshipped, and removal of plants was believed to offend the ruling deity. Most of the states had forestlands demarcated as sacred groves. In Meghalaya, vast stretches of sacred groves are still preserved in the midst of degraded landscape. The Meitei in Manipur dedicate their forests to the *umanglai,* or forest deity, who protects the large variety of species within it. Similarly, many tribes in Arunachal Pradesh still preserve their sacred groves. The utilization of forest resources is restricted to community well-being; unsustainable extraction of resources or killing of animals within these sacred groves is prohibited. Sacred groves are often based around areas of community value, such as catchment areas, streams, lakes, and ponds. The myths, legends, and religious beliefs of the local communities are closely linked with the forests and the waters, and aspects of their management.

5.2.2 The case of slash-and-burn agriculture

Most of the Northeastern Region consists of hill areas with fragile ecosystems and low productivity. The subsistence farming traditionally practiced in the region is slash-and-burn agriculture, locally called jhum. The jhum system, typically, reflects a sort of community farming without heritable rights over the land. The practice starts with selection of forested land, clearing and burning of the forest before the onset of the monsoon, planting of various crops in an intimate mixture by dibbling, and harvesting. The land is abandoned after cultivation for a period of 2–3 years and cultivation is shifted to another site. The method of allotment of land varies from tribe to tribe. In most cases it is decided upon by the village councils or by village elders, and the size of the plots depends on the number of working hands in respective farm families. Out of the total area of 2.2 million hectares of jhum lands, 17.5 percent is cultivated at any one point of time; the rest is left for natural regeneration over a period of several years.

Many blame this agricultural practice for destruction of forests and resulting land degradation and erosion. The issues have become acute in the last few decades, as the population has grown and nutritional needs have increased. According to recent estimates the jhum cycle has shrunk to 3–6 years or even less compared to a previous cycle of 10–15 years in earlier practice, resulting in soil degradation and ecological imbalance. Destruction of forests in the jhum land, coupled with high rainfall, has resulted in heavy soil erosion.

5.2.2.1 Initiatives to eliminate jhum

Some characteristics of jhum and its evolution have been widely studied. Governments, over the years, had tried to limit or reduce the practice of jhum, under the Jhum Control program, which attempted to replace jhum with permanent, settled agriculture. Overall, these attempts failed. Policymakers now recognize that jhum is an intrinsic component of the social and cultural milieu of most of the communities in northeast India, and cannot be treated in isolation. Efforts to discontinue jhum cultivation have often met with limited success because government policies tend to overlook the deep-rooted and complex imbrications of this practice in the traditional societies of the region.

More recently, attempts have been made to optimize the productivity of jhum fields. There is a gradual shift in focus from earlier campaigns to eliminate the practice of jhum to increasing its productivity and livelihood potential. But these efforts have not yet been systematic. Conflicts between forest conservation and jhum still exist.

An additional and recent conflict is between jhum and market-oriented agricultural systems. Cash crops such as coffee, rubber, cashew nuts, black pepper, cardamom, and cloves have been introduced by the government through various schemes and programs as a supplementary source of income. However, market-based agriculture is relatively new for the local communities. As observed in Khonoma, Nagaland, there was no system of saving until recently. Earlier, when a family produced more than it required, the surplus was given to the needy or used for a village feast. New market-based agricultural systems are displacing jhum fields, driving the poorest that practice jhum to remoter areas with relatively lower yield potential.

Through all of these actions certain values of jhum are forgotten. Under the Jhum Control program, the land free from *jhumming* (shifting cultivation) had been monocultured. The cash crops and other market-oriented agricultural systems are also promoting exotic varieties. Added to this, the reduced fallow cycle of the jhum fields is destroying the large diversity of

jhum crops, and similarly the large variety of flora and fauna that jhum fields traditionally used to support.

5.2.2.2 Jhum and natural resource conservation

Most traditional communities were aware of the significance of preserving forest cover on hilltops and ridges to ensure perennial water supply to the jhum fields at the lower ranges. In Chingmei village of Tuensang District, timber loggers rampantly destroyed a large area of forestland at the hilltop near the village, resulting in a drastic decline of water supply to their jhum fields. The community enforced a ban on hunting and felling in the forestland and this led to an increase in forest cover, which helped to rejuvenate the catchment areas.

In Khonoma village in Nagaland, the Angami tribes practice multicropping in the jhum fields where they grow as many as 50 different varieties of crops. Alder trees (*Alnus nepalensis*) are intercropped with food crops in the jhum fields. The root nodules of the alder trees help to conserve up to about 120 kilograms of nitrogen per hectare per year by fixing atmospheric nitrogen in the soil, thus improving its fertility and reducing pressure on the land (Ramakrishna 1992). The dry leaf litter is also rich in nitrogen and adds to the soil fertility.

5.2.3 Examples of traditional knowledge

Documentation of indigenous traditional knowledge in northeast India is very limited, though many societies, particularly in the rural areas, are still dependent on forest products to meet their requirements. There are, of course, scholarly works done on a few cases, but there have not been many systematic documentation initiatives. The vast treasure of indigenous methods, developed by ethnic tribes for utilization of various plants for their day-to-day needs, requires proper documentation. The recent initiatives to compile people's biodiversity registers, started under the central government-funded Biodiversity Action Plan follow-up activities, has yet to take root, but is viewed optimistically by many practitioners and experts. The following are some examples, admittedly sporadic, of such knowledge.

5.2.3.1 Cultivation methods

The Apatani in Arunachal Pradesh have rich traditional ecological knowledge and are known for their advanced system of wet rice cultivation, which they have perfected over many years.

Jhum is well studied as an age-old system of agriculture among indigenous groups in the humid tropics. The *jhumias* (shifting cultivators) make use of the local ecological and environmental conditions to their advantage. The natural indicators, and their magico-religious beliefs, condition their decisionmaking. Rituals, myths, and folk tales also govern their land and resource use. The entire gamut of their sociocultural life is thus woven around jhum, making it not merely an agricultural activity but a cultural practice and a way of life (Gupta 2001).

Smallholder farmers in traditional farming systems are an untapped source of traditional knowledge. They are the managers of well-preserved local soil knowledge and folk soil taxonomy. Rice farmers in Barak valley, South Assam, had their local soil knowledge in relation to rice farming systems inventorized by Tapasi Das and Ashesh K. Das (2005). The rice farmers were interviewed for the prevalence of folk soil taxonomy and a total of five major soil types were recorded. Since smallholder farmers practice their farming systems under various environmental factors, they shape their crop diversity on the basis of their local knowledge of soil and other factors. The study revealed that the farmers are faced with heterogeneous soil

types and hence they maintain systematic classification criteria for the nomenclature of different soils, which was found to be positively correlated with scientific analysis and soil classification.

5.2.3.2 Ethnobotanical studies and documentation of medicinal plants

Northeast India has a valuable heritage of herbal remedies. Most of the communities that inhabit the remote forest areas still depend to a great extent on the indigenous systems of medicine. So far studies in this regard have been reported from a very limited number of the tribes of the Northeastern Region, namely the Ler, Mikir, Karbi, Miri, Khasi and Jaintai, Garo, Monpas, Nishi, Apatani, and Reang. A wide range of plants of ethnobotanical value due to their efficacy for treatment of some important diseases have been reported, but a large number of folk medicines remain endemic to certain tribal pockets in northeast India. Therefore, further detailed studies on the ethnobotanical aspects of the region may help promotion of traditional herbal medicinal plants and landraces of crop plants.

Arunachal Pradesh, recognized as a hotspot of biodiversity, is home to a range of economically important plants. Some of these plant species have found use in the preparation of natural dyes, colorants with several applications in textiles, inks, cosmetics, and other products, from more than 500 dye-yielding plant species. *Daphne papyracea* is one such plant being traditionally used by the Monpa tribe of West Kameng and Tawang Districts for preparing dye and for making handmade paper for painting and writing scripts in monasteries. The Apatani, Khampti, Tangsa, Wancho, and Monpa have traditionally been using species such as *Rubia cordifolia*, *Rubia sikkimensis*, *Woodfordia fruticosa*, and *Colquhounia coccinea*, in combination with other plants, for extraction and preparation of dyes utilizing indigenous processes. Some of the aforementioned species possess ethnomedicinal and fiber-yielding properties in addition to natural dyeing and are being used in traditional health care practices, ropemaking, fish poisoning, and other uses.

Documentation (by Sharma et al, 2003) is available for 34 plant species, belonging to 30 families, used in the extraction of dyes by the Meitei community of Manipur. The plant parts used in the extraction of dyes along with the method of extraction and their uses have also been documented. Another 19 plant species belonging to 14 families, used as dye mordants, have also been reported. The people of the state use these dyes for dyeing of their world-famous handloom products.

The *bong* or gourd shell *(Lagenaria siceraria* Standl.*)* is an integral part of Karbi culture and is regularly used during *adam-asar* or marriage and worship ceremonies. The seeds of the bottle gourd are believed to have been gifted by a Karbi god, Songsar Recho, the creator to the ancestor of the Karbi, and today gourd seeds are still considered as one of the assets of the tribe. Songsar Recho is also considered as the custodian of all crops. Before the introduction of the bong into Karbi society, a fruit of the nong-nong (*Thunbergia grandiflora* Roxb.) was used for storing *horlank* or rice beer, and the leaves of the phle-phle *(Premna latifolia* Roxb.*)* were rolled into cones and used as a *lankponk* (traditional drinking pot) during marriage.

Ethnobotanical studies (byKhumbongmayum et al, 2005) in the four sacred groves of Manipur reveal therapeutic applications of 120 plant species representing 106 genera and 57 families. Tree species contributed the most with 42 percent while herbs recorded 33 percent of the total medicinal plants. These plants are used for a wide range of common ailments such as skin disorders, ulcers, rheumatism, and bronchitis. The majority of the preparations are taken orally in the form of juice extracted from the freshly collected plant parts. Leaves are the plant parts

most used for the preparation of medicine by the medicinal practitioners (*maibas*). Most of the plant parts are harvested from the wild. It has been observed that the species that are scarce locally in the forest due to various developmental activities, deforestation, and overexploitation are abundant in the sacred groves. Information on medical claims was collected from the elderly people residing in the vicinity of sacred groves and also from the traditional healers or maibas.

5.2.3.3 Medicinal plants

The Reverend J. H. Lorrain, one of the first Christian missionaries to arrive in Mizoram, compiled a detailed list of a variety of species along with their local names and their uses. The results of ethnobotanical studies carried out in Mizoram (by Bhardwaj et al, 2005) establishes usage of 17 species belonging to 14 families of wild plants by the communities for the cure of cuts and wounds. The plants not only contain ingredients of antiseptic value but also have regenerative and healing properties. A sticking property of paste of bark was also observed in the laki tree. In addition, blood-clotting properties of some plants have also been reported. The Mizoram Upa Pawl has also documented a list of medicinal plants used traditionally for ailments such as stomach ache, headache, and kidney problems.

The uses of rosaries made from various plant parts by the Meitei community in Manipur (documented by Singh and Singh, 2005) are a symbol of tradition and culture and are used as ornaments or for health and religious practices. Of the 20 plants reported to be used for rosaries, 18 plants belonging to 15 families are used to cure 29 diseases or complications such as fever, gout, urinary disorder, rheumatism, tuberculosis, heart diseases, liver complaint, and bronchitis. Some of the rosaries are also sold in the local markets and fetch good prices.

Nikhil Jyoti Das, Kamala Devi, and Satya Ranjan Goswami (2005) have reported the use of *Jatropha curcus* Linn. for the treatment of dysmenorrhoea by the Koch-Rajbongshi tribe in Nalbari District, Assam.

N. S. Jamir and P. Lal (2005) documented traditional methods of treating various kinds of ailments using certain vertebrates and invertebrates or their products by different Naga tribes. Since different Naga tribes have their own distinct languages, the vernacular associated with a particular animal differs from one tribe to another. A list of 26 animal species and their products, the nature of ailments, and the modes of treatment were documented.

5.2.3.4 Other livelihood generation activities

An ethnobiological survey was conducted during 2001–2003 in Miri-dominated hill districts of Arunachal Pradesh, revealing details of their indigenous knowledge system. In addition to jhum cultivation, fishing and hunting are major economic activities of this tribe. They derive their fish protein diet requirement directly from wild sources, using two major rivers and a number of their tributaries. A total of 21 plants significant for ethnofisheries have been listed. Twelve plants are used as ethnotoxins (fish poison) and the other 9 species are used in different ethnofishery techniques (documented by Kalita et al, 2005).

S. C. Rai (2005) documented traditional knowledge with regard to paddy-cum-fish farming along with jhum. Paddy-cum-fish cultivation is practiced mainly by the Apatani, a progressive agricultural community of Arunachal Pradesh. The main advantage of the practice is that the land gives sustained yield year after year, unlike the jhum system, where the land is under crops only during certain periods, depending upon the jhum cycle. The economic and energy

efficiency of this agroecosystem is high and rice is exported after local needs have been met. Rain-fed cultivation of millet and mixed cropping contributes toward meeting the diverse needs of the people. Mithun, swine, and poultry husbandry are important links with agroecosystems. Therefore, an understanding of this agroecosystem function becomes significant, as it offers opportunities for redevelopment with additional scientific inputs.

Few studies have been made of fish attractants, especially for freshwater fish. Communities living in the Karbi Anglong District of Assam use fish attractants to discourage fish from escaping during inundation of ponds during flood. The fish attractant is made from locally available ingredients such as rice bran and oil cake. As verification of the efficacy of this indigenous method, Bhagaban Kalita, Amalesh Dutta, and M. Choudhury (2005) observed that as many as 70 percent of fish remained in the pond after flood.

5.3 Recognition of community asset management traditions

The central role of (tribal) communities in the Northeast in the development process has long been recognized by the Government of India. The Planning Commission in 1981 suggested that:

> "The traditional structures like Village Councils can be used to secure the participation and involvements of people in the development effort. These Councils can provide a point of contact between the State and the people. The accent has to be on what people can do to improve their prospects with some help from the state" (Planning Commission 1981).

However, this recognition has not always been systematically relied upon in the intervening years. The attention to the central role of communities, and the traditional or customary systems, has, nonetheless, seen an upswing since the late 1990s. In recent years, much government and expert attention has been focused on building on traditional systems of management of community and public assets. Examples of such increased reliance on community-based approaches are numerous, particularly in the area of delivery of public services. Some of these are documented in the case studies undertaken during this study.

5.3.1 Communitization of public institutions in Nagaland

As noted in the Nagaland State Human Development Report (Government of Nagaland 2004b), the strength of the state lies in its social capital and strong community spirit. Taking advantage of this strength, the Nagaland Government has amended its existing policies and evolved a unique concept of empowerment of the community, legislatively supported by the Nagaland Communitization of Public Institutions and Services Act, 2002. Communitization fosters decentralization through the transfer of ownership of government assets and devolution of power to the community, while at the same time aiming to improve public utility systems (Government of Nagaland 2004a).

Communitization has been implemented in the health, education, and power sectors since 2002. The results have been encouraging – a significant increase of over 80 percent in teachers' attendance, for example, leading to an improvement in students' attendance. The pass rates of students also significantly improved. An increased sense of ownership of the schools by the communities is reflected in their contributing materials and labor to repair the schools. In Chingmei village of Tuensang District in Nagaland, the local private boarding school, once preferred by most parents, was compelled to close down due to competition from the government school. This reflects a change in attitude of the parents and the increasing

confidence in the quality of education in the government schools. Similarly, stories of the positive impact of the communitization of health and power have been reported from different parts of the state.

5.3.2 Village development boards

Village development boards, established in 1980–1981 in Nagaland, are products of a decentralized form of planning and devolution of powers to the village and grass-roots levels. Each village in Nagaland has a village development board whose main responsibility is to implement development schemes, the funds for which are directly channeled to the board from the state government. From managing basic funds in the initial stages of its development, village development boards are now entrusted with the handling of numerous central government funds. The funds are disbursed for building community halls, schools, agricultural link roads, rural housing, natural resource-based income-generating activities, and livestock rearing.

5.3.3 Building on traditional customs

Among the Garo, the nokma can regulate and manage the community-owned forestland, called *akhing*. The Garo are a matrilineal tribe and, theoretically, the nokma is a female. But the akhing land is controlled by her husband on her behalf. Any initiative or project that involves land use requires a written proviso signed by the nokma declaring no objection to the programs. The International Fund for Agricultural Development (IFAD) project on livelihood benefits in the West Garo Hills followed this gesture, with the intention of educating the community about the existing traditional rules.

Another example is the reliance on community traditions for controlling forest fires in Mizoram. Increasing incidence of jhum-related forest fires has prompted the Mizoram Government to introduce the Mizoram (Prevention and Control of Fire in the Village Ram or Land) Rules, 1983, for effective prevention and control of forest fires. It has set up fire prevention committees at village level (headed by the village council president), district level (headed by the deputy commissioner), and state level (headed by the chief minister), each with distinct duties and functions. While the village-level committees are to mobilize volunteers for fire watching and fire fighting in each village, the committees at the district and state levels mainly have advisory, supportive, and coordinating functions. The state-level committee acts as the apex body for all the other committees and also interacts with the central government on the matter. This entire program is based on the traditional system of community-based fire management in the jhum fields, where control and management of forest and jhum fire were joint responsibilities of individuals and the entire village. As jhumming had been an entrenched practice for the Mizo, the community had evolved its fire management around this tradition. Whenever a forest fire is reported, the village council president immediately orders the village crier (a village messenger or announcer) to alert the community, and anyone who hears the announcement is duty bound to immediately proceed to the site to fight the fire. Labor is also divided across age and gender for jhum burning.

6. Issues for improved livelihood

6.1 Diversification of income sources

Despite intensive labor inputs the yield is comparatively low in hilly areas due to the difficult terrain, high runoff, and soil erosion (in Nagaland alone, 4.4 million metric tons of soil are lost every year due to inappropriate methods of jhum cultivation). These environmental constraints are a limiting factor in increasing food productivity and poverty alleviation and as a result additional sources of income may be necessary. Due to the fragile ecology and the poor infrastructure in the region, any developmental activity would have to be sustainable in the long term.

The agroclimatic conditions of most parts of northeast India are suitable for the growth of horticultural and floricultural products. There is great export potential for exotic and ornamental plants, such as orchids, anthurium, lilium, and many other flowers. Floriculture as a cottage industry has emerged as an integral part of the economy in northeast India and there are numerous entrepreneurial activities on a small scale. Promotion of horticulture and agro-based activities that are suitable for upland regions would help local communities to shift focus from tapping forest resources.

The Technology Mission for Integrated Development of Horticulture in Northeast India provides support in the form of drip irrigation, pest management, organic farming, cold storage, and market infrastructure to help promote entrepreneurship among local communities.

6.2 Need for market linkages

A meeting organized by the Agriculture and Processed Food Products Export Development Authority in Guwahati in 2003 identified several bottlenecks in exporting agricultural and horticultural crops from the region. These include lack of capital; lack of large markets, which affects the profitability of large-scale industry; poor transport and infrastructural facilities; poor technology and shortage of skilled labor; and the continued civil unrest, which discourages private investment.

There are initiatives and suggestions aimed at opening up the economy of the Northeast to the major neighboring Asian economies. Many questions and doubts, however, remain as to how major development could affect the local people in terms of displacement and rehabilitation, and how the interests of the local people can be protected. In view of the small size of the domestic market, the general prevalence of poverty, and the high seismic risk, some argue against large-scale industrialization in the region.

There are opportunities for development of cash crops when there is market access, but in the current scenario this link is poor and has resulted in the failure of numerous initiatives. Institutional and policy interventions are critical in helping local communities. There is a need to develop a network with the national economy. Due to the poor road infrastructure most farmers are unable to gain optimum profits from their produce.

Many communities earn alternative income from marketing of fruits produced in the jhum lands. The rich variety of fruits endemic to the region presents opportunities in the processed food sector. Food processing units are essential for value addition in order to fully realize potential.

As observed in the case of squash in Mizoram and cardamom in Nagaland, the farmers are dependent on the intermediate traders from the lowlands who monopolize the buying of cash crops, effectively setting the price, as in the case of squash production in Mizoram. Increasing supply is also depressing prices: cardamom, which was sold for Rs. 250 per kilogram about five years earlier, is now sold at Rs. 50, due to the increase in the number of farmers taking up cardamom growing as a source of livelihood. Ginger is grown as a cash crop in the jhum fields of many states of the region and more than 50,000 metric tons are produced per annum. However, due to its perishable nature, a large amount goes to waste during transportation.

6.3 Building upon existing agricultural systems

As in many upland regions, the forest constitutes an integral part of life in northeast India, where for many centuries it has been a source of sustenance and resources. Over the years, the forest cover in most parts of northeast India has declined drastically due to rampant logging and other anthropogenic activities. One of the primary factors viewed as contributing to the ecological degradation is jhum or swidden cultivation, an age-old agricultural practice of the people of the Northeast. Recent studies have found that the effects of jhum cultivation are overemphasized and not as destructive as indicated by some. For hilly areas, jhum cultivation is more viable and economical compared to other systems of agriculture (Poffenberger 2006, p. 60). Most jhum fields grow 15 to 60 different species of crops.

In the past decade or so, the government approach towards jhum cultivation has gradually changed, from attempts to replace it with permanent agriculture or livestock rearing to augmenting its productivity. The IFAD initiative with local communities in parts of Meghalaya, Manipur, and Assam, which has yielded positive results, is one such attempt. It focuses on livelihood improvement through resource management while optimizing the productivity of the jhum fields.

6.4 Horticultural research institutes

There is a need to establish institutes of high standing dedicated to research on horticultural crops unique to the region. An increase in skilled labor and expertise is crucial for the development of high-value horticultural produce and other value-added products. According to the North Eastern Development Finance Corporation (2003), horticultural crops occupy only 5.09 percent of the total land area of the region. There are 32 functioning food processing industries in the entire region, despite the abundant availability of horticultural crops.

6.5 Cash crop cultivation

In an effort to encourage permanent systems of cultivation the Mizoram Government introduced the New Land Use Policy in the early 1990s. Over Rs. 1.32 billion was spent to provide financial assistance to over 41,000 beneficiaries who opted for schemes such as cattle rearing, horticulture, cottage industries, cash crops, and terrace cultivation. The block development officers, with assistance from village-level workers, were responsible for ensuring effective utilization and implementation of the scheme. In 2000, with minor changes to the New Land Use Policy, the subsequent government introduced the Mizoram Intodelh Policy (Policy of Self-Sufficiency or Self-Reliance) with a similar objective of reducing dependency on jhum cultivation.

In Nagaland, where 45.3 percent of the forest area is under jhum cultivation (FSI 1999), Nagaland Empowerment of People through Economic Development (formerly known as Nagaland Environmental Protection and Economic Development), the Agriculture Department, and other allied government departments recommended the cultivation of cash crops in jhum fields to sustain and improve local incomes (NEPED and IIRR 1999, p. 24). At present, more than 60 percent of the households in Khonoma village are engaged in cardamom cultivation and the number is expected to increase.

Squash or *iskut* cultivation, a permanent system of agriculture practiced on a large scale in Sihphir village in Mizoram, is seen as a viable source of livelihood that helps reduce dependence on jhum cultivation. The Iskut Growers Association of Sihphir village in Mizoram has been involved in cultivation of squash on a large scale since the early 1980s and has been marketing it with relative success despite limited assistance from the government.

6.6 Changes in land use patterns

Financially profitable crops can represent an opportunity as well as a threat to local communities and their traditional land use patterns. While cash crops help to generate additional income for the household, they can also induce pressure on the species diversity of the jhum fields, including the indigenous varieties, potentially reducing the subsistence options for families.

Pressure on jhum lands is likely to increase market dependence. Though no comprehensive studies have been conducted on the impact of cash crop plantation, the increase in income could be short term. Since the fallow land is used for plantation there is little time for soil regeneration. Eventually, the land will no longer be able to support the cash crops (Poffenberger 2006). Traditionally, during the fallow period in the jhum fields, farmers tend the terraced rice fields, but cultivation of cash crops in the fallow land requires time and this has resulted in less attention being paid to terrace cultivation.

6.7 Ecotourism as a sustainable source of income

Ecotourism as a concept is sustainable tourism that focuses on minimal impact on the environment and local culture. The objective of ecotourism is to generate income that can be used for the benefit of the local community and to conserve the local biodiversity.

6.7.1 Ecotourism in northeast India

Tourism is regarded as a sustainable industry with a potential to return benefits to the local people. As an industry tourism is in its infancy, with less than 1 percent of the domestic and foreign tourists visiting the region. Most governments of northeast India are beginning to explore ecotourism as a potential and sustainable source of revenue. The rich cultural heritage, folklore, handicrafts, and ethnic diversity, as well as the rich and exotic flora and fauna, are being promoted as the attractive assets of the region.

One of the main factors that determines the success of a tourism project is the participation of the local community. Ecotourism offers an opportunity for local communities to earn additional income, as the industry can accommodate skilled and unskilled people. Tourism can help to create employment, either as a primary or as a secondary source of income, check migration from the villages, revive the arts and crafts, traditional customs, and cultural identities, and promote greater social contact and exchange (Khonoma Tourist Development Board 2004).

A comprehensive environmental and social impact assessment is vital for ecotourism projects. Formulation of a detailed strategy report can be used as a roadmap for the development of tourism in the region. As indicated in the case study on Khonoma village in Nagaland, a comprehensive environmental impact assessment was prepared by the Khonoma Tourism Development Board in 2004, which documents the rich flora and fauna in the village. This report, part of the Green Village project on ecotourism, is probably the first of its kind in the state.

6.7.2 Community participation in planning

Since the local communities are the main beneficiaries of ecotourism, they can develop a vision of, and a comprehensive framework for, the type of tourism that they want to be implemented in the region. Their involvement is crucial in the entire process of the project, from planning to the implementation phase.

For the Green Village project in Khonoma a sensitive approach has been taken in full consultation with the village community, which is involved in the entire planning and implementation process of the project. A community organization on tourism has been formed among the young people, who voluntarily join the group and are entrusted with different charges of the tourist operation (Khonoma Tourism Development Board 2004). Another group documented the biodiversity of the area. This is an encouraging attempt towards sustainable management of natural resources for income generation.

In Sikkim, ecotourism is identified as a sustainable industry to which priority is accorded.[1] The case study on Sindrabong village, of West Sikkim District, shows the transformation in the livelihood of nomadic yak herders, who gave up their unsustainable practice to take up ecotourism as a stable source of income. They were provided with training and assistance from the local nongovernmental organizations (NGOs). These communities offer ecotourism services such as home stays, trekking, and village tourism. In 2005–2006, a total of Rs. 582,030 went to the local communities living in three village clusters, of which 60 percent went to Sindrabong village. After permanent settlement in the villages, the pastoralists send their children to schools. The women have started stall-fed dairy farming, from which they earn Rs. 500 a month.

6.7.3 Infrastructural constraints

One of the main constraints to the promotion of tourism in northeast India is the weak infrastructure and poor connectivity – most states have no railhead or air connectivity and the highways are in dire need of repair. An Inner Line permit – introduced during British rule to protect the local communities from outsiders and issued by the state governments – is still required in certain states; there are debates regarding the need to retain this permit. The Restricted Area permit, which is issued by the Home Ministry, restricts the flow of tourists to the region. Further, the lack of basic services and facilities, such as transportation or communication systems, can be detrimental to a visitor's experience. Most tourist spots are located in the rural areas and outskirts of the towns and cities, but the poor transport facilities hinder the development of these sites.

[1] Sikkim governor's address at the inauguration of the budget 2005/2006.

6.7.4 Potential impacts

Tourism can also bring about some undesirable effects. It can dilute the cultural values of the local community and divert interests, particularly among the young people, from the traditional economy and society. Special care should be taken to inform the local community about the possible negative effects of tourism.

While tourism is often seen as a comparatively less destructive form of developmental activity that would return benefits to the local communities, there are doubts about its sustainability and the ability of the local conditions to handle the influx of outsiders and the resulting exchange of cultural experiences. In the Dzukou valley in Nagaland, a rich repository of biodiversity, there are reported signs of wanton human destruction and littering, which is likely to have a negative and long-lasting impact on the ecology of the region.

Few long-term studies have been undertaken of the impact of tourism on the livelihood and culture of a local community, but available studies have not indicated positive results (Kothari and others 1998). The potential increase in income and its contribution to the local economy could lead to environmental problems, rising demand and consumption, and a subsequent increase in garbage. The increase in cash flows could create greater inequalities within the community. Increase in demand for food is also likely to cause expansion in agricultural land and a subsequent increase in deforestation (Khonoma Tourism Development Board 2004).

7. Fostering partnership for livelihood improvement

Right at the initiation of a project, it is important to define in clear terms what is to be managed, based on interactive dialogue with the local people in order to understand their definition of well-being. There is a tendency among government agencies and planners to project their own priorities onto local people.

Government agencies need to define their level of involvement in a project – whether it is best left to the local communities to carry out the project and be in total control, to participate as facilitators or advocates, or retain control over the project, though in consultation with the local people.

7.1 Build on locally available knowledge and resources

A project has better chances of success and acceptability when it respects the local traditions and culture.

The major challenge for governments is in building upon and strengthening the existing traditional institutions, which have often been functioning effectively for many years prior to government intervention. This involves decentralization and the devolution of powers and responsibility to the community, while ensuring mechanisms for accountability are in place.

In projects that aim to generate local income there is a tendency to introduce technologies and concepts that are alien to the local people. Such projects have little chance of success as they are not likely to gain acceptance among the people. It also makes practical sense to utilize locally available resources in income-generating initiatives.

Possible technical training and assistance may be provided to the local farmers on maintenance and cultivation and value addition for their produce.

7.2 Building partnership with the local community

Most of the case studies reflect the significance of a strong partnership between the government and the local community for the success of a project. This has been observed in Tokpa Kabui village in Manipur between local people and the Loktak Development Authority in the restoration of 500 hectares of degraded forestlands belonging to the village, an important segment of the catchment of Loktak Lake. Similarly, in the IFAD initiative government line departments were instrumental in helping the local people to achieve the project's objective of restoring degraded forestland, optimizing the use of jhum lands, and increasing livelihood options. In the Joint Forest Management initiative in Boxanagar, Tripura, the Forest Department was able to transform the local people from being forest exploiters to forest custodians.

7.3 Engaging religious institutions in resource management

In some states, governments can engage with the Church to carry out certain developmental activities and other social works. The Church has a strong influence in many of the northeastern states of India. In Nagaland, the Church is part of the ongoing peace negotiation with the insurgents; as mentioned earlier, in Tuensang District, Nagaland, the Church is the primary agent of change in dealing with the HIV/AIDS problem. As observed in the case study on Tokpa Kabui village in Manipur, the Church plays an important role in village affairs. In some states, church leaders also hold important positions in the government and in political parties. In Mizoram the Presbyterian Church, under the Social Welfare Department, is involved in a host of social issues, including the campaign on self-sufficiency.

7.4 Government facilitation for market access

While the state governments have been instrumental in promoting the use of cash crops (to improve local income and to discourage jhum cultivation), they have been slow in providing market linkages for agro-based products. This is a major constraint for communities that are currently experimenting with and investing in cash crops. Since farm produce has a short shelf life, it needs to be transported to the market with little delay.

As observed in most of the case studies, several obstacles had to be overcome to gain market access. Some of the common constraints for the local communities were lack of market access, poor transport, deficient storage, and lack of possibilities for value addition for the produce. As a result, farmers were compelled to compromise on price, with small or marginal profits leading to unsustainable outcomes and insecurity.

A careful and sensitive approach – from planning to the marketing stages of the cash crops – can help to reduce dependency on the jhum system of cultivation. One significant feature observed in the IFAD project in the West Garo Hills is the emphasis on infrastructure building and improving communication networks between villages and towns and markets outside the villages where the project is implemented.

On the part of the government, providing services for marketing produce and infrastructural facilities, such as roads and transportation, are necessary to gain optimum potential from the resources. It should seek to provide a proper and formal channel to market the local produce. This would significantly reduce their dependence on the intermediate traders and contractors.

Providing opportunities for value addition, particularly for the rural population, would greatly help to increase the income of the communities. Small-scale processing units can be set up at the grass-roots level by utilizing the locally available raw materials and creating employment opportunities for the local people. Some state governments have been providing support by supplying poly houses and saplings, and sponsoring trips to floricultural exhibitions in India and abroad. A buy-back system could be arranged for the producers.

7.5 Empowerment of communities in resource generation

Most of the case studies reflect the ability of communities to generate their own resources. However, it may be necessary to provide necessary technical or financial support at the initial stage of a project. At the same time, the project will have to be able to stand on its own and be self-sufficient after the withdrawal of the facilitating or funding agency.

The case studies provide examples of a diversity of livelihood sources, ranging from self-funded ones to those assisted by external agencies. In the case of squash growers in Sihphir, Mizoram, the local communities earn their livelihood with little or no assistance from the government. At the same time, other communities started their initiatives with assistance from the government or NGOs, as observed in Tokpa Kabui village in Manipur, which received financial assistance from the Loktak Development Authority; the Sindrabong community in West Sikkim, with assistance from The Mountain Institute, an international NGO, and the Forest, Environment, and Wildlife Department; the Joint Forest Management initiative between the local people, NGOs, and the Forest Department in Boxanagar, Tripura; and the IFAD project in the West Garo Hills in Meghalaya.

Conservation strategies may be best left in the hands of the local communities, who are most knowledgeable about the locality and the value of the natural resources in the area. Boundary disputes are common among communities, as seen in the West Garo Hills in Meghalaya and Khonoma in Nagaland, and there are no clear demarcations between villages. Boundaries are marked by landscapes such as brooks or ridges or depressions. As noted in the Khonoma case study, one method of resolving this problem is an agreement between neighboring villages to set aside disputed land for regeneration, which could in turn help to increase forest cover. It is also important to promote intervillage cooperation to ensure effective conservation.

Due to the negligible presence of the private sector thousands of students who graduate every year from academic institutions seek employment with the already bloated bureaucracy. These students can be introduced to entrepreneurship courses as part of their syllabus so that they can start enterprises utilizing various agricultural and natural resources, making them employment providers rather than employment seekers (Abdul Kalam 2005).

7.6 Adopting a flexible approach in project implementation

Outsiders have a tendency to overlook the diversity and complexity within local communities. The undercurrents and nuances in a society, even with the best of intentions, may not be gauged or appreciated. It is important to note that communities are far from homogeneous and any program or scheme initiated in the region should be tailored to meet the specific needs of the diverse peoples in the region.

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Appendix A. The self-help group movement in Assam

Nava Thakuria[2]

Preface

The Swarnajayanti Gram Swarozgar Yojna (SGSY) was launched in April 1999 by the Ministry of Rural Development (Government of India). It was primarily launched with an aim to eradicate unemployment problems and give economic assistance to the rural poor and disadvantaged peoples. The SGSY aims to establish a large number of microenterprises in rural areas, building upon the potential of the rural poor. It is rooted in the belief that the rural poor in India have competencies and, given the right support, can be successful producers of valuable goods and services. The assisted families may be individuals or self-help groups.

The SGSY, which is a holistic program covering all aspects of self-employment including organization of the poor into self-help groups, training, credit, technology, infrastructure, and marketing, is a concept borrowed from the successful Self-Help Group Linkage program of the National Bank for Agricultural and Rural Development (NABARD), which provides microcredit to the rural poor in general and women in particular.

The SGSY is a centrally sponsored scheme emphasizing a group approach, whereby rural people are encouraged to form self-help groups of families below the poverty line. The poor people are inspired to undertake income-generating projects with the conviction that they have potential equal to other members of society.

The government releases the funds directly to the district rural development agency, which is primarily responsible for implementing the program. After formation of the self-help groups, the members are trained in undertaking economic activities through bank loans and also asked to open bank accounts in the nearby branches of nationalized banks or regional rural banks.

A self-help group is defined as a group of rural poor who volunteer to organize themselves into a group for eradication of poverty among the members. They agree to save regularly and convert their savings into a common fund known as the group corpus. The members of the group agree to use this common fund and such other funds that they may receive as a group through common management. Under the SGSY, a self-help group generally consists of 10 to 20 persons. The group devises a code of conduct (group management norms) to which the members are bound. Regular meetings (weekly, fortnightly, or monthly) are held, functioning in a democratic manner and allowing free exchange of views and participation by the members in the decisionmaking process. Initially the members build their corpus through regular savings, recognized as the group corpus fund. This is then is used to provide loans to the members. The groups develop financial management norms covering the loan sanction procedure, repayment schedule, and interest rates.

Around six months later, a self-help group is examined for its maturity to receive a sum (around Rs. 10,000) as a revolving fund. After completion of the grading test, the group is recognized as eligible to receive a sum (normally Rs. 15,000) from the banks as loan. Once the group shows its creditworthiness in repaying the amount, it is asked to undertake economic

[2] Nava Thakuria is a journalist based in Guwahati, Assam. Phone: 98640 44917. Email: navathakuria@yahoo.com.

activities and bigger bank loans are provided. Besides loans, the self-help groups are also assisted with subsidies under the SGSY.

The last annual report of the Ministry of Rural Development revealed that over 3 million self-help groups had been formed in India, with around 100,000 groups undertaking different economic activities such as handicrafts, mushroom growing, pig rearing, dairy farming, mechanized agriculture, and *rabi* crop growing. A cumulative number of 500,000 self-help groups were credit linked with the banks, covering more than 15 million rural poor families. The program is being implemented in all the states and union territories, spread over 488 districts. Altogether a sum of Rs. 10.26 billion has been provided as bank loans to self-help groups, against which NABARD had provided refinance assistance of Rs. 7.97 billion to banks by the end of March 2002. The goal of NABARD is to credit link around 1 million self-help groups with the bank by 31 March 2008.

Government figures indicate that in Assam, over 100,000 self-help groups have so far been formed, involving nearly 1.5 million poor families, or around 20 percent of the total population of Assam. State Institute of Rural Development statistics disclose that 2,253 self-help groups have had loans sanctioned by different banks in the last two financial years, with a sanctioned amount of Rs. 230 million.

Aditya group initiative in upper Assam

The Aditya self-help group is a vibrant example of how a small band of men and women changed their lives, and those of other people, by simply organizing themselves and investing in their farms. Formed in July 2002, the group is based at Golaghat (Gomariguri development block) in upper Assam, a region known for flood hazards due to the untamed Brahmaputra River. This area, like other parts of the Northeast, does not boast a strong industrial base, except for the oil companies based in the Brahmaputra valley in eastern Assam. Farming is therefore the mainstay of the people.

The landscape is predominantly rural, and most of the inhabitants are cultivators. The primary crop is rice (mostly cultivated once a year). Deprived of many facilities, including health, education, and economic avenues, villagers mostly represent the lower middle class and annual income is low. Merapani, on the Assam-Nagaland border, is the nearest urban area to the locality. The district headquarters is located at Golaghat, about three hours away by bus. After Golaghat, the next important town is Jorhat. The state capital, Guwahati, is an overnight bus journey (over 300 kilometers) from the locality.

The self-help group began when 13 young men and women of the area decided to market their agricultural produce together. This decision not only helped them cut transportation costs but the larger product base gave them better leverage in the market. This joint venture, though unplanned, soon started showing results. Previously, individual farmers used to produce significant amounts of crops, but most of the produce was sold at low prices in the local markets. The demand in the local markets was, and still is, typically low. Intermediate traders took advantage of the situation (abundant production but low demand) by buying the produce at cheap prices and gaining benefit by selling it in the large markets in Jorhat, Dibrugarh, Tinsukia, and Guwahati.

The Aditya group decided to transport the produce to those larger markets with higher demand. Initially they transported the produce to nearby towns and sold to wholesalers, to the benefit of the group members. Soon they started to negotiate with traders based in Jorhat,

Dibrugarh, and Tinsukia to sell their produce in a regular manner. Today, the group has its own representatives in these towns to manage sales and to take orders from the big buyers. The group can now supply according to demand in the bigger markets, and their returns have increased significantly.

As they progressed in this manner, an official from the district Rural Development Agency, Golaghat, told them about the benefits of forming a self-help group formally, as defined by the SGSY. The idea looked interesting to the group and they kicked off their self-help group by opening a savings account at the Assam Gramin Vikash Bank.

The group's first capital investment was a tractor. It proved to be a good decision because it served a dual purpose. First, the tractor helped them till their land better and they could start growing paddy, mostly sali (a kharif rice cultivated in the summer season). The quantity produced was also good because this particular zone is not a flood-prone area, unlike other parts of upper Assam.

Second, the group started renting out the tractor to other farmers of the area at a nominal charge. With the extra earnings and another bank loan they soon bought another tractor. Around the same time, the group also started diversifying into new products that had a good market in the area, such as tomato, capsicum, cabbage, ginger, and other vegetables.

Until now their land had remained fallow in the winter because they did not have enough capital to invest in any new crops. As the group started profiting, they decided to plow back a part of their profit to grow rabi crops (cultivated in the winter season).

Today, four years after they started off, the products of the self-help group are marketed in various parts of the region, including Tinsukia, Merapani, Jorhat, and Guwahati. Their products have carved a niche in the region and are sold under a brand name – Aditya Vegetable Products. "Now we are well recognized in the markets, we try to maintain the quality of the products", said Durgeswar Saikia, a member of the group.

The group today owns two tractors, a mini rice mill, shops dealing in fertilizers and pesticides, and a broiler farm. "We had transactions worth over Rs. 85 lakh [8.5 million] in the last financial year. The estimated net profit has been around Rs. 3 lakh [300,000]", Mr. Saikia said.

Along with enjoying the benefits of its success, the group also helps other farmers of the region. They buy products from other farmers and market them under the Aditya Vegetable Products brand name. For farmers this has proved to be a boon because now they do not need to market their produce individually and are also assured of a minimum support price for their products. This system has worked out so well that over 500 families in the locality use the self-help group.

As a part of community service, the group often tills the land of poor farmers and widows free of cost. "Our tractors are hired by other farmers. Sometimes, we prepare the land of poor people and widows with the tractor. We only charge for the fuel but often we do it absolutely free", said Biren Saikia, adviser to group.

Despite their success, the group is facing some problems that are inhibiting its growth. Irrigation facilities in the region are almost nonexistent. "We have to depend on rainfall. For small amount surface water, we use our ponds", Mr. Saikia said. He strongly argues for a groundwater irrigation arrangement and if that is not possible, given the topography of the area, then surface water should be transported from the hill springs.

The SGSY has inspired the self-help group. The SGSY was launched with an aim to eradicate unemployment, give economic assistance to the rural poor, establish a large number of microenterprises in rural areas, and build upon the potential of the rural poor.

For expanding their business, the group has received Rs. 10,000 as a revolving fund from the district Rural Development Agency, Golaghat. They also took a loan of Rs. 25,000 from the bank. With that and a subsidy of nearly Rs. 100,000 they purchased the second tractor. Now they are planning to buy a truck so that they can transport a larger quantity of what they produce to the market in one go, especially during the peak season. This will be an important move to strengthen their supply chain management. "Since we have no facility of cold storage here, it is essential to dispatch the products to the market as soon as possible. Otherwise, they can rot", asserted Nandeswar Saikia, another member of the group. The young entrepreneur also added that to prevail over this problem, the group is planning to start a cold storage facility for the benefit of the farmers in the locality.

Taj Mahal initiative

Inspired and encouraged by a local NGO, the North East Development Organization (NEDO), 10 Muslim women and their families joined forces in 2003 to start a self-help group, the Taj Mahal Atmasahayak Got.

This has become possible because of a mini food processing unit. The unit, started with a nominal investment of Rs, 1,000, has also become a meeting ground and a place of exchange of ideas for these women, who before joining the self-help group did not have much exposure to life outside the four walls of their homes.

Mumtaj Begum and her team, Shajeda, Shaniara, Fatema, Aasia, Aajiron, Najima, Jarina, Delwara, and Mirana, are residents of Kathalartari village in Barpeta District, lower Assam. The self-help group produces a range of jams, pickles, fruit juices, and vinegar under the brand name Taj Mahal.

The members of the group meet every first week of the month to discuss sales, production, and their future business plans. On this day they also contribute Rs. 20 per head to their corpus fund at the local branch of the Assam Gramin Vikash Bank. "Mumtaj Begum and her team were very positive and enthusiastic. We suggested to them to apply for a bank account because this was mandatory if they wanted to take advantage of government schemes", says Jayanta Das of NEDO, which helped the women to come together as a group.

The women then approached the nearest branch of the Pragjyotish Gaonlia Bank (now renamed the Assam Gramin Vikash Bank) at Howly. Though the women were initially hesitant about taking loans because they had no previous experience in such transactions, they soon began considering it as an income-earning opportunity.

"Raw materials (fruit) are available in our area. We collect the material with very small investment. Very often, we personally go out for collecting the fruits. Sometimes, we take help from the male members of our families. In some cases, other villagers sell the raw fruits to us at a cheaper price. Then we process it in our unit according to the demands of the market", says Mumtaj Begum, the lady behind the success of the industry.

Mumtaj, a mother of three, not only invites the other women to work in the unit, but also conducts the process. The food processing is a labor-intensive exercise. From collecting the raw materials to production of the final products, much care is needed in order to maintain quality.

"We have stocked our products for the last few weeks. Once the flood season is over, we will go for marketing and get the money back with handsome profit," says a confident Mumtaj.

The earnings from the self-help group have ensured two square meals a day for the women and their family. A result of this initiative by the women has been a change in the attitudes of male members of their families. Most of them daily wage earners, these men recognize the contribution that the women make to the family income. Women now take an active part in planning and deciding on issues within the family. A few years ago this would have been unthinkable.

Thanks to their hard work and enthusiasm, the self-help group was awarded a loan of Rs 50,000 by the bank. Fifty percent of the amount released by the bank was subsidized, which is identified as financial assistance from the government. The group has already repaid the initial investment. Now they possess a unit worth Rs. 50,000. The average income of the unit has reached Rs. 5,000 per month. The income is shared between each and every member of the group of 10 women. For these poor village women, a monthly income of around Rs. 500 is a big achievement. They now hope for increasing income and imagine a better future.

Encouraged by NEDO, the Taj Mahal self-help group has recently applied for another bank loan of Rs. 200,000 to 300,000. With this they plan to set up a marketing stall in the nearby town of Howly, where they would put their products on sale.

At the same time, they are planning to buy a machine to prepare and grind the seeds of mango, blackberry, amlokhi, and jalphai. "You know, these seeds have tremendous demand in the market because they are used for treating different chronic diseases", says Mumtaj. To keep a continuous supply of raw materials for their industry in future, the group has already planted seeds of these useful fruits at their homes.

In response to a question asking if she had experienced any social stigma because of her notable initiative as a Muslim woman, Mumtaj that initially it had been difficult. The women did not get the opportunity to come out of their family boundaries to discuss some group economic issues. Moreover, they had to face other problems, as the male members often opposed the women leaving the home to attend meetings. But slowly, Mumtaj grew in confidence among the members. She argued that the self-help group activities would bring direct economic benefits to the families. Slowly, the women were able to convince their family heads regarding the advantages of the group. Meanwhile NEDO officials, who are visible in many parts of Barpeta District, went on campaigning for self-help income-generating activities among the poor villagers. They helped inspire the village women in particular to form self-help groups to obtain the advantages of the government scheme, launched for the benefit of families below the poverty line throughout the country.

Now Mumtaj is very confident and hence she has a brave and smart answer to those who question her involvement in the scheme. "My husband and sons are supporting me. Even our members enjoy the support from their families. Then whom else should we care for?" says Mumtaj.

Footnote

A life of dignity is the right of every citizen. However, poverty is a major obstruction to a dignified life. Self-employment is a significant step towards sustained income and removal of the shackles of poverty. The self-help group movement can help the poor people in general and

women in particular in this respect. This is especially the case in Assam and the Northeast, as the region is facing massive problems of unemployment, due in part to the prolonged insurgency in the region, which may be addressed through economic development.

A stable and sustained income flow is very important for a family. Once the poor (and women) start earning, they will feel increased responsibility to their families and to society. It will also help them to nurture their children in a peaceful environment. Moreover, the women will be able to play an increased role in family-related issues. Thus, the self-help group movement, which encourages disadvantaged people to undertake income-generating activities using the natural resources available in the region, carries great potential at this moment.

Persons consulted

Mr. Durgeswar Saikia, member of Aditya self-help group, Gomariguri development block, Golaghat, upper Assam. Mobile: 9435154813.

Mr. Jayanta Sharma, member of North East Development Organization, Barpeta Road, lower Assam. Tel: 03666 262141.

Ms. Mumtaj Begum, member of Taj Mahal self-help group, Kathalartari village, Barpeta District, lower Assam.

Mr. Biren Saikia, adviser to Aditya self-help group, Gomariguri development block, Golaghat, upper Assam. Mobile: 9435154820.

Appendix B. Community forest management and sustainable livelihood: Tokpa Kabui, Manipur

Salam Rajesh

Background

Tokpa Kabui village, located in Henglep subdivision of Churachandpur District in Manipur, is a small village with an approximate population of 500 individuals in 44 households. Predominantly Christians by religion, the villagers belong to the Rongmei tribe, one of the scheduled tribes of the state. The village is located around 37 kilometers southwest of Imphal, the capital.

Tokpa Kabui village is strategically located on the leeward side of the Thangjing-Loiching range (800–1,200 meters in height) which forms an important watershed for Loktak Lake, a designated Ramsar site of international importance, and Leimatak River, an important tributary of the Barak River system, which drains into the Brahmaputra River in lower Assam. The location of Tokpa village's forestlands within the Ningthoukhong microwatershed adds significance in the context of the conservation of microwatersheds in the Loktak catchment for the overall treatment of Loktak Lake, which is threatened by siltation, eutrophication, and changes in the hydrological regime induced by human activities. The total catchment area of the lake is approximately 980 square kilometers.

The institutional structure of the village involves overall supervision and control of village affairs by the village authority, with the village head as its chair. A secretary and supporting members run the village authority. The traditional institution is the *thoubei*, which is composed of village elders and heads of clan families. The thoubei is important in settling issues within the village structure that cannot be settled by the village authority. Other social organizations in the village are the Zeikuluang Baptist Church Organization, Tokpa Women's Organization, Zeikuluang Educational Sporting Development Organization, Tokpa Nature Club, and Loktak Watershed Development Society. All welfare programs and social activities are jointly discussed and worked upon by the village community. The Church also plays an important role in village affairs.

The community largely depends on forest resources and crop plantation for its livelihood and sustenance. The primary sources of income of the villagers are traditional agriculture and farm activities. Income is generated from the sale of locally produced cash crops such as *Parkia* (tree bean, or *yongchak*) and banana. Other sources of income include horticulture, pig rearing, and some employment in government jobs at lower levels. There are also supply contracts with field offices of the National Hydroelectric Power Corporation located at Kom Keirap, and the Loktak Development Authority located at Ningthoukhong. Community involvement has largely been enabled by limited funding from the Loktak Development Authority as a process of its Loktak catchment treatment activity under the Global Environment Facility program. Asem Bidyabhusan, scientific officer with the Loktak Development Authority, has been at the center of the initiative.

The community initiative involves both natural and added regeneration of the forestlands located in the Ningthoukhong microwatershed, and simultaneously finding means and ways to provide alternative or supplementary livelihood options to minimize pressure on the forest

resources. At the same time, an end target is the total participation of the community, particularly the young people, in motivation towards general awareness and appreciation of the conservation initiative so that replication of the successful model can be introduced in the neighboring villages that share common boundaries and are equally responsible for the healthy regeneration of the Loktak catchment.

Towards conservation and sustainable livelihood

Loktak Lake is the largest natural freshwater lake in eastern India. The conservation and preservation of the lake is an issue of regional and international concern. The government has a major program towards this end, yet it has not been able to achieve much to date. In such circumstances, small efforts at the grass-roots level towards providing solutions to the problem are creditable.

The community involvement under study is focused towards conservation of Tokpa Kabui village's forestlands located in the Ningthoukhong microwatershed, an important segment of the western catchment of Loktak Lake, and achieving alternative or supplementary livelihood options, for example creation of water bodies for aquaculture, inducing regeneration of forest, encouraging return of wildlife, and other allied activities such as a welfare program in the village with funds generated from the sale of fish and other produce. Finally, a move will be made towards replication of the initiative in the neighboring tribal villages.

The conservation initiative started earnestly around 1999–2000. The effort was required to meet the challenges of the adverse impact in the Loktak catchment of anthropogenic activities such as large-scale deforestation for jhum cultivation and timber logging. Human impact in the catchment hills, particularly through the practice of slash-and-burn cultivation, and recently rotational bush cultivation, had degraded large areas, leaving few trees standing and inducing massive topsoil runoff and consequently a great increase in the silt load being deposited in Loktak Lake. It was estimated by the Delhi-based firm WAPCOS in 1988 that around 336,326 metric tons of topsoil are brought down annually from the catchment by the feeder streams into the lake.

The approximate total area under the present initiative is around 500 hectares of forestlands belonging to Tokpa Kabui village, primarily secondary forest with mixed deciduous and semi-wet evergreen vegetation types. The Ningthoukhong subwatershed has a total area of 1,281 hectares. The total land cover in the Loktak catchment, covering 20 catchment microwatersheds, is 15,015 hectares. Of these, the Turelu, Thongjaorok, Ngariyan, and Ningthoukhong microwatersheds are the largest. There are roughly 36 feeder streams that flow directly into Loktak Lake from its western catchment.

The stakeholders are the Tokpa thoubei (traditional village council of elders), Tokpa village authority, Tokpa Nature Club, and youth and women's organizations. The Tokpa Nature Club, with around a hundred members, is the backbone of the initiative. Women, both married and unmarried, take an active part in the process, such as involvement in tree plantation, checking dam making, raising pigs, farming, and taking part in the village welfare programs taken up by the Nature Club or other village organizations.

The Tokpa Nature Club has a good understanding with the village authority on the conservation initiative. The village authority has given great encouragement to the young people by allowing them to utilize the village commons for their activities.

The current focus is on water harvesting, natural and added regeneration, wildlife protection, alternative livelihood options, and legal protection of the village forestlands.

Selected trees, including uyung (*Quercus serrata*), pareng (*Alnus nepalensis*), uchan (*Pinus khasiana*), wang (*Gmelina arboria*), and yongchak (*Parkia roxburghii*), are planted for added regeneration. These tree species are planted to provide for fuelwood requirements and as a cash crop to supplement livelihoods, as well as with the purpose of minimizing pressure on the forest. Trees such as alder are fast growing and suitable for pollarding, therefore providing fuelwood for the villagers. *Quercus* is also good for pollarding. *Parkia* beans are highly relished by the locals and there is a good market for this cash crop.

During 1999–2000 the Tokpa Nature Club members developed a water harvesting component near the village by constructing earthen and vegetative check dams along a hill stream course. A water body measuring 6 meters by 18 meters was the result of their effort. Club members took up pisciculture in this water body with the purpose of harvesting a fish crop to yield revenue for their welfare programs and other activities.

The follow-up course of action is to enlarge the scope of activity by increasing the area of conservation from around 500 hectares to around 1,000 hectares by replicating the success example in neighboring villages, including Sadu, Kha-Aimol, and Ngariyan.

Achievements

The community participation in conservation of the forest ecosystem in the Loktak catchment has yielded visible end results, both tangible and nontangible. The full involvement of the community in the conservation effort has brought back life to the once highly degraded hill range. Also, the community initiative has brought into shape a fairly well-developed partnership between the conserving community and a government agency, the Loktak Development Authority.

A tangible benefit of the community conservation initiative is the large area under tree cover in the once degraded forestlands. There are pockets of fairly dense forest cover in the Ningthoukhong microwatershed today, which is a very good example of natural regeneration. Planted tree species such as alder, *Quercus*, and *Gmelina* have served multiple purposes: pollarding provides fuelwood for the villagers without killing the trees; and leaves shed from alder and *Quercus* act as good agents for nitrogen fixation in the topsoil, thus enriching the soil. The survival capability of alder and *Quercus* in the event of forest fires is quite high, and so these tree species are appropriate for cultured regeneration of forestlands.

Water harvesting is also a tangible benefit of the community conservation initiative. While serving the purpose of checking silt load runoff, water harvesting in depressions has benefited the community with a productive fish crop. In October 2001, the Tokpa Nature Club harvested the fish crop and yielded a net profit of around Rs.15,000 (over US$300), which is by their standards a major dividend considering the minimum investment. In the coming years they expect to harvest fish crop worth around Rs. 150,000 (over US$3,000) from two aquaculture ponds.

The dividends from aquaculture have paved the way for successful ventures such as restocking of fish in the water bodies, setting up of a workshed for the women's society in the village, provision of raw materials (yarn and wool) to the women in the village with funds generated from the fish culture ponds, and the award of incentives to deserving school students. The

workshed provides space for the women to weave cloth on a loom, and to learn embroidery and wool knitting to supplement their earning capabilities. The Nature Club proposes to award Rs. 2,000 each to students who pass the high school leaving examination with first class marks.

Water harvesting has also encouraged healthy rejuvenation of the vegetation cover in the surrounding areas, inducing fast-growing trees and plants to flourish. This naturally results in good growth of the secondary forest, which has mixed deciduous and semi-wet evergreen species.

An important nontangible benefit of the initiative is the healthy regeneration of the forest ecosystem and the gradual return of wildlife that had been considerably reduced due to degradation of the forestlands and rapid degeneration of the forest ecosystem. The conservation area now has a wide variety of wildlife, including small mammals such as barking deer (*Muntiac munjak*), wild boar (*Sus scrofa*), hog badger (*Acronyx collaris*), and common otter (*Lutra lutra*); primates such as the slow loris (*Nycticebus coucang*); reptiles such as the water monitor (*Varanus salvator*); avifauna such as pond heron, egrets, hawks, bulbuls, and owls; and floral species such as medicinal plants and terrestrial orchids. Around 51 species of trees, 35 species of herbs, and 17 species of bamboo and grass have been recorded from the area.

An important impact of the initiative has been the direct involvement of the villagers, particularly the young people, in the protection of wildlife. Where once guns and slings were common sights and hunting was prevalent, the young are now quite enthusiastic on wildlife conservation. Hunting and trapping of small mammals and birds have certainly been reduced to a large extent. Children have been motivated not to carry slings or to shoot birds in that area. With the help of the Nature Club, several species, including hog badger, slow loris, water monitor, and owls, have been safely released in the conservation area.

The success of this community involvement in conservation of an important microwatershed has opened the possibility of declaring the area a community reserve of certain importance under the Wildlife (Protection) Act (Amended) 2002.

Constraints

Tokpa Kabui village was earlier located in the uplands. The original village was completely razed to the ground during ethnic turmoil in 1992–1993. Rebuilding started at the present location in 1992, and it has taken much effort by the villagers to reconstruct their lives and homes. The lack of resources has been a major constraint for the villagers in taking up any form of welfare and other social activities, not least the conservation effort.

The community initiative in conservation of their forestlands faces several hazards, for example bushfires lit by local hunters or firewood gatherers from neighboring villages. It requires the village community to be vigilant during the dry season, particularly during January and February when there is strong wind and during March and April when it is exceptionally dry and warm, and sometimes windy. Lack of funds to pay daily wages or appropriate remuneration to villagers for fire line cutting and burning hampers timely intervention to control bushfires. Fire line cutting and burning needs to be started by late November to be completed before the onset of the strong westerly winds in February and March.

There is a constraint in expanding the activity area in the form of boundary disputes with neighboring villages. Normally there are no clear-cut boundaries between villages other than a mutual understanding on boundaries marked by certain landscape features such as brooks, hill

ridges, or depressions. There is a tendency for disputes to arise out of activity by a village in forestland that is claimed by another village. The solution lies in bringing about an understanding between neighboring villages on coordinating work on common activities, particularly in forestlands belonging to different villages that are contiguous over a large area.

The lack of resources, equipment, and facilities for taking up activities such as making terraced paddy fields and checking dams also hampers efforts to make progress with the initiative. A combination of wet rice cultivation and pisciculture in terraced fields could provide means of supplementing food sources, but the construction of terraced fields is a huge task for villagers who live at the marginal line.

The lack of markets for local produce can also be a deterrent in taking up horticultural activity at a large scale as a livelihood option for the community. There is a need for building up market links to sell the produce. This would encourage the villagers to turn their attention from tapping the forest resources towards horticulture and other agro-based farm activities, thus building up their earning capabilities.

Prospects

There is a huge scope for replication of the Tokpa initiative in the other tribal villages located along the range of the Loktak catchment in the larger context of conserving this very important landscape. This, in its totality, could be a strengthening factor towards the general effort in conserving Loktak Lake. The relative closeness of the location of Tokpa village to National Highway 150, which run along the Imphal-Bishnupur-Churachandpur route, promises a viable market if some form of cold storage facility is available in Bishnupur District headquarters, which is the next stop from Ningthoukhong town. Government support in infrastructure and agro-based activities could encourage Tokpa and other neighboring villages to take up farm activities that would strengthen their earning capability and subsequently improve livelihood options, while at the same time minimizing pressure on forest resource use. Government agencies such as the Loktak Development Authority, Forest Department, and Environment and Ecology Office can take up this case as a role model towards replication of the initiative in other hill villages.

Persons consulted

Jonathan, Secretary, Tokpa Nature Club, Tokpa Kabui village.

Athui, Tokpa Nature Club, Tokpa Kabui village. Tel: 953879209231.

Asem Bidyabhusan, Scientific Officer, Loktak Development Authority. Residential address: Keisamthong Hodam Leirak, Imphal 795001. Tel: 0385 2441870.

Padigmei, Secretary, Tokpa Kabui village authority, Henglep subdivision, Churachandpur District.

Appendix C. Livelihood-based biodiversity conservation: West Garo Hills District, Meghalaya

Bidhayak Das

Background

Daribokgre village, located in West Garo Hills District in Meghalaya, is a small hamlet with an approximate population of 800 individuals in 100 households. Predominantly Christian by religion, the village is dominated by the Garo, one of the major tribes of the state of Meghalaya. The village of Daribokgre is situated at an altitude of 1,400 meters above sea level adjacent to Nokrek National Park. Located at a distance of 40 kilometers from the district headquarters of Tura town, the villagers have to trek a distance of 11 kilometers along a *kacha* (dirt) road from the main highway to reach the main town. The village is in an important location, in that it acts as a buffer zone for the Nokrek National Park, the highest point of the Garo Hills region of the state. A virgin canopy of thick, tall, and lush green forests covers Nokrek and its environs. The mother germ plasm of *Citrus indica* has been discovered by science researchers within the Nokrek range. This discovery led to the establishment of the National Citrus Gene Sanctuary-cum-Biosphere Reserve at Nokrek, covering an area of 47 square kilometers. All important rivers and streams of the Garo Hills region rise in the Nokrek range, of which the Simsang River, known as the Someshwari when it flows into Bangladesh at Baghmara, is the most prominent.

The location of Daribokgre forestlands within the Nokrek range is of great significance as it contributes to the preservation of some of the rare species of citrus endemic to this citrus gene sanctuary, besides catering for the protection needs of the catchments, which are considered threatened by hunting, jhum cultivation, eutrophication of water bodies and rivers, and overexploitation of nontimber forest products.

The Garo or Achik, the tribe inhabiting the Garo Hills, are a matrilineal community which had a technoeconomic organization heavily dependent on the forest and forest products, which they believed were inexhaustible and could be utilized in an uncontrolled way. According to customary law the forests were under the control of the *nokma* (the local chief or head) who could regulate extensive use of forestlands for jhumming. Most of the land in the hilly portion of the Garo Hills belongs to particular clans and is known as *akhing* land. The akhing land belongs to the clan but is under the control of the head of the clan, the nokma. Though theoretically the nokma is a female, in actuality the akhing land is managed and controlled by her husband on her behalf. The land tenure system in the Garo Hills is that of the community under the custodianship of the nokma. The autonomous district councils too exercise control over land and forest.

While the traditional system of governance over land continues to be managed by the nokma and the district councils, including in the case of Daribokgre village, other social organizations, NGOs, and government-aided development agencies also play an equally important role in the management of natural resources to improve the livelihoods of the communities residing in the village. These organizations include the Daribokgre Village Development Authority, Garo Mother's Union, International Fund for Agricultural Development (IFAD), West Garo Hills Community Resource Management Society, Knowledge Networking for Rural Development in

Asia-Pacific Region (ENRAP), and Church-based organizations. Most of the welfare programs are discussed openly between organizations that are involved in community forest management and conservation of natural resources.

In Daribokgre and surrounding hamlets the community largely depends on forest resources, especially nontimber forest products and jhum agrobiodiversity for livelihood and sustenance. Traditional methods of cultivation were a major activity on which the farmers and the communities depended for their income. The local populace derive income from selling crops such as brinjals, chilies, cowpea, flat beans, okra, maize, seral seeds, pumpkin, cucumber, yam, and other gourd family seeds, which are grown seasonally with changes in the monsoon cycle. Other sources of income include systematic plantation of medicinal herbs, horticulture, fisheries, pig rearing, floriculture, and some employment with the block offices of the different government departments. Community involvement has largely been initiated by the West Garo Hills Community Resource Management Society through an IFAD project under the Ministry of Home Affairs, Government of India.

The participatory approach in the community initiative is aimed at regeneration of forests and natural resources, including the aquatic fauna of the Simsang River, which runs close to the village, and the Nokrek Biosphere Reserve. The aim of the intervention is to bring about a change in mind set that encourages introduction of improved jhum practices and creates adequate space for generation of alternative or supplementary livelihood options in order to reduce pressure on forests. The project stresses the need for collective responsibility through formation of natural resource management groups and self-help groups to assist sustainable economic growth of the community. Involvement of various organizations and village-based groups, especially women, have ensured that the initiatives have the potential not just to provide basic livelihoods but to open up other avenues of income, through social awareness and education. The impact of some of the success models in Daribokgre and other nearby villages, including Sasatgre, Rombagre, and Chokagre, has been felt also in other nonproject villages. Significantly, land use planning and biodiversity conservation have also been enhanced through the promotion and use of a participatory three-dimensional model. Sasatgre is an example of a location where the model has benefited the communities in biodiversity conservation and land use planning.[3]

Engaging communities in livelihood-based resource building and conservation

In a place where an important biodiversity center, the Nokrek Biosphere Reserve, is situated, destruction of forests and pollution of water bodies has forced both man and nature to the brink of disaster. The Simsang River, which flows along the catchments next to the reserve, had suffered due to destructive human activities, including use of poisonous substances and explosives for fishing, and destruction of surrounding forests for shifting agriculture and commercial purposes, leading to siltation as runoff from the denuded hillsides deposited soil into the river. These factors, coupled with other challenges such as the absence of developmental role models for upland areas, poor delivery by government and other service

[3] Participatory evaluatory documentation by IFAD, ENRAP, and village communities.

agencies in the region, and social unrest related to insurgency and ethnic aspirations, contributed to the hopelessness and insecurity felt by many people.

Given that similar situations existed throughout the region, the Government of India and IFAD developed the Northeastern Region Community Resources Management Project for Upland Areas. The project was initiated at the critical juncture of the end of the 20th century and the dawn of a new millennium, at a time when there was a great need to usher in new hope and an innovative development role model for the people and the region. The North Eastern Council and the Ministry of Development of North Eastern Region (MoDONER) represented the Government of India in the project setup. The United Nations Office for Project Services, Bangkok, is the cooperating institution for project supervision in implementation.

The conservation initiative started during 1999 through the West Garo Hills Community Resource Management Society, covering 192 villages with 7,070 households forming 252 natural resource management groups and 520 self-help groups. The society is assisted by seven partner NGOs in the implementation and delivery of the project.

The overall objective of the project is to improve the livelihood of vulnerable groups in a sustainable manner through improved management of their resource base in a way that contributes to protecting and restoring the environment. The project attempts to achieve this overall objective through a set of eight specific objectives, one of which is "to make people more aware of the need to preserve and regenerate natural resources, particularly forests and biodiversity".[4]

The project program has attempted to consistently link biodiversity conservation with the livelihood activities and opportunities of the communities. To date, the project has been able to reach 862 villages with 39,203 households.

The approximate total area under the present initiative is over 1,000 hectares of forestland, primarily secondary forest with tropical and semitemperate climatic conditions, belonging to the Daribokgre and other surrounding villages, including Sasatgre, Chokagre, and Rombagre.

Reaching the poor and the marginalized

Community-based biodiversity conservation does not by itself offer a very attractive prospect to villagers below the poverty line unless it is significantly linked with livelihood activities. Therefore, attempts were made as part of the project strategy to offer farmers livelihood improvement activities as an efficient incentive to mobilize the community to adopt biodiversity conservation programs in the villages. This process started with an awareness campaign on the project concept and philosophy for the farmers, along with the formation of natural resource management groups and self-help groups. The prospective farmers were then offered the opportunity to enter into partnership with the project by signing a social agreement with the district society, wherein the terms and conditions included natural resource and biodiversity conservation and management. In the terms of reference the nokma (village chief and custodian of the land) has to sign a written proviso declaring no objection to the programs of the project, and only after this can the project implementation process continue further. In effect the traditional and conventional rules and regulations (formulated and scheduled) are

[4] IFAD documentation on biodiversity conservation.

revisited, revived, and strengthened in close consultation with the community with the aim of educating them on these formal and informal existing rules and regulations. The concerned line departments, particularly the Forest Department, and at times the district council, were involved in the process.

Participatory approach

Notwithstanding the fact that it took time for the community to understand the participatory approach during its initial phases, as it was a new concept, it eventually became an efficient mode of communication and began to offer the community the most suitable options they could devise to improve and strengthen their sources of livelihood, while preserving the natural environment. The demand-driven opportunities for accessing loans and grants, while at the same time improving skills, made the scheme very attractive to the members of the community. Significantly, the age-old system of community-based conservation and management practices, which was on the brink of vanishing, was revived.

In a field study carried out by the project team a member of the natural resource management group at Sasatgre was asked why similar actions were not undertaken before the commencement of the project. The response was: "We tried earlier but as there was a lack of harmonious participation and commitment, we failed to achieve what we intended to. The group has brought us closer to developing a clear understanding about the best way forward for sustainable development."

Role of NGOs and social organizations

NGOs played an important catalyst role in coordinating between community and development partners, including financial institutions such as banks, in order to strengthen self-help groups through mobilization of funds and loans. A positive convergence of NGOs made it possible to avoid compartmentalization, as frequently occurs in rural development efforts. The constant daily NGO presence in each village provided a driving force and guidance in the right direction. The presence of a community organizer in each village also filled a much-needed gap for constant linkage between the local communities and the partner organizations.

The womenfolk were encouraged to form self-help groups, which brought about an important change in mind sets, as it was the first time that women were allowed to participate in decisionmaking in village welfare issues. The groups also instilled in their members the habit of saving, which in turn enabled them to have access to small and emergent loans.

Achievements

Jhum optimization and rationalization had positive impacts resulting in reduction in jhum areas in all the project villages. The average reduction in the jhum areas was found to be as much as 50 percent in Daribokgre, Sasatgre, and Chokagre, while very sharp declines in jhum areas were observed in Chandigre and Rombagre, due to the project interventions. The average jhum area per household also proportionally declined, though the number of households practicing jhum reduced only marginally. Jhum is now practiced with a compact area approach, instead of the scattered jhum plots that were typical before the project interventions.

The reduction in overall jhum area has also been achieved due to the concurrent program of jhum modification activities. A number of other programs also supplemented the jhum modification strategy. Activities included:

- Conversion of jhum land to terraces
- Promotion of cash crops, perennial horticultural crops, and medicinal and aromatic plants in the jhum fields
- Conversion of jhum fields into community forests and community reserves, particularly those with very good tree cover and valuable nontimber forest products
- Promotion of crop intensification (by increasing the cropping phase from generally one year of crop cultivation to two years or more by crop modifications and introduction of cover crops)
- Promotion of traditional jhum crops, niche crops, and vegetables (other than paddy) in jhum for higher cash income
- Promotion of agroforestry, including introduction of economically advantageous trees into the jhum system, such as cardamom with existing trees in the fallow areas.

The increased forest cover that has resulted from jhum modification has created areas suitable for other kinds of activities, which have been variously termed, according to their primary function, village reserve forests, community forests, catchment reserves, bamboo reserves, cane and timber reserves, thatch reserves, wildlife sanctuaries, and riverine fish sanctuaries. All these activities have contributed towards increased income for communities and individuals in different villages, as well as improved availability of biodiversity services and better nutrition. An example is the success of some Daribokgre farmers in setting up cane enterprises from the cane reserves located within the multipurpose catchment reserves of the village.

Another very noteworthy development of the jhum modification initiative has been the introduction of terrace cultivation, for example in Daribokgre and Sasatgre. Prior to the project intervention the villagers had no technical know-how or financial support to create the terraces. Revolving fund and income-generating grants, and loans from microcredit systems, brought about the changes. This method of cultivation has led to higher productivity of crops, and the womenfolk, who are primarily engaged in managing the self-help groups, feel that this type of cultivation is less laborious and provides sufficient time for them to engage in other activities.

It is generally accepted in the study area that expansion of terrace cultivation will ultimately lead to a reduction in and eventual replacement of jhum practices. The jhum area in Sasatgre has been reduced to one-third of its size 10 years ago.[5]

The participatory approach has infused the people of Daribokgre and neighboring villages with a sense of collective responsibility and has convinced them (including those outside the project area who have benefited immensely from the interventions in other villages) to take up other income-generating activities, including orange plantations, beekeeping, squash cultivation, and wild citrus cultivation.

From the field experiences at Daribokgre, Sasatgre, and other villages that were not visited but where similar programs are under way, it can said with certainty that development of terraces has resulted in reduction in human pressure on the existing forest resources and this in turn has increased the diversity of flora and fauna in these areas.

[5] IFAD documentation on livelihood management.

Noticeable among the many changes that were encountered was the successful functioning of the natural resource management groups and self-help groups and the creation of revolving funds for microcredit. The availability of small loans and grants for these groups facilitated development of farm-based (particularly orchards) and non-farm-based income-generating activities, together with market development. All these factors ultimately contributed to the reduction of jhum in these villages.

Awareness building on livelihood and conservation issues

Given the changes that have taken place it would be safe to say that communities that depended heavily on the practice of slash and burn are now discussing issues such as biodiversity, village reserve forests, wildlife, and water conservation in the village development council or natural resource management group meetings. The communities in these villages have also started keeping records of their local biodiversity in local registers, including in their village development council records. They have also started framing rules and regulations regarding what can or cannot be done, with, for example, a fine of Rs. 500–1,000 for those violating the rules, and an incentive payment of Rs. 100 to the informer. However, violations within the villages appear to be very few so far.[6]

According to research and field evaluations carried out by ENRAP, "Jhum agrobiodiversity continues to be an emerging issue of concern among the communities as well as for the Project." The study carried out by IFAD and ENRAP has come up with the following observations:

"The communities have recorded as many as 77 crop varieties of jhum crops in Daribokgre and Sasatgre, although a jhum field may harbor about 51 crop varieties during a cropping season at any given time. The communities are increasingly realizing the fact that although paddy may not grow well, many other crops continue to grow very well in the jhum fields and hence could be a good source of income for the households if organized appropriately. In most villages of the present study, the annual average household income from the sale of traditional jhum crops is calculated to be more than Rs. 10,000. This pace of income may be possible to keep up and even improved further by promoting the traditional seed preservation techniques and exchange of seeds (jhum crop) among the farmers."

Participatory land use planning: The Sasatgre model

Before the community initiatives started in Daribokgre, Sasatgre, and other villages in the West Garo Hills, constant conflicts were reported, mostly resulting from disputes over allotment of jhum plots to individuals. The village development councils had limited responsibility in resolving conflicts and therefore could not address the problems. An attempted intervention by the Forest Department and local NGOs had involved selecting an area of about 83 hectares of jhum fallow as village reserve or catchment reserve forest. However, with no proper rules and regulations, illegal extraction of timber continued.

Changes came about only after the project intervention in 2001 and formation of the natural resource management groups. Intensive participatory rural appraisal exercises were conducted to identify the social and natural resources of the village and frame a practical vision for the

[6] *Community Managed Forests: Law, Problems and Alternatives.* Ritwick Dutta Advocate, Supreme Court of India. Coordinator, Environmental Justice Initiative (Formerly Environment and Human Rights Law Initiative).

village. But the groups too had their limitation in that management of jhum fields and natural resources that were spread over a geographical area of 35,000 hectares was practically impossible.

Thus, to help the villagers plan and manage their resources a participatory tool, the participatory three-dimensional model (P3DM), was designed at Sasatgre village. The community participated enthusiastically in structuring a 3-D model of their village and adjoining areas by using rubber sheets and paint. This model allowed the villagers to systematically allocate and demarcate land that should be conserved, and land where jhum can be cultivated or orchards can be located.

With the help of this model, the villagers are now able to settle disputes regarding allocated jhum land and conflicts over land allotment have more or less disappeared, leading to more efficient use of the land. The P3DM structure, placed at the community hall in the village, allows villagers to identify further suitable land for expanding their terraces.

Buoyed by the success of the P3DM the villagers appear to be highly optimistic that with time they will be able to do away with the practice of slash-and-burn and switch to a more sustainable form of agriculture with proper irrigation systems and cultivation. In the present context the jhum area has been reduce to one-third of its size compared to 10 years previously, thus increasing the cycle from 5–6 years to 7–8 years. With the present trend towards a decrease in jhum cultivation, the villagers feel that the jhum cycle can be increased to 12 years. The P3DM is a prime tool for the natural resource management group of Sasatgre, and also for visitors to the village, who are able to visualize the impact of project activities on the wider horizon presented by the model.

Constraints

Villages such as Daribokgre close to the Nokrek Biosphere Reserve were under severe pressure from unmindful felling of trees, partly due to shifting agriculture and partly due to illegal timber logging by timber mafias and smugglers. In addition, the specter of militancy in the Garo Hills over the last decade, especially in West Garo Hills District, has made it difficult for development interventions to take off. There was constant insecurity among the people, who feared being uprooted from their lands owing to militancy. The presence of militant camps inside dense forest reserves (including Nokrek) did not bring much hope to the poor and the marginalized who were dependent on the forests for their livelihood.

The lack of resources has also been a major constraint to the initiation of welfare programs in the villages. The thought of conservation programs was far fetched, and even now there is a certain amount of dependency on the project, though the community has to a large extent developed the habit of creating conditions of self-sustenance and self-generation of income. There is a great need for increased literacy and education among the villagers in order to provide them with adequate knowledge to manage their own resources for their own gains, without being exploited by intermediary traders or outside forces, as has often been the case in the past. Conflict over land between villages, too, has often acted as a hindrance and prevented development activities from starting on time.

There is also another problem in that there is simultaneous operation of customary tribal laws and the statutory laws of the district council in the Garo Hills. The main reason for the mismanagement of forests in the Garo Hills is the confusion that arises because of the overlapping authority of the nokmas and the district council. Most of the land in the Garo Hills

belongs to different clans (under the control of the nokma) in accordance with customary law. However, under the Sixth Schedule of the Constitution, all forests other than government reserved forests are to be managed by district councils. Since most of the forests are in the hilly region of the district, where customary land law is applicable, this has led to confusion, as it is difficult for the district council to effectively manage the forests if the land on which the trees stand is not under its control.

The district council has sought to end this confusion through a rule, according to which, even though the nokma has the right to grant permission for felling trees, that permission has no validity until the district council approves it. But in actuality, the district council has no proper mechanism to see whether the number of trees felled is in accordance with the permit granted.

Other factors, such as forest and bush fires during the dry season, have also greatly damaged the biodiversity and the existing germ plasm by destroying the young seeds of many rare and endemic species in and around the Nokrek Biosphere Reserve. These fires were caused by the unwanted human activities of hunters and firewood gatherers from other villages. Lack of funds and poor vigilism allowed the hunters and timber smugglers to inflict damage on the fragile ecosystems and escape with impunity. Now, however, the situation is much improved, and though attempts are still made by vested interests to manipulate the villagers, the awareness created by the project has made this less likely.

Prospects and the road for others to follow

The interventions that have been made by the natural resource management project to strengthen communities and provide them with livelihood options have characteristics that may be applicable in other locations, irrespective of the type of population structure or geographic conditions. A replication of the methods and practices in other parts of West Garo Hills District, especially East and South Garo Hills, where Balpakram National Park is located and where rich limestone and coal deposits are found, would enable a continuance of the initiatives that have been started in this highly underdeveloped and neglected district of Meghalaya. An extension of the programs to tribal villages situated along the fringes of the Balpakram National Park in South Garo Hills and along the Simsang River, which flows through South and East Garo Hills, could be part of a holistic approach to strengthen communities and empower them to manage their natural resources in a way that contributes towards the overall conservation of the rich biodiversity of the region.

One very significant feature of the community initiatives in the villages of the West Garo Hills is that they have laid emphasis on infrastructure building and improving communication networks between villages and towns and markets outside the project villages. Wider market access and the introduction of direct marketing systems have become the cornerstone of success of the projects, as villagers are now more confident about participating in alternative types of cultivation, besides jhum.

Improved road links to large markets, and setting up cold storage facilities for farmers at central points from where vegetables, fruit, and other agricultural products could be disseminated to bigger markets in Assam and Meghalaya, could be very advantageous to the farmers of the region.

Utilization of existing indigenous knowledge systems and traditional institutions, rather than implementing ideas and plans that are alien to and incompatible with the prevailing conditions, has been largely instrumental in making this a successful model. Such approaches could be

replicated and used with slight modifications, as in the case of jhum modification techniques, wherever communities have been using their own indigenous systems of livelihood management and conservation practices. The approach could assist in the removal of destructive practices and the provision of more sustainable livelihood options coupled with improved income generation for the communities.

One very noteworthy feature of the project is the multipronged approach that has been adopted to ensure that while striving for livelihood-based biodiversity conservation all important aspects of development are considered, including basic education and community empowerment. Initiation of employment-generating activities such as fisheries, horticulture, plantation of medicinal plants, integrated farming in the hills, and kitchen gardens have resulted in reduced pressure on forest resources.

Conservation of biodiversity through controlled shifting cultivation and watershed management has led to overall improvement of the economic status of the communities and added to their income generation. Most villagers can now afford to live in comfortable homes and send their children to schools, health has improved, and there is greater civic awareness and social responsibility. The project has also helped to place the villagers in a position where they can now design their own destiny. Increased government support, through creation of better infrastructure, for example proper roads, bridges, improved community health centers (in addition to whatever has been created by the communities), electricity, and regular water supply, would enhance these models of success and create more room for hope for other villages.

The main strength of the project in Daribokgre, Sasatgre, and other villages in the West Garo Hills has been the ability to bring about community participation and link it strongly with government line departments concerned, for example, with forests, power, public works, and health.

The formation of natural resource management groups, too, is a development of great potential, as it caters for the needs of overall development within the village while conserving the depleting biodiversity resources through judicious management practices such as taking decisionmaking out of the confines of the village head and making it a process in which the entire village participates. The formation of self-help groups and the creation of microcredit facilities has given the villagers an insight into the value of thrift and saving for their prosperity. The participation of women in decisionmaking has also been a major contributory factor in the overall improvement in the social and economic status of the people of Daribokgre and surrounding villages.

Persons consulted

Deputy Commissioner, West Garo Hills District.

Dr. V. T. Darlong, Natural Resource Management and Extension Coordinator, IFAD, Shillong. Tel: 0364 2503531.

Mr. Bijoy Sangma, Assistant Project Coordinator, Northeastern Region Community Resources Management Project, IFAD, Shillong.

Alva Sangma, Media Personnel, Ringrey, Tura.

Secretary, Village Development Council, Sasatgre.

Field offices, West Garo Hills District Administration.

Community leaders and village heads.

Youth organizations in a few villages.

Appendix D. Exploring the commercial prospects of squash in Sihphir, Mizoram

Lian Chawii

Introduction

The Government of Mizoram emphasizes its Intodelh Policy (Policy of Self-Reliance or Self-Sufficiency), which encourages the farmers of the state to cultivate and market vegetables and other crops to reduce dependency on other states. This policy thrust is also a means of discouraging the traditional slash-and-burn cultivation and developing a more permanent method of agriculture. The soil and climatic conditions of Mizoram are conducive to the cultivation of fruits and vegetables, for example cabbage, chilies, French beans, grapes, mustard, passion fruit, pumpkins, and squash, most of which are marketed within the state itself. However, for many farmers, marketing their produce is a relatively new concept and it is at this crucial stage that government assistance is necessary for starting the process. So far, government assistance has been limited, and squash or *iskut* is one of the few crops to have been exported to other states with significant profits. Though this climber grows profusely in most parts of Mizoram, Sihphir village is particularly associated with squash since it was here that large-scale cultivation of the vegetable was initiated, which gradually became the mainstay for a majority of the families who earn their livelihood from it.

What began as an effort to meet the daily needs of a family has turned into a relatively successful business that has transformed the quality of life in many households of Sihphir village. Squash, or chow-chow of the Cucurbitaceae family, is a traditional food, usually cultivated in the kitchen gardens of many families in Mizoram. The Welsh Christian missionaries who came to Mizoram more than a century back are believed to have started squash cultivation and it is said that the word *iskut* is derived from the word "squash" as used by the missionaries (box D1).

The quaint and scenic Sihphir village, located in Aizawl District, is about 18 kilometers from Aizawl town and is situated along the National Highway that connects Aizawl to Assam through Silchar. This highway is the main surface route that links Mizoram to the rest of India. The long stretches of green squash leaves climbing over the GI wires along the arterial road in Sihphir make for a beautiful sight. Sihphir enjoys a pleasant climate with an average temperature of about 27°C throughout the year. The origin of the village dates back to the 1880s under the chieftainship of Tutera. During this period there were approximately 30 families in the village, which increased steadily to about 70 in the 1950s. Since the 1960s, however, there has been a sharp increase in population, and at present there are approximately 1,600 families in Sihphir with a total population of about 5,500. Most of the families are migrants from different villages in the state. Some attribute this recent surge in population to the ideal climatic conditions and its strategic location for marketing its produce. Some migrate to Sihphir lured by the prospects of profitable squash cultivation. However, the hilly terrain necessitates huge investments for large-scale cultivation – poles and wires for the climber, water tanks for irrigation, transportation facilities along the 3 to 4 kilometers length of the steep farms, cold storage facilities, and labor. The Iskut Growers Association, which has its headquarters in Sihphir, believes that what has been achieved so far, in terms of export, is only a fraction of the total potential, which can be achieved only with greater support from the government.

Box D1. Squash (*Sechium edule)*

Characteristics and production

Chow-chow, squash, or chayote is a staple part of the Mizo traditional diet. It is grown mostly on family plots or vegetable gardens and was not considered a major commercial crop till the 1980s. Although the fruit is the principal food of the plant, its tender leaves and stalks are also used to garnish smoked meat and flavor its stock, while the rest of the plant is used as pig feed. This way no part of the plant is wasted.

The climber plant comes from the Cucurbitaceae family and has the botanical name *Sechium edule.* Members of the Cucurbitaceae family usually grow in tropical and subtropical regions and cannot tolerate temperatures below freezing. It is a fast-growing plant that takes about 10 to 20 days for its fruit to mature or ripen. Sowing can be done throughout the year, but most growers prefer the days prior to the rainy season. The fruits are harvested from June to December with peak productivity and fruition between September and October. The plant withers and dries up from January to March, and subsequently regenerates itself. Profits soar during April and May as the fruits begin to mature and are available only in limited amounts in the local market.

The productivity phase starts from the second year, when the output multiplies significantly. Since the plant is a climber, poles or frames are erected next to it for support; they are also grown next to trees for the same reason. In Mizoram, bamboo is the most common support as it is abundantly available. The bamboos are interwoven and erected over the crops when they are saplings.

Modern studies reveal that *S. edule* has properties that can cure kidney diseases. The infusions of the leaf are used to dissolve kidney stones, while the fruit infusion can be used for urine retention. It is also grown in many parts of South America, where, apart from being cooked as a vegetable, it is dried and made into jams and pickles. In India, Mizoram probably has the largest area under squash cultivation, though it is also grown in other states of the Northeast. In Mizoram, Sihphir and its neighboring villages have the highest concentration of squash cultivation. However, in India at large, the plant has yet to achieve the level of consumption that other staples like tomatoes, onions, or potatoes have.

Ideal climate and soil conditions for squash cultivation

Altitude of 750–2,000 meters above sea level

Temperature 20–30°C

Rainfall 1,500 to 2,500 mm annually

Soil must be relatively fertile and dark with minimal acidity

Land preparation

The land should first be weeded and cleaned.

Holes are dug with intervals of about 0.5 meter between each hole for the seed to be planted in places where there is shade with good soil.

The distance between each hole should be relatively more where there is harsh direct sunlight and poor soil conditions.

The dimensions of the hole can range from 0.6 to 1.2 meters square.

After the pit is made, fertilizer-free humus soil is used for the lower layer of the pit and then the dug-up topsoil is roughly ground and used to cover the upper layer. Then the topsoil is pounded to finish off.

Apart from the ideal location and climate, the other significant contributing factor is the integrity and spirit of trust that binds the community involved in the activity. The Mizo's traditional concept of *tlawmngaihna* – selfless sacrifice for the betterment of others, a traditional code of ethics – is still evident in the smaller towns and villages of Mizoram, though less apparent in the cities. For instance, when a family encounters a problem because of which they are unable to harvest their yield on time, the community abandons its work to help the affected family. This spirit of solidarity binds Sihphir into a tight-knit community, though some attribute the recent decline of this traditional practice to the influx of new settlers.

Positive outcomes of squash cultivation in Sihphir

Zahmingliana is one of the many farmers in Sihphir village who depend on squash cultivation for livelihood. He owns 5.6 hectares of farmland and an 8 x 10 meters double-storeyed concrete building. These are the tangible results of over twenty years of hard work put into cultivating squash (*Sechium edule*), locally known as *iskut,* from which he earns over Rs. 100,000 annually. He also rears seven cows, which fetch approximately Rs. 15,000 per month from the milk and dung sales. During the dry season following the harvest, he grows cabbages for the market in Aizawl. Despite having to feed a family of 15, Zahmingliana sets aside Rs. 60–70,000 annually as savings from his squash earnings alone. Zahmingliana's case is not unique. After investing in large-scale cultivation the improvement in the quality of life is evident in Sihphir. Many families now afford better education for their children; some even send them to reputed boarding schools outside the state.

In 1982, as a migrant from another village, Zahmingliana toiled long and difficult hours to provide two square meals a day to his family of 13. Back then, as a carpenter he considered himself fortunate when he got work for two days of the week. Subsequently, his earning as a teacher in a local primary school barely met the daily needs of his growing family. After wading through various jobs with limited or no success, the turning point came when he decided to invest in a 5.6 square meters plot for the purpose of squash cultivation. Since then there has been no looking back. The first harvest from the small plot yielded a generous 10 quintals of squash that was completely sold out, despite the lack of a proper marketing channel. Over the years, Zahmingliana bought land from different parts of Sihphir with savings from squash sales. At present, he owns a total of 5.6 hectares of land.

Not surprisingly, the story of this successful initiative caught on and it was not long before other households in Sihphir village started similar undertakings, which led to a revolution of sorts. In 1992, Sihphir village alone earned Rs. 5.2 million from squash sales. After witnessing the success in Sihphir village, four branches of the Iskut Growers Association have been established in the neighboring villages. A report by the Horticulture Department stated that these four villages alone earned Rs. 10 million in 2000–2001; Sihphir alone earned Rs. 8.5 million. In 2004, Zahmingliana fetched Rs. 120,000 from squash sales. His friend Sangkhuma of the same village created a record of Rs. 400,000 the same year.

On the other hand, since squash cultivation requires huge investment, lack of resources has compelled some households to abandon their undertaking. For instance, H. Zathuama has tasted the benefits before – he practiced large-scale cultivation for over 15 years, from 1981–1997 – when he earned as much as Rs. 60,000 in four days during the peak period. But the soil fertility eventually declined over the years due to intensive use of chemical fertilizers, thus

affecting the productivity. In 2000, the state government stopped supplying chemical fertilizers and instead switched to organic manure. Immediately after this ban, Zathuama still managed to procure chemical fertilizer on the black market but the productivity continued to decline. According to Zathuama, the organic manure supplied by the Horticulture Department was insufficient and did little to increase the yield. He believes that large-scale cultivation can be taken up only by those who can afford cattle breeding as this ensures a consistent supply of cow dung, which is a reliable organic fertilizer.

Iskut sales in Mizoram 1986–2005

Period	Produce (quintals)	Average annual income (at Rs 2.50/kg)
1986–1990	10,000–12,000	Rs. 2.5–5 million
1990–2000	12,000–15,000	Rs. 8.5–10 million
2000–2005	20,000–35,000	Rs. 10–15 million

Source: Compiled by author from information collected from Iskut Growers Association

Iskut Growers Association

In 1986, the Squash Growers Association, now called the Iskut Growers Association, was registered under the firms and societies, Government of Mizoram, with 80 members. The same year, the association exported squash to the neighboring state of Assam in small quantities, though exports on an individual basis started much earlier in about 1980. From then on, the number of growers increased steadily each year. The squash is exported to Assam through an intermediate trader who buys it at an average of Rs. 4 per kilogram. There are times when the figure falls as low as Rs. 2 per kilogram, reducing profit to a minimal margin. And then there are exceptional occasions when it rises as high as Rs. 15 per kilogram. These fluctuations are seasonal and accepted as the capricious but natural demands of the market.

Twenty years after its formation, the Iskut Growers Association has reached a membership of more than 800, with squash cultivation being their prime source of livelihood. In 2006, the association anticipates an increase in membership to about 1,000–1,200. Due to the large-scale production of squash in Sihphir and its neighboring villages, a more organized system of storage and marketing of the produce was required. So towards this end, the Iskut Growers Association established four branches in the neighboring villages of North Sihphir, Neihbawih, Durtlang, and Lungdai, with its headquarters located in Sihphir.

During the initial years, from 1992–1993, the state Agriculture Department provided a price support subsidy of about Re. 0.50 per kilogram to the growers. But the assistance discontinued due to the increasing number of families involved in squash cultivation. Once market channels were established the association received assistance from the North Eastern Council in the form of two trucks to facilitate transportation, and Rs. 500,000 for the construction of a storage depot. On a monthly rotation basis, one member of the association is assigned the responsibility of maintenance of these trucks. However, some association members believe that pool trucks are often misused, shoddily maintained, and carelessly handled, which reduces them to a semipermanent state of disrepair, making them more of a liability than a support and incurring

extra cost that eats into the coffers of the association. Recently the Horticulture Department, through the Technology Mission Scheme of the central government, has provided Rs. 5 million worth of GI wires and about 150 community water tanks.

The Sihphir example: An inspiration

To date, the quantity and quality of squash grown and sold from Sihphir village remains unrivaled in Mizoram. The membership of the Iskut Growers Association has increased rapidly in the last decade since it began large-scale commercialization. This successful initiative taken by the iskut growers of Sihphir has received an interesting response from various sources, particularly because of its ability to market its produce with little or no assistance from the government, considering the intensity of labor and resources required throughout the whole process, from the cultivation phase to commercial marketing.

After witnessing an improved quality of life in Sihphir due the transformation brought about by this enterprise, neighboring villages such as North Sihphir and Durtlang began to experiment with large-scale cultivation of squash using the Sihphir model as a template. And the story so far has taken on a positive development, with the formation of a definite outline and framework. Five branches of the Iskut Growers Association have been initiated in different parts of the state.

In 2000, a group of farmers from Nagaland, supported by the Nagaland Environmental Protection and Economic Development (now the Nagaland Empowerment of People through Economic Development), a Canada-funded semigovernmental body, visited Mizoram to learn about the method of cultivation and its possible replication in Nagaland. They paid a field visit to Sihphir and had a productive exchange of first-hand experiences with the local squash growers. Such an exchange could be of tremendous value, considering the fact that intensive squash cultivation at this scale had never before been carried out in other states of the Northeast, and possibly India.

In early 2006, students from the Agricultural University in Itanagar visited the growers in Sihphir as part of their educational tour. According to Zahmingliana, there was an enthusiastic response from the students during their interaction with the Iskut Growers Association. More importantly, the students of the agricultural institute imparted their academic knowledge regarding squash cultivation, pest control, and aspects of organic farming to the iskut growers. The passion fruit growers of Sihphir have taken a cue from the iskut cultivators and formed an association to regularize and market their produce.

Other initiatives

Squash is not the only vegetable that grows in abundance in Sihphir. The village is ideal for growing vegetables such as mustard, cabbage, radish, broccoli, French beans, oranges, and pumpkin. Most of the cut flowers sold in Aizawl are sourced from Sihphir, which also happens to be one of the largest suppliers of milk to Aizawl. This conducive environment, complemented by the local people's willingness to experiment with new varieties of vegetables, has earned the village its reputation as the "fruit basket of Mizoram". It is no wonder that most of the families of Sihphir village earn their livelihood from vegetable cultivation and its subsequent marketing in Aizawl. To date, Sihphir remains one of the largest producers of vegetables and fruits in the state.

Constraints

Water shortage. That many families have experienced an improved quality of life after reaping the benefits of squash cultivation is indisputable. Nevertheless, there are also many others that have given up their aspirations of achieving the same success. One of the main constraints is the severe water shortage. Hillside agriculture suffers from low productivity mainly due to water shortage and the intensity of topsoil runoff. Most areas within Aizawl District have serious water problems, including Sihphir. This problem has been compounded by the fact that *S. edule* is water intensive and there are no irrigation facilities for the vast plots of cultivated lands. Rainwater remains the only source of supply for most fields and the lack of it can severely affect productivity. Some families have placed temporary water tanks in their field to harvest the rainwater, while households with more members make good use of the extra hands for fetching water from the local streams and rivulets, though this can be physically demanding and time consuming. For the few affluent families, water tankers are hired to irrigate the fields. The Horticulture Department has erected about 150 community water tanks, which are shared by 10 to 15 households. This number is grossly inadequate since it is only a small fraction of the total number of households involved in squash cultivation. It is clearly evident that more assistance, government or otherwise, is required for its potential to be realized.

Lack of infrastructure and poor accessibility. For those with fields located upstream and at remote distances, long stretches of pipes are required, and this can be a drain on their resources. Again, due to the extreme nature of parts of the terrain, some of which are impossibly steep, accessibility from the main road becomes a real problem. There are farms located 3 to 4 kilometers from the road, requiring considerable resources of labor or wheeled transport to move the produce. The situation worsens during the monsoon when the rain renders the *kacha* (dirt) road into a veritable mudslide, impossible for both humans and machines. Add to that the gradient, and the situation can seem imposingly insurmountable for the farmer.

Squash is a climber that requires sturdy and solid physical support. According to Saipari, deputy director, Horticulture Department, squash production has not reached its optimum because many growers cannot afford the infrastructural facilities, such as GI wires or wooden poles, required for setting up a proper structure. The state government distributes GI wires, but the number is limited and cannot be distributed to all the families taking up squash cultivation. Often, the family status and political connection determines the probability of attaining government support.

Decline in yield after switching to organic manure. In the 1980s, when large-scale cultivation of squash was initiated, most of the growers practiced intensive farming and used plenty of chemical fertilizers, which were distributed by the state Agriculture Department. This led to huge profits in the first few years, though a decline in productivity was observed over the years. In 2000, the Mizoram Government terminated imports of chemical fertilizers and Mizoram was thereafter declared an organic state. As a result, the farmers had to switch to organic manure, which was subsequently supplied by the government. But this did not meet the rising demand and they continue to buy from the local traders. In the first few years of switching to organic manure, the output declined drastically. The use of chemical fertilizers has not stopped entirely; growers buy them on the black market from outside the state. Cattle breeding proved to be a saving grace for many households as the manure was used in the farms and also sold. However, not all families can afford to rear cattle, particularly cows, since they requires extra labor and resources. In 1996–1997, the government offered loans for rearing cows under the

New Land Use Policy, another scheme to divert farmers from jhum cultivation, but the scheme discontinued with the change of government. But for the few that can afford to invest in this activity, there is a value addition of about Rs. 15,000 per month from the sale of milk alone.

Need to diversify from monoculture. Though iskut cultivation is seen by many as a viable alternative to jhum cultivation, some experts point out the need to substitute with other crops or practice intercropping in order to make it a more sustainable livelihood activity.

Lack of market linkages and value addition. According to C. Lalawmpuia, circle officer, Horticulture Department, Government of Mizoram, lack of proper marketing facilities restricts profit. There are no formal channels to market the produce so intermediate traders are hired. Some growers assert the need for an agency or company to handle the exports. The transportation period from the field to the market is sometimes delayed due to landslides, heavy rain, or infrastructural problems, as a result of which the fruit loses its freshness. Since there are no cold storage facilities, the fruit saps and loses its appeal by the time it reaches its destination and the growers are compelled to reduce their price drastically. One grower says "We can export endless amounts of squash from Mizoram as long as the demand exists."

Members of the Iskut Growers Association have explored the possibility of larger commercial production and export. However, the standards required for export are stringent compared to those applicable to local or national consumption. Export would be an expensive proposition, at least in the formative stages, for most of the farmers. But it is possible if it comes with some form of assistance from the government or private agencies.

Source persons

C. Lalawmpuia, Circle Officer, Aizawl Division, Horticulture Department, Aizawl.

Lalengmawia, Director, Rural Development Department, Aizawl, Mizoram.

Dr. Vincent T. Darlong, Natural Resource Management and Extension Coordinator, International Fund for Agricultural Development, Shillong, Meghalaya.

Zahmingliana, President, Iskut Growers Association, Sihphir village, Mizoram.

H. Zathuama, former village council member, Sihphir, Mizoram.

Dr. Saipari, Deputy Director, Horticulture Department, Government of Mizoram.

Appendix E. Community initiative in biodiversity conservation: Khonoma, Nagaland

Lian Chawii

Introduction

About 20 kilometers southeast of Kohima, capital of Nagaland, is the picturesque village of Khonoma. Named after a plant, *Glouthera fragmantisimia*, the village is surrounded by verdant mountains and perennial streams. Believed to be more than 700 years old, Khonoma has less than 600 households and a population of only 3,000 people. The village is populated predominantly by Angami, one of the 16 major tribes of the state. Animism (the belief in the existence of spiritual beings that are separable or separate from bodies) was practiced till the 1890s in this village.

Khonoma is also a historically significant village. The Angami warriors put up fierce resistance to British colonial rule, leading to a series of retaliatory attacks, resulting in the siege of the village in 1880. Today, a white pillar remembering the heroes stands proudly atop the highest point in Khonoma. The village was also the home to A. Phizo, the revered leader of the Nagaland freedom movement.

Khonoma is now being promoted as a tourist destination and was selected in 2003 by the state government as a center for the Green Village project, with financial assistance from the Ministry of Tourism, Government of India. The villagers have joined in the project enthusiastically. The road leading to the village is neatly paved and lined with wastebaskets, and there are well-maintained public toilets. Residents of this sloping terrain have painted their roofs green – a clear indication of the efforts taken by the villagers to showcase Khonoma as a model village. The rural charm of the village only adds to its enormous potential as a hub for ecotourism. The central area of the village overlooks a vast stretch of terraced paddy fields that resembles a golden valley at the time of harvest.

The reasons for choosing Khonoma for the project were many – Khonoma had made its mark as a village with a unique land use pattern, effective governance system and strong traditional institutions, and a desire to improve its economy by switching to sustainable yet profitable agrobusinesses.

Talking about the inherent strengths of this village, Charles Chasie, Kohima-based convener of the Environmental Impact Assessment Report on Khonoma, a component of the Green Village project, says: "The greatest strength of the village is the spirit of the community." The village's success in restoring the degraded community forest of 20 square kilometers and the revival of the endangered Blyth's tragopan, despite fierce opposition from loggers, reflects this strength.

Khonoma also has the advantage of getting the help of enlightened people because many of its sons and daughters are professionals who reside in Kohima. They maintain their connections with the village by contributing their experience and knowledge to facilitate some of the decisions taken in the village.

The farmers of Khonoma have also perfected the art of optimizing the produce from their jhum fields by cultivating alder trees, which regenerate the soil and check erosion. The root nodules of these trees improve fertility by fixing atmospheric nitrogen in the soil.

Land use pattern: Productive yet sustainable

In Khonoma, a majority of people practice jhum and wetland-terraced paddy cultivation. The jhum fields are regenerated by a unique but old method of intercropping with alder trees (box E1). Farmers grow crops such as Job's tears, maize, millet, barley, pumpkins, and colacasia in the higher altitudes of the cleared and burnt field while the lower altitudes are used for growing rice – more than 20 different types are grown in these terraces. This cropping process is repeated in the second year, after which it is left fallow and the farmer moves to another jhum plot which is cultivated for another two to three years. Eventually, the farmer returns to the first field after four to five years, thus completing a cycle. By this time, the alder trees have matured and are ready for pollarding again.

Jhum cultivation is a centuries-old practice in Khonoma, as in most parts of northeast India. But developmental activities and population pressure has reduced the cycle to four to five years compared to the earlier cycle of 15 to 20 years. Because of the reduced cycle, trees like alder are indispensable as they improve soil fertility.

Box E1. Alder: The jack of all trees

In Khonoma, jhum and alder (*Alnus nepalensis*) cultivation are carried out alternately, as the roots of alder improve the fertility of soil by fixing atmospheric nitrogen and checking soil erosion. Though no proper record has been maintained, this method of intercropping is said to be more than 200 years old.

With a combination of the desired altitude (above 1,000 meters), climate, and rainfall, the tree flourishes in this area, growing fast and yielding huge quantities of firewood. The ashes of burnt alder twigs are mixed with the soil to increase its fertility. No part of the tree is wasted. The wood is used for firewood, building houses, making furniture, and carving. The leaves have medicinal properties and are used to stop blood flow. Alder trees are also used in terraces at bench level to prevent runoff of topsoil.

Alder-based cultivation starts with the pollarding of alder trees 2 meters above the ground in the first year of the jhum cycle. The wood is then collected and sold; the smaller twigs and leaves are either burnt or left to decompose, depending on whether pollarding takes place before or after the slash-and-burn process. The tree sheds leaves in huge quantities, which act as a mulch to the soil, causing microbial activities. Even when the jhum land is burnt, the alder stumps are not affected since they are fire resistant. The wood is then taken to Khonoma village or to Kohima and sold as firewood or furniture wood. A stack (2 x 2 meters) can cost up to Rs. 800 and most households earn a good amount by selling these stacks.

To increase the output of jhum fields, Nagaland Empowerment of People through Economic Development has encouraged the cultivation of cash crops such as large cardamom, turmeric, and squash. The fallow land is also used for growing crops, such as pepper, that can grow alongside other tree species. Other suitable trees, such as *Malaina arborea* (gomari) and *Albergia* species, thrive in the lower altitudes, enriching the soil. They are also resistant to fire and have good value as timber.

Nearly 20 rice varieties grow in the terraced fields of the village. The varieties are selected according to the location of the field – paddy suited to cooler climes is grown in shaded areas and with cold water. As the water flows down the terraces it becomes warmer and therefore different varieties are grown at the lower levels. Soft, hard, white, and red rice varieties are grown in these selected areas (Khonoma Tourism Development Board 2005).

The paddy terrace is prepared during November-December when the soil is ploughed manually. Leveling of land and preparation of nurseries is done next in January and February. Irrigation channels are cleared during the monsoon in May to ensure distribution of water to the fields. All openings in the terraces are sealed and care is taken to ensure that water does not flow out of the field apart from at the point where it is designed to flow out. This is followed by another round of tilling and leveling. Paddy is then sown in June and July. Occasional weeding is done till the paddy is harvested in October. The field is then left fallow or used for growing other crops such as potatoes.

Most of the families in Khonoma are able to meet their needs and do not depend on market produce. It is estimated that 80 percent of Khonoma's households are self-sufficient.

As discussed above, terrace cultivation requires intensive labor inputs, but the amount earned is minimal. This can prove to be a disincentive. An average household is estimated to earn approximately Rs. 10,500 for 160 days of intensive work put into the rice field (Khonoma Village Tourism Board 2004).

Local governance: Democracy at the grass-roots level

Khonoma's system of governance is a unique blend of the traditional and nontraditional. One would imagine that this dual system of governance would impede quick decisionmaking. However, here it seems to function smoothly and has been providing strong and effective governance in the village.

The heart of traditional governance as practiced in Khonoma is the *khel* or territorial division, which comprises different clans or *pfutsano*. There are three divisions and the number of clans varies from khel to khel. Once a decision is taken by representatives of a khel, it is absolute and accepted by all unless vetoed by one or more members. These khels are joined to form khel unions, which function as governing bodies. They are in charge of maintaining law and order and resolving day-to-day affairs, disputes, and other such matters within their respective khels.

Above the khel unions is the village council, a nontraditional body initiated by the Nagaland Village and Area Council Act, 1978. This council is responsible for the overall administration of the village and has representatives from the khels and *gaonburas* or village elders. Some of these traditional representatives also serve as members of the Village Development Board, which disburses government funds for village development. And for the citizens' forum there is *rupfuno,* which serves as the body that holds all these institutions together.

Thesus (age groups) are another powerful force that integrates the village as an entity. There are more than 54 such groups in the village. All members of the community have a place in these age groups, which usually start at the age of 9 or 10.

These bonds lasts a lifetime and are also a source of honor and respect for the members. The groups are assigned work in the paddy fields according to their age and also take part in social activities such as house construction, tree plantations, and making pathways. Thesus also participate in traditional songs, dances, and other forms of entertainment. In addition to these groups, the students, young people, and women of Khonoma are members of the Khonoma Students Union, Khonoma Youth Organization, and the Khonoma Women's Organization. The Khonoma Youth Organization plays an active role in village development activities and has enforced the ban on hunting in the Khonoma Nature Conservation and Tragopan Sanctuary.

Live and let live

Khonoma is part of the biologically diverse Dzukou valley, which is home to more than 200 varieties of flora, 90 birds, and over 10 species each of reptiles and amphibians. Many of these rare species of flora and fauna would have been relegated to textbooks had it not been for the persistent efforts of the community.

Hunting, much a part of the Angami culture as for most Naga tribes, was rampant and widespread. The decline in the numbers of animals was compounded by the loss of habitat caused by large-scale logging in the forests. In the mid-1990s, amid major resistance, the village council decided to impose a ban on logging in the forests around Khonoma.

The initial reaction was outright resistance since for many it was the main source of income, and as Tsilie Sakhrie, the pioneer of this initiative, points out, "It was also an easy and quick way of striking it rich."

Peto Punyu, a 45-year-old former Village Development Board member, who served as the president of the Khonoma Youth Organization at the time of imposition of the ban, relates the story: "In 1994, village leaders got together to address the problem of indiscriminate logging and other social problems in the village and the urgent need to take action in order to preserve the historically important village of Khonoma." As expected, the loggers resisted fiercely. They disrupted community meetings and resorted to drunken brawls.

This resistance only strengthened the resolve of the community leaders to put an end to these problems. The determination to root out the problems was so strong that one community meeting on the issue lasted for over 40 hours. Eventually, in early 1996, the loggers relented and agreed to abide by the decision of the community leaders. Permission for tree felling was restricted only to personal use. This decision was further strengthened by the Supreme Court's ban on tree felling, in December 1996. It was also decided that the profits from the timber, which had been lying with the loggers, would go to the village fund and 30 percent would remain with the loggers.

In 1998, the village officially declared a ban on logging and a subsequent ban on hunting in the Khonoma Nature Conservation and Tragopan Sanctuary. It issued rules and guidelines and imposed fine of Rs. 2,000 for hunting a bird and Rs. 5,000 for other animals. Slingshots, commonly used for shooting birds, were banned in the sanctuary.

The Khonoma Youth Organization was entrusted to implement these rules and impose the fines wherever necessary. In December 2005, the organization also offered a reward of one-third of the fine to the person who reported hunting, and the rest would be shared between the organization and the khel to which the informer belonged. One of the positive outcomes of conservation of the 20-square-kilometer sanctuary has been the revival of the state bird, the endangered Blyth's tragopan, which was almost hunted to extinction.

Metha Chase, a former full-time hunter who killed as many as 60 tragopans prior to the ban, says that today "There are 10 to 15 groups in the sanctuary, and in each group there are 20 to 30 tragopans." The numbers have increased drastically from approximately 80 to 90 in 1999 to more than 200 in early 2006.

However, hunting has not stopped totally because neighboring villages have not implemented the ban. Those birds that stray outside the sanctuary become soft targets for these villages. "The number of tragopans could be close to 400 if the neighboring villages, such as Mezoma and

Jotsoma, also imposed a ban on hunting", says Chase. There has also been a perceptible rise in the number of animals thanks to the ban. Today, deer and wild boars are often seen venturing into the fields.

Though Khonoma has met with significant success in its conservation efforts, the same cannot be said about other villages. Sakhrie outlines the reason for this positive outcome in Khonoma: "The united effort and strong resolve of the Khonoma Youth Organization is the reason for the success of the ban."

Khonoma's success with conservation and regeneration of the sanctuary has been an inspiration to other villages. The Ao and Sangtam tribes, who reside in two neighboring villages with boundary disputes, wanted to resolve their problems by conserving the disputed areas as a sanctuary, which would also serve as a boundary. These two tribes visited Khonoma and met the community leaders to learn from their experience in conservation.

Agriculture: Earning sustainably

Until the 1980s, most households in Khonoma were self-sufficient in food and fulfilled their annual demands from their jhum and paddy fields, according to Punyu. The Environmental Impact Assessment Report on Khonoma in 2004 also supports his view (Khonoma Village Tourism Board 2004). However, this has changed in recent years due to population increase and the rising costs of household necessities and education.

Most households in Khonoma have more than one source of income, such as stone masonry, which fetches between Rs. 200 to 300 per day. Weaving and carpentry are other sources of income in Khonoma. The main source of income, however, is still derived from the farm produce sold in Kohima or the local market. These farm products primarily consist of paddy and vegetables, fruits, and cash crops from the jhum fields. This shift to cash crops has also proved that the people of the village are receptive to new ideas, willing to take risks and experiment with new crops.

Since the late 1990s, the agricultural practice in Khonoma has witnessed a marked shift towards cash crops, a result of numerous programs and schemes introduced by the state government. One such crop is large cardamom or *Bada elaichi,* which was introduced by the state agriculture and allied departments. The Nagaland Empowerment of People through Economic Development, earlier known as the Nagaland Environmental Protection and Economic Development (NEPED), also encouraged the farmers to increase their income from jhum fields by cultivating cash crops such as pepper, turmeric, ginger, and yam in the fallow land. A group of farmers were sent to Sikkim – a major producer of cardamom – for training and exchange on cardamom cultivation, where they learned how to prepare nurseries.

According to the Village Development Board, at present 60 to 70 percent of the households in Khonoma are engaged in cardamom cultivation, though a few experimented with the crop in the mid-1980s.

Charles Chasie, senior journalist and convener, Khonoma Environmental Impact Assessment Report, Kohima, mentions: "Khonoma farmers are always willing to take risks and experiment with new crops." Earlier, they tried large-scale cultivation of vegetables such as cabbage, carrot, squash, and other cash crops, with limited results. Cardamom, however, was found to suit the soil and local climatic conditions and the profits have been encouraging. In the first three to four years, a kilogram of cardamom has been selling for Rs. 250–300. The largest amount produced

so far was 2,500 kilograms from 3 hectares of land. An optimistic Metha Chase, owner of Chase Nursery, expects to harvest 3,000 kilograms from 3 hectares by 2006. One stalk of cardamom bears 5 to 6 kilograms of cardamom, and occasionally 10 kilograms.

According to Chase, 1 hectare of cardamom can sustain a family's annual demands. "Alder trees help to improve soil fertility, which in turn increases the yield of the cardamom", says Chase. Cardamom is grown in the jhum fields alongside alder trees and other vegetables.

But certain problems have cropped up. With the increasing number of farmers engaged in cardamom cultivation and the subsequent rise in yield, the selling price of the crop has reduced sharply to about Rs. 50–90 per kilogram in the past two to three years. Chase claims that the Cardamom Growers Union was assured assistance by the government but no action has been taken so far. Intermediate traders fix the prices. "These middlemen buy cardamom from the farmers at Rs. 60 per kilogram and sell it outside the state at Rs. 250," says Chase.

Despite this hurdle, there are indications that more and more people are taking up cardamom cultivation. Punyu, however, is more skeptical and prefers to put on hold his plans for large-scale cultivation until the prices increase and stabilize. Till then, he intends to stay safe and continue cultivating garlic, which is supplied to Kohima market, and passion fruit, which he sends to Dimapur for sale as juice.

It has been observed that a large portion of the jhum lands used for cultivating Job's tears and such traditional vegetables are being replaced by cardamom. Similarly, rice, the primary crop cultivated in Khonoma, is gradually losing its place, partly due to the high labor input and poor incentives from its sales – an average of Rs. 10,000 per year from about 720 kilograms sold at Rs. 13–15 per kilogram (Khonoma Village Tourism Board 2004). It has also been observed that the reduction in jhum cycles has reduced the crop diversity. Cardamom cultivation could add pressure to the traditional land use patterns and cause a subsequent reduction in yield of the traditional crops grown in the jhum fields.

Constraints and prospects

Despite its potential for contributing to the local economy, ecotourism in an indigenous habitat can have undesirable impacts. The concerns and needs of the local community and their full participation are crucial in planning tourism development. Efforts are currently under way to prepare for the influx of tourists into the village. The Environmental Impact Assessment Report has been prepared for this purpose. It explores in detail the potential benefits and drawbacks of ecotourism in Khonoma.

Some of the local people point out the need for greater participation of the local community in the decisionmaking process. As one member mentions: "At the moment, the local community has little say in the tourism project as most decisions are taken by people originally from Khonoma who reside in Kohima."

Cash crops have yet not been cultivated to any great extent in Khonoma. As the jhum fields are already under pressure due to the shortened cycle, the introduction of cash crops could intensify this problem. It is important to analyze the possible impacts of this change in the agricultural pattern. Since many households are seen to be diverting from rice cultivation the level of self-sufficiency, which is about 80 percent at present, is likely to decline in the future with a concurrent increase in market dependency. This decline in the traditional system of

agriculture coupled with the thrust towards cash crops may have a deeper impact on the entire agricultural production system in the village in the long term.

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Appendix F. Community initiatives in livelihood improvement and the fight against HIV/AIDS: Tuensang, Nagaland

Lian Chawii

Introduction

The foundation of traditional governance in most indigenous societies of northeast India is the strong sense of community. This distinct characteristic is particularly evident as one travels deep into the remote villages away from the more urbanized cities and towns. In Tuensang District, Nagaland, the Eleutheros Christian Society (ECS), a nonprofit organization, draws on the combined strength of both the community and the Church to fight HIV/AIDS and drug abuse, which is prevalent in the region. Tuensang is one of the remotest districts in Nagaland, located in the eastern part of the state, sharing approximately 160 kilometers of international border with Myanmar. There are five dominant tribes and a few minor ones in Tuensang, the largest district in Nagaland, which covers an area of 4,228 square kilometers. The district has some of the highest incidences of HIV/AIDS, intravenous drug use, and sexually transmitted diseases in Nagaland – almost 7 percent of HIV tests conducted are positive. This can be attributed to factors such as lack of education, poverty, drug trafficking, rampant sharing of needles among intravenous drug users, insurgency, and border sharing with Myanmar.

In 1993, the ECS was started as a modest and informal effort by Chingmak Kejong, a local pastor, and his wife Phutoli. It was the death of close friends and relatives to AIDS and drug abuse that led and motivated the couple to initiate efforts to tackle this scourge, which affects and wastes many young people in Nagaland. Over the years the ECS has gradually evolved into an organization with more than 200 members, comprising those with HIV, pastors, village elders, and former drug users. Though the central focus of the ECS is to fight drug abuse and HIV/AIDS in Tuensang, the organization has branched into other developmental initiatives such as women's self help groups, education and health reforms, environmental awareness, and livelihood management in villages located in remote areas of the district. In most of their endeavors, the organization emphasizes participation from the local community, including women, elders, and the Church, in decisionmaking activities.

A factor that sets the ECS apart from others in the fight against HIV/AIDS is the ability to involve the Church – an influential body in community affairs and policies. This concept of involving a religious institution in tackling HIV/AIDS is perhaps the first of its kind in northeast India. This has helped immensely in dealing with the social stigma and discrimination faced by people living with HIV/AIDS and has been a factor in the sharp increase in the number of people willing to undergo the HIV test, from a mere six in 1999 to 2,450 in 2005. The outcome of over a decade of consistent campaigning is encouraging. The number of HIV-positive cases has declined from 7 percent in 2000 to 6 percent in 2005, and the number of intravenous drug users has reduced drastically from 73 percent in the mid-1990s to 5 percent in 2005.

The intensity and outreach of ECS activities is well known in Tuensang town – just about everybody knows the location of the ECS office, or has heard of its work. Also, the fact that the underground insurgent groups, instead of demanding a "tax" from the organization, are willing to contribute financially, speaks volumes about the acknowledgement of and respect for the

organization's contribution to society. The state government too has recognized their efforts by awarding the Governor's Medal to Chingmak in 2003 and Phutoli in 2004.

ECS initiatives can be divided into four broad categories: drug abuse and HIV/AIDS, empowerment of women, education, and livelihood management.

Role of the Church in the HIV/AIDS campaign

One of the most unique and interesting concepts in the campaign against AIDS in Tuensang has been the ability to draw strength from the community as a whole. The decline in social stigma attached to the illness and the subsequent drop in the number of HIV/AIDS cases has a strong correlation with the Church's involvement. In Nagaland, as in most northeastern states, the Church is a powerful body with an overwhelming influence on society. The women and youth groups within the Church are engaged in social activities for the welfare and development of society. Even in the ongoing peace initiative in the long-standing Naga dialogue on insurgency the Nagaland Baptist Church Council continues to play a crucial role.

The formal association of the ECS with the Church began in 2000 with the formation of the Church Alliance for Community Care and Support, hereafter called Care. In 2001, a HIV/AIDS awareness campaign was carried out in 19 churches in different parts of Tuensang District, involving different groups and sections of society, including village elders, community leaders, pastors, and women leaders. An intensive campaign was carried out for six months covering 961 households, during which Care interacted with more than 600 people in families and high-risk groups. The high-risk groups include drug addicts who share needles, their sex partners, those who practice casual sex, and partners of people living with HIV/AIDS. The local pastors acting as counselors, assisted by outreach workers and field assistants, offer emotional and spiritual support during the pre-testing and post-testing periods. In the pre-test counseling they explain the facts about HIV tests and also try to dispel certain misinformation. Post-test counseling is more about informing the patient, if tested positive, about their status and helping them accept the facts and providing guidance. A major challenge for the pastors when working with high-risk and infected people is gaining their trust. To achieve this trust they constantly counsel and assure the patients with moral and spiritual support. Each pastor counsels four or five positive clients at a time – inevitably, some of these people living with HIV/AIDS succumb to the disease. A monthly meeting is conducted to assess and review the performance and activities of the pastors. In 2002, pastors of four tribes, two counselors, and Phutoli, with assistance from the United Nations Drug Control Programme, Delhi, visited Thailand to see similar projects taken up by the church, NGOs, and the Thai Government. The group recommended the Nagaland State AIDS Control Society (NSACS) to send state bureaucrats and policymakers to Thailand to learn about Thai efforts in fighting HIV/AIDS.

At present, the ECS receives strong support from the Church in its campaign, which was not the case in the initial period. The Church then considered the issue to be more of a social problem and considered it to be outside the ambit of its obligations and duties. The fact that Chingmak was a local pastor and that Phutoli had an academic background in theology worked to the couple's advantage and after much persuasion, which went on for about five years, they managed to convince the Church to play a more proactive and responsible role. The Care group has since expanded tremendously – core support groups have been established in several major churches in Tuensang run by the five major tribes. When a person of a particular tribe is infected, he or she is provided with the necessary guidance and support by the Care group run

by the same tribe. Care has also adopted smaller churches in and around Tuensang District, where it conducts awareness campaigns, seminars, and training on HIV/AIDS. These churches have their own drop-in center where a pastor provides spiritual and emotional support to the family and the patient. Care also provides educational support to children of people living with HIV/AIDS. Some churches have even allocated budgets to set up small hospitals for these people. Due to the success of the Care projects, funds are no longer routed through the ECS but are received directly from the NSACS. In 2005 alone they received Rs. 6.3 million. The NSACS has officially assigned to the ECS the role of a resource center for Care projects in Nagaland. The ECS carries out training programs on HIV/AIDS for nongovernmental organizations in Nagaland. The NSACS and Family Health International/USAID also provide nutritional care to 200 clients under the Care project.

According to Chingmak, people living with HIV/AIDS who deal with their problems alone tend to get into extreme depression and this leads to early deaths. The ECS felt that this could be dealt with by encouraging the patients to form a personal relationship with others living with HIV/AIDS and their families, as this provides emotional strength and support rather than coping with it in isolation. This also helps ameliorate the social stigma, which is one of the main barriers to this problem in most societies. The ECS facilitated an informal platform for strengthening personal relationships among people living with HIV/AIDS and by 2005 there were 120 members in the group. By July 2005, the Grace Chapel was set up with 76 HIV-positive members, of whom only eight are men. This gathering helps members to support each other and derive strength by sharing their experiences. When under depression, the patients turn to a counselor who then finds other patients with similar problems and encourages them to support each other. The service is followed by a fellowship where experiences are shared, after which medical checkups are conducted by nurses and doctors, who provide the patients with nutritional facilities and vitamins. In the beginning, the church service was conducted once a month, but the frequency has increased to weekly. The group has played an active role by traveling to other villages and conducting awareness campaigns. According to I. Sentila Chang, President, Grace Chapel, the flipside to this increased visibility is that people living with HIV/AIDS are often discriminated against, resulting in mental and physical stress. Next in the agenda is to form Grace Chapels in all the subdivisions of Tuensang and to conduct a spiritual renewal week involving as many as possible of people living with HIV/AIDS in Nagaland. They also plan to organize skill-based livelihood training and collect an annual fee of Rs. 5. This courageous act by the people living with HIV/AIDS of overcoming their initial reservations can be attributed to the dedication of the community, particularly the Church, in being sensitive to their needs. As a result, there are about 75 HIV-positive people working full-time with the ECS Care projects.

About 1,200 orphaned and vulnerable children of HIV-positive parents in Tuensang District receive life skills education from the ECS. Children within the 8–14 age group are given life skills education by the ECS, while those between 14 and 21 are trained by the Church. Under the life skills education program children are taught assertive skills, such as the courage to say no to drugs or sex when under peer pressure, and to make informed decisions. They are also given lessons on creative and critical thinking and stress management. These life skills classes are usually conducted in different villages on Saturdays.

The number of HIV-positive people has not declined drastically – 6 percent in 2005 compared to 7 percent in 2000, since the primary infection has already spread for more than a decade. Nevertheless, as mentioned earlier, it is interesting to note that the number of people willing to

undergo the HIV test has increased sharply from six in 1999 to 2,450 in 2005. In 2006, from January to March alone, 1,021 people were tested, of whom 65 were positive. According to Chingmak, it is important to open more testing centers and intensify them so that those with negative results will become proponents of the test and be more involved in the campaigns, while those tested positive will be more careful and seek early support from other people living with HIV/AIDS and their families. This increase in the number of people tested in Tuensang is seen as a positive trend because in other parts of Nagaland, such as Kohima, only 92 people were tested, despite the fact that many people belong to the high-risk groups that showed symptoms of AIDS. Chingmak believes that there is an epidemic waiting to happen in Nagaland.

However, the ECS encounters several restricting factors in the fight against HIV/AIDS:

- There is severe shortage of medical personnel to deal with the large number of infected patients. There are no gynecologists, despite the high number of HIV-related antenatal cases.
- There is a need for better infrastructure and equipment, such as CD4 machines to monitor the patients.
- The Mother-to-Child program, funded by the World Bank, has met with several obstacles, mainly due to the late arrival or shortage of funds, despite the fact that at 8 percent Tuensang has the highest proportion of antenatal cases in India. The sharp rise in these cases, from one in 1998 to 28 in 2005, the highest in India, was one of the main concerns raised by the President of India, Abdul Kalam, when he visit the ECS in October 2002.
- The denial factor among HIV-positive people in Tuensang is a restricting factor. The fact that people are slowly breaking this inhibition is itself an achievement.
- Though the social stigma towards people living with HIV/AIDS has reduced to a certain extent, many people, including in the Church and in community groups, still hesitate to cooperate.

Women's empowerment through self-help groups

According to Phutoli, women make more sensible money managers than men. The general observation is that the women in rural Nagaland are subservient as they are dependent on their husbands for financial support. So one of the keys to empowerment, says Phutoli, is financial independence. Since most of the HIV/AIDS patients are illiterate and from poor families it was felt that setting up self-help groups would ease the financial burden. In 1997, with an initial investment from the ECS, 35 women's self-help groups were formed in Tuensang with 10–15 women in a group. At present, there are more than 200 self-help groups directly under the ECS, in which almost Rs. 2 million is in circulation, in Tuensang town alone. Many of these self-help groups have been set up by the ECS in villages located in the remote areas near the Indo-Myanmar border, where poverty is prevalent.

Under the scheme, loans are given out to self-help groups by the ECS. These initiatives have yielded interesting outcomes. Some of the group members have opened knitting or tailoring shops, pig rearing and poultry businesses, and grocery stores. Nine orphaned and vulnerable children of people living with HIV/AIDS are also supported by the self-help groups, some of which have adopted HIV-positive patients. On occasions, the village council also seeks loans

from the self-help groups. In Hakchang village, the group loaned Rs. 50,000 for a church building project. In Chingmei, the groups provide loans for children's education and also provide free medical support for the poor. Some have bought land and pursued agricultural activities by cultivating potatoes, ginger, maize, and other crops, which are sold in the local vegetable market. In December 2004, when the deputy general manager of the State Bank of India received the first loan repayment from the self-help groups, he commented that it was the first case in Nagaland where a community loan was repaid in full, and on time.

These self-help groups were encouraged to invest 50 percent of their earnings in a corpus fund that could be utilized to refinance the group members and also serve as a localized bank in the villages. Now almost every village in Tuensang has a local microcredit and finance banking system bank called the Edou Bank. *Edou* is the local Chang dialect word for a farmers cooperative. Loans are given for entrepreneurial activities at 2 percent interest. The interest from the bank is shared among the members at the end of every third year. In 2003, the Edou Bank in Hakchang village accumulated more than Rs. 400,000 in six months.

According to Phutoli, the success of a self-help group is based not on individual contributions, but on the combined effort of all its members, which facilitates strong group dynamics and team spirit. This was perhaps manifested in the protest march, carried out in 1998 by the women self-help group members, calling for a ban on the sale of lottery tickets, since they believed that it went against the spirit of saving, which they had tried hard to cultivate. The group submitted a memorandum to the district authority, who responded within a few weeks by imposing a total ban on lotteries.

Livelihood management in Chingmei village

Chingmei is one of the remotest villages in Tuensang District and is located close to Myanmar. The village has about 350 houses with a population of approximately 2,000 people, mostly of the Chang tribe, with jhum cultivation as its main agricultural mainstay. The village elders date Chingmei's origin back to 1877 when there were only 40 houses and animism was the main practiced form of religion. Christianity arrived on 11 February 1948 when a Naga Baptist missionary belonging to the Ao tribe visited the village and baptized some of the local people. Attempts were made earlier by the English Baptist missionaries to establish the religion but they were killed by headhunters. The last recorded traditional practice of headhunting among the Naga took place in Chingmei village on 5 April 1945 in a clash with the neighboring Konyak tribe. Interestingly, Tuensang District was not under British or Assam administration, unlike the neighboring districts of Mokukchung and Kohima. This is also attributed to the late arrival of Christianity compared to the rest of Nagaland.

In 1997, the ECS initiated the People's Action for Change project on livelihood management. Under this project, funded by Action Aid, nine resource-poor villages located in remote parts of Tuensang were identified. Chingmei is one of the villages where the ECS introduced livelihood reforms. In each of these villages, a community board was formed comprising key persons in the villages. The board oversees the community development work.

Educational reforms

It is the untiring effort of the ECS over the years in taking the initiative to promote education in the remotest areas of Nagaland that has prompted the state government to reassess its educational system and policies and come up with the much-needed Nagaland

Communitization of Public Institutions and Services Act (2002). Under its provisions the village is empowered to run the local elementary and middle school, and salary funds are directly sent to the village educational committee, which has the authority to deduct the salaries of staff that do not perform. It is also empowered to appoint substitute teachers and grant leave, as well as being responsible for the universal enrolment of children up to the age of 14.

In 1998, when the ECS started the People's Action for Change project, the government school in Chingmei was in a state of disrepair; teachers were rarely present, students' attendance was low and the dropout rate was high, and school uniforms were unaffordable. This deteriorating condition was one of the reasons that prompted the more affluent parents to seek admission of their children to the local private school. The ECS, however, decided to work with the government school since the fees were affordable to poor families. Meetings were organized with the local teachers, parents, village elders, and other community leaders who felt the need for a change in the educational system. They resolved to send all the children in the village to school and decided that no child should be seen on the streets during school hours. Each family raised two chickens per child to pay for books, pencils, and school uniforms. The ECS with Chingmei village jointly funded the salary for three volunteer teachers, and with support from the local community attendance of the staff was maintained.

The efforts have paid off. By 2003 – the project had begun three years earlier – student enrollment had increased by 35 percent. A boarding school was also introduced for 140 students from standard II to V. There was evidence of sincerity and commitment among the government schoolteachers – the attendance increased to 85 percent from 45 percent. As a result of this stiff competition the local private school had to shut down. The Community Board set aside Rs. 5 per year of membership fee from each member of the village to support orphans and physically challenged children. As a sign of gratitude, the village decided to offer a day's work in the field of the volunteer teachers. The parents express hope that their children will continue to pursue higher education and secure respectable jobs in the government.

In 2003, the community decided to buy a computer for the school and each family donated one tin of maize, equivalent to 20 kilograms, which worked out to approximately 350 tins, fetching about Rs. 15,000. With some contribution from the ECS, the community managed to procure a computer for the school. This generated more interest among the students, whom the ECS hope will pursue higher education, since the dropout rate tends to increase at the high school level. At present, more than 20 students study outside the village for college education.

Health

A survey conducted in Chingmei village at the initial phase of the project showed high cases of diarrhea, dysentery, and other health problems, particularly during the monsoon. This was mainly due to the lack of proper hygiene and sanitation. There were no animal sheds in the village – pigs and chickens were let loose on the streets. The problem was compounded by the absence of toilets. The ECS carried out health awareness campaigns where the community was informed about basic hygiene, including the importance of having sheds for the animals and the need for toilets. The community resolved to have one toilet per family, failing which a fine of Rs. 50 would be imposed – a large amount for the Chingmei families, whose average monthly income is Rs. 500–600. The ECS offered to pay Rs. 30 per day to dig 2 x 1 meter pits for the toilets; most of the owners dug the pits themselves and earned their daily wage. Now, more

than 80 percent of the households have their own toilets and the livestock are properly contained in their sheds.

A health center was set up maintained by health workers from the local community, who were trained by the ECS in first aid and basic health care. This has helped reduce the travel expenditure incurred by the community, except for cases that call for major medical intervention.

Chingmei has also propagated 15 women's self-help groups, with each member contributing Rs. 10–15 per month. The gaonburas, or village elders, mention that the community has benefited a great deal from the self-help groups, as they charge only 2 percent interest compared to the 10–15 percent charged by the local moneylenders. The self-help groups also fund a part of the volunteer teacher's honorarium and medical assistance for the poor. Many families also take loans from the groups for their children's school admission.

Natural resource management

Each family in Chingmei village owns about 2 to 3 acres of land in which they practice jhum cultivation, but productivity is low in these areas because of the frost and cold climate. Most families, as an alternative source of livelihood, traded in timber from the community forest, which was abundant and considered to be of fine quality. However, as the trade became profitable the logging grew more intense and inevitably became unsustainable, as well as giving rise to other problems such as water shortages, previously an uncommon problem. Finally logging, along with wildlife hunting, was banned in 1996 in the village and the surrounding areas. This ban was further strengthened by the Supreme Court's ruling against timber felling in December 1996. For the purpose of construction and other noncommercial use, special permission has to be obtained from the village council.

With help from the ECS, which supplied over 2,000 saplings, the village organized tree plantation drives in the reserved forest. As a result the water shortage was significantly alleviated. Another positive outcome of this initiative is that the population of the mithun – an animal of totemic and symbolic significance in traditional Naga culture and a state animal – has significantly increased. Once a rare sight, the mithun is now often seen straying into the neighboring jhum fields. One can also hear the sound of birds from close distance, which was unusual when bird hunting with slings was common. Due to the ban on logging in the community reserve forest, the local people have taken the initiative to set aside a portion of their own jhum lands for tree plantation to meet their personal needs. The vegetable produce from the jhum fields is sold at the roadside and in the local market. This is a new development among the local people, who were earlier reluctant to sit and sell their wares at the roadside or in the market as it was considered undignified.

Shepherd for "the lost, the last, and the least"

The ECS' role in the struggle to combat HIV/AIDS and to improve the livelihoods of the resource-poor communities in Tuensang District is truly commendable. There are several other areas of ECS initiatives that also deserve mention, such as the Retrievers Society. Under this program the ECS encouraged a group of local unemployed young people to carry out manual work as porters by loading and unloading commodities to make a living. These retrievers earn as much as Rs. 100 to Rs. 150 per day. The ECS offered loans without any interest for two years to some of the retrievers, who were encouraged to form groups. Under this sweat fund a certain

amount is used by each member, revolving among the members every two months. Most of the members have taken up small businesses and run grocery stores, while some have invested in poultry and pig rearing development.

It comes as no surprise that the ECS contribution to society has earned well-deserved recognition and acknowledgement. In October 2002, the President of India, Abdul Kalam, made a personal visit to the ECS office in Tuensang and expressed concern about the large number of HIV/AIDS cases in the district and urged the state government to take up the matter. For one of India's most prominent leaders to travel to this remote district is perhaps an indication of the impact of the ECS contribution to society. In December 2004, the governor of Nagaland made it a point to acknowledge ECS efforts by inaugurating the House of Hope, a drug rehabilitation center, which is located in an isolated area about 26 kilometers from Tuensang town. Chingmak and Phutoli had invested their wedding gift of Rs. 140,000 to obtain a portion of land for the rehabilitation center, which is occupied by approximately 10 to 15 people at any one time. The building, also used as a resource center, has been extended to accommodate about 10 women.

There are four main agencies that fund ECS activities – Family Health International under USAID, the Indo-German Social Service Scheme, Action Aid India, and the Nagaland State AIDS Control Society (NSACS). It is interesting to note that these funding agencies approached the organization to offer financial support, instead of the other way round, which is the norm in most cases. In fact, the NSACS has requested the ECS to serve as a resource center for the Care projects in Nagaland.

At a time when information on Nagaland in the mainstream media is mostly negative it is a true testimony to the resilience of human spirit that in a remote corner of the state there are selfless people still dedicated to working tirelessly "for the lost, the last, and the least".

Appendix G. Community-based ecotourism and sustainable livelihoods: Sindrabong, Sikkim

Dr. Dipankar Ghose

Introduction

Sindrabong, West Sikkim District, Sikkim, India, is a cluster of six hamlets – Chongri, Lungmo Dara, Sosing, Sankhola, Barseybong, and Sindrabong – with a total population of approximately 500 people in 48 households. The majority of the population in this village cluster are scheduled tribes: Bhutia and Sherpa (70 percent), and Subba or Limbu (20 percent).

The study area is close to the Khangchendzonga Biosphere Reserve. The reserve, 2,620 square kilometers in extent, comprises the state's largest protected area, namely the Khangchendzonga National Park (1,784 square kilometers), and the buffer areas of Lhonak valley, West Chungthang-Lachen, Tholung valley, and the Rangit and Teesta catchments (836 square kilometers). The Khangchendzonga Biosphere Reserve comprises about 37 percent of the geographic area of Sikkim.

Of the above-mentioned six villages, Chongri (meaning "yak" in Sikkimese) is located along the Rimbi River and is the village closest to the reserve. As the name suggests, Chongri is a village inhabited by yak herders. Since time immemorial, nomadic yak herding and trade in medicinal and aromatic plants has been the chief source of livelihood for the inhabitants of Chongri and the other five villages of the Sindrabong village cluster. Villagers were pastoralists and the total number of yaks in this village cluster was about 3,000 a decade ago. The pastoralists' lifestyle had an adverse effect on the forests as well as on the social life of the pastoralist and his family. Large tracts of pristine temperate forests were cleared by the yak herders for creation of open grazing patches for the yaks during winter, resulting in large-scale deforestation. The yak herders used to collect firewood and timber in the forest for their personal consumption and often hunted wild animals. Illegal extraction of wildlife products from the forests was sometimes practiced. The children of yak herders did not have an opportunity to attend school as they were also involved in pastoralism in areas far away from where the schools are located.

The winter pastures for blue sheep (*Pseudois nayur*) and foraging grounds for musk deer (*Moschus chrysogaster*) were unavailable during the lean season. Less than 10 percent of the area of the biosphere reserve has adequate habitat in the form of palatable sedge and grass, which are extremely limited in extent. A preliminary sampling study carried out by the Mountain Institute indicated use of the same pastures by both blue sheep and domestic yak, which resulted in competition for this limited resource. When the yaks descended to the subalpine forests in winter, there was competition with musk deer for the limited fodder resource.

In early 2004 an international NGO, The Mountain Institute, through its project office in Sikkim and in partnership with the Forests, Environment, and Wildlife Management Department, Government of Sikkim, the Khangchendzonga Conservation Committee, and local communities, initiated activities targeted towards sustainable livelihoods and biodiversity conservation in Sindrabong village cluster and the adjoining Yambong valley. There were some community-based organizations, including the Sindrabong Khangchendzonga Ecofriendly Society, the Yambong Ecotourism Committee, the Sindrabong Joint Forest Management Committee under the Divisional Forest Officer (Territorial), West Sikkim District, and the self-

help groups of West Sikkim District. Villagers were organized into these community-based organizations, which then spread environmental awareness at the grass-roots level. These initiatives weaned the villagers away from a pastoralist life towards sustainable and ecofriendly activities.

The road to sustainable livelihoods and biodiversity conservation

The major initiative was demarcation of a trekking trail, the Yambong-Singalila trek. Singalila is the major mountain spur on the western side of the state of Sikkim that separates India and Nepal. This spur, running in a north-south orientation, joins the Khangchendzonga mountain ranges towards the north. This trek is a treasure trove for nature lovers, providing panoramic views of snow-capped mountain ranges. The Yambong-Singalila trek follows the Singalila range, passing through the Yambong valley and the Daphey Bheer or Devil's Pass, located at 5,100 meters, which gives excellent views of the Everest and Khangchendzonga ranges of mountains with their glorious peaks. Six high-altitude lakes, Jamle Pokhari, Lam Pokhari, Laxmi Pokhari, Hans Pokhari, Dhunge Pokhari, and Guyam Pokhari, are also visible during this trek. The villagers of Sindrabong cluster promoted this trekking activity, which resulted in additional seasonal income by providing different ecotourism services such as home stays, village tourism, and trekking tourism. They earned additional income as porters, guides, cooks, and pack animal operators, and the profits went directly to the community.

A community-based ecotourism committee – the Yambong Ecotourism Committee – was formed to manage this village-based tourism. This was the coordinating body with representatives from three NGOs in the three villages – the Sindrabong Khangchendzonga Ecofriendly Society from Chongri, the Nangjong-Lungma Samrakshan Samiti from Lungmo Dara and Rimbick, and the Nambu Samaj Sangh from Rimbick and Nambu. The objective of this committee was to make the Yambong and Singalila range free from grazing. Yak herding being an unsustainable practice, the villagers provided training and assistance to herders to give up this practice and take up sustainable livelihoods. A total of Rs. 200,000 was invested by the Mountain Institute for construction of water supply in the villages, procurement of equipment for dairying, such as cream separators for making butter and cottage cheese, construction of toilets for proper sanitation facilities in the village, material support for drinking water, and poly houses for vegetable farming. An additional Rs. 150,000 was spent by the villagers on local material and laborers, and another Rs. 200,000 was provided by the Forests, Environment, and Wildlife Management Department and panchayats for provision of camping equipment and repairing the trekking trail. Seventy percent of the village people were involved in this process.

The community-based organizations played an important role by spreading the message of biodiversity conservation at the grass-roots level. It was in the meeting of the Sindrabong Joint Forest Management Committee that the yak herders agreed to phase out all their yaks from the forests within six months. This was made possible because the villagers were more conservation conscious and also had other sources of income. An added attraction was the education of their children, made possible by a settled village existence. Over the last year, the number of yaks has been reduced by 15 percent. Capacity building of the villagers was also conducted for alternative income generation through provision of ecotourism services and community dairying.

Achievements

The Yambong-Singalila trek started in October 2005, with some success. The local communities have been involved in providing the tourism-based services. About 146 persons from 14 trekking groups from the United States, United Kingdom, Spain, France, Italy, Switzerland, and the Netherlands participated. A total of Rs. 582,030 went to the local communities during 2005–2006, of which Rs. 297,540 was distributed among the 13 pack animal operators and the other Rs. 284,490 among the porters. Of the total income, 60 percent went to Sindrabong village cluster and the rest to Nambu, Rimbick, and Tongbu. Of the village clusters Sindrabong is located at the most strategic spot and is the source of most ecotourism initiatives. A total of 35 households in the Sindrabong cluster benefited from the initiatives. The Yambong Ecotourism Committee also generated a revenue of Rs. 16,500, of which Rs. 11,500 was a contribution from the members and Rs. 5,000 was a contribution from its adviser, the local member of the Legislative Assembly, Ms. Kalabati Subba. This fund has been utilized fully for the salary of the coordinator, communication, website creation, and to meet the office running expenses. All financial transactions were conducted through a bank account at a nationalized bank.

During the year 2005–2006, trekkers on the Yambong-Singalila trek were provided with home stay facilities and local delicacies by the Yambong Ecotourism Committee. The communities of Rimbick, Dechenthang, and Sindrabong put on a traditional Sikkimese cultural program to welcome the visiting guests, who helped conserve local culture and traditions as well as generating some income for the local people.

A review meeting was held at Nambu, West Sikkim, towards the end of 2005, which was chaired by Ms. Subba and attended by the members of partner organizations, for example Pelling Tourism Development Organization. Targets for the year 2006–2007 included providing better employment opportunities for the members of the Yambong Ecotourism Committee by building local capacity, protection of the Yambong-Singalila region, development of village campsites, and provision of better services to the trekkers and tourists. A community campsite at Chongri has been prepared with financial aid from the Mountain Institute. This consists of a kitchen-cum-porters camp, toilet with running water, and leveled ground for camping. The Sindrabong Khangchendzonga Ecofriendly Society was entrusted with the management of this community campsite. Of the income generated by renting this campsite 30 percent will be given to the landowner, 30 percent will be spent on its maintenance, and 40 percent will go to the Sindrabong Khangchendzonga Ecofriendly Society for conducting village-level developmental activities.

Fourteen toilet facilities were also created in the villages, for which Rs. 2,500 was contributed by the Mountain Institute and Rs. 2,000 by the community. A potable water supply to Chongri village was also created by tapping the nearby water source. Poly house vegetable production was started in the village to help the villagers in generating additional income. The improvement in the standard of living has made possible further goals for education of the children.

In another confidence-building measure, the Mountain Institute supported the villagers at Chongri in establishing the Khangchendzonga community dairy. Support from the Mountain Institute was augmented by the villagers, who provided land and laborers for construction of the dairy. From nomadic pastoralism, most of the villagers have now shifted to stall-fed dairy farming. Workers in the dairy are earning about Rs. 500 per month.

With fewer yaks in the alpine areas more forage is available for the blue sheep, Himalayan tahr (*Hemitragus jemlahicus*), serow (*Nemorhaedus sumatraensis*), and musk deer. Reduction in the number of herders' camps will also result in less usage of forest resources and more access to winter pastures for the wildlife.

Pro-wildlife livelihood changes among the herders, reduction in hunting, and the breaking of the hunting chain between the older and younger generations were all beneficial for the survival of wildlife. In this initiative, external support was also provided through partnership with the people, with funds being transferred to the people as they implemented the project.

Enabling factors

The success of the Sindrabong Khangchendzonga Ecofriendly Society has been based on a number of factors. The driving force of this initiative was the effort put in by the staff of the Mountain Institute, Sikkim Unit, who provided technical and financial support and purchased equipment for the project. This external support was matched by the local community, who contributed by providing laborers and local materials. Only needy villagers were selected for this initiative and the society, being a community-based organization, was in the perfect position to select these people. The activities tried to target women's welfare relating to water, health, sanitation, vegetable gardens, and community dairying. All the income from these income-generation activities would go to the womenfolk. Based on the community consultations organized in the years 2004 and 2005, a detailed village action plan was prepared for Sindrabong. All the activities try to follow this plan. As mentioned earlier in this case study, the villagers participated in this initiative by contributing in kind, which ensured that the villagers had some ownership and respect towards the project.

This initiative is also sustainable because the villagers' institutions, including the Sindrabong Khangchendzonga Ecofriendly Society and the Sindrabong Joint Forest Management Committee, have their own constitution and executive bodies, and function through an institutional bank account. Currently the Ecofriendly Society conducts all capacity building programs with technical support from the Mountain Institute, WWF-India, and other local NGOs, whereas the Forest Management Committee does the afforestation and conservation-related activities along with the Forests, Environment, and Wildlife Management Department. The Ecofriendly Society is also collaborating with three other local community-based organizations to promote ecotourism in the Yambong valley. Institution building at various levels, capacity building of the stakeholders, and partnerships with different institutions will also help in making this initiative sustainable.

The initiative also received support from the Government of Sikkim as it is a state government policy, and in line with the Wildlife (Protection) Act of India, 1972, to evict yaks from the protected areas of the state. The herders' phasing out of their yaks also received political support at a later stage. Sikkim is also being projected as an ecotourism destination and this has helped in promoting the Yambong-Singalila trekking trail during this initiative. Closure of the Singalila trail via Uttarey during 2005 increased the inflow of tourists to Yambong. Nima Tashi Bhutia, a young person from Chongri village, was the main leading force behind this initiative. He and other young people in the villages convinced their parents about the ill effects of their dependency on the moneylenders and herding practices, which was creating a problem for the wildlife and their habitats.

Restricting environment

A few years ago, the herders had an unsustainable and irregular source of income from yak herding and they had to borrow money from the moneylenders, who used to be powerful persons in the village and had some political clout. At the onset of the present initiative, the moneylenders perceived this to be harmful for their business and strongly opposed it, making it harder for the project personnel to convince the yak herders to give up their age-old practice and start something else. Moreover, the lack of political support and confidence of the external agencies such as the Mountain Institute was a deterrent at the initial stages. Communication and transportation pose a major hurdle for these remote villages in promoting ecotourism**.**

There is also poor marketing capability, which still requires a major overhaul. Marketing is currently done through two local tour operators. This will change, and more tour operators are to be contacted in order to generate an adequate number of trekking groups. Tour operators in Nepal and Bhutan who cater to tourists visiting eastern Himalaya are still unaware of this trekking trail, and a strategy is to be developed to inform them.

Prospects

The Sindrabong Khangchendzonga Ecofriendly Society is in the process of creating a new trekking package entitled "Himalayan heritage hamlet trek". This will comprise 11 days of trekking and will pass through some of the remotest villages of Sikkim, where the traditional culture is still unaffected by the developing world and remains rich and vibrant. The enchanting experience will include a stay with the yak herders at Chongri, a taste of the Limbu culture at Topung and the Bhutia culture at Melli, wish making at Khecheopalri Lake, a visit to the archaeological remains of Sikkim's first capital and the coronation throne at Yuksom, and relaxation in the hot spring at Borong. This package will be marketed through the local and outstation tour operators.

During January 2006, the members of the Yambong Ecotourism Committee attended a meeting along with other ecotourism committees from Sikkim and joined the newly created Sikkim Ecotourism and Conservation Federation. This will also help the villagers to reach the government and address some of their concerns through the federation.

Institution building is being stressed by the members of the Yambong Ecotourism Committee. The herders are professional trekkers and can be used as trekking guides and porters. In a recent initiative supported by the stakeholders, the Yambong Ecotourism Committee formed the Yambong Bird Club and trained 25 young people from five villages for conducting bird tours. Chongri being the last village, the trekkers will have to pass through it and avail the services, which makes this initiative sustainable. The divisional forest officer (wildlife), West Sikkim District, in a public gathering on 11 June 2006, mentioned that very soon there will be a Forest Department checkpost in Nambu, which will issue permits to visitors and trekkers going into Khangchendzonga National Park. This is a welcome gesture from the Forest Department and will help increase trekking tourism. Sindrabong is the main water source for Gayzing and Pelling and safeguarding the watersheds in the Yambong valley will ensure a regular supply of water to these two townships. A number of local people urged that the Sindrabong Khangchendzonga Ecofriendly Society and the Yambong Ecotourism Committee spend more time in building people's trust, giving short-term benefits and creating sanitary and drinking water facilities.

Locals also perceived that developmental projects such as road building are not of great benefit to the present study areas because they do not have much impact on people's lives. There is less benefit sharing in such developmental projects, and the contractor system only benefits the high-profile people and does not reach the grass-roots population.

Persons consulted

Mr. Keshan Subba, President, Yambong Ecotourism Committee.

Mr. P. T. Bhutia, member, Yambong Ecotourism Committee and Sindrabong Khangchendzonga Ecofriendly Society, Chongri.

Mr. Sandeep Tambe, Project Manager, the Mountain Institute.

Mr. L. D. Subba, Panchayat member, Nambu.

Mr. Nima Tashi Bhutia, Secretary, Yambong Ecotourism Committee.

Appendix H. Joint Forest Management and sustainable livelihood: Boxanagar forest range, Tripura

Jayanta Bhattacharya

Background

Boxanagar forest range is spread over about 7,500 hectares on the Indo-Bangladesh international border. This border is very porous and in many cases runs through cultural and linguistic areas, communities, and even individual holdings. Transborder movement of people is frequent and is often for monetary reasons, either legal or illegal.

The range has 3,254 hectares of forestland under the Department of Forest, Government of Tripura. There are 11 gram panchayats having a population of 31,000, of which 68 percent live below the poverty line. Of the population of the range area, 49 percent are Muslim, 27 percent are Hindu scheduled caste, 2.5 percent are scheduled tribes, and 21 percent are from other castes. As regards occupational status, 70 percent are farmers, while the remainder are forest and other land occupiers, or are landless. Among the landholders, considerable numbers are allottees in excluded forestlands. Of 3,254 hectares of forestlands, 576 hectares are under rubber plantations of the Forest Department and about 400 hectares are occupied and cultivated by the local people. Thus the forestland now under forestry and administered by the department is 2,278 hectares, which is under tremendous pressure from destructive activities (Source: Forest Department).

The area was once green and rich with thick vegetation. Many old trees, such as teak, gamar, and karai, were available in the forest. Depletion of the forest started with the partition of the country. Thousands of Hindus crossed from what was then East Pakistan in the 1950s and 1960s and settled in the forests. Later, economic migrants started pouring in, increasing the pressure on the forest.

Rich, valuable, and dense forest started disappearing rapidly. In the 1980s the government initiated plantation of cash crops, including coffee and cashew nuts, on the degraded lands to reduce poverty and to restrain the local people from damaging the forests. A forest police force was deployed to protect the forest and stop timber smuggling, but struggled to contain illegal activities in the forest. Large numbers of people from Boxanagar and neighboring Bangladesh occupied the forest, collecting forest produce, cultivating in the forest areas, grazing cattle, burning forests, and smuggling seedlings, saplings, and timber to Bangladesh. There were inadequate numbers of forest employees to guard and protect the forest, and they were forced to remain as silent spectators of the destruction of the forest.

Abu Zafar, now chair of the Boxanagar-Kalsimura Joint Forest Management (JFM) Committee, recalled: “Five years back the area wore a deserted look. Long stretches of barren wasteland were dotted with stumps of what had once been trees.” Abdul Malek, a 25-year-old youth, added: “In the morning I used to stalk the forestland to find suitable timber for smuggling. I was not alone, hundreds of such youth used to do the same job for earning money. But this attitude has changed now.”

Green Brigade

On 25 December 1988 Ashok Chowdhury took over the charge of the Boxanagar range, which by this time was a desert. He realized that it would not be possible to protect and renovate the forest using existing methods. The idea of JFM struck him. If people were to change their attitude towards the forest a motivation drive was necessary. His staff conducted a survey among the people living on the fringe areas of the forest and found that earning a livelihood was the reason behind destruction and depletion of forest. In addition to the motivation drive, then, alternative arrangements for livelihood were also necessary. During the survey he came in contact with many young people in different localities, most of whom were educated. By continuous persuasion he managed to form a JFM volunteer group, otherwise known as the Green Brigade.

Members of the group were given one week's training by an NGO, Acharya J. C. Bose Vrikshamitra Sangha, on the concept of JFM. The process of training JFM volunteers continued and simultaneously the trained group started a door-to-door campaign about the utility of the forest and the concept of JFM. The people started responding slowly when they came to know that half of the selling price of timber would go to the members of the JFM committee, and besides they would be able to collect fuel, fodder, and fruit from the forest.

The Green Brigade continued their relentless awareness campaign in different forms and also started patrolling in the forests with the forest officials to stop illicit felling. The task was not easy due to the opposition of vested interested groups, who threatened the Green Brigade with dire consequences if they did not give up their jobs. Political influence was also brought to bear, with the implication that the group was in league with forest officials to deprive the poor people of their earnings.

The group apprehended many persons involved with illicit felling but the ranger did not file any court cases against them, trying instead to motivate them. The Forest Department then started replanting in the degraded areas, employing the local people as paid labor.

The impacts of the Green Brigade operation have been as follows:

- Transborder movement and smuggling of forest produce has fallen considerably.
- Cutting of forest plants and trees for use as fuel, encroachment on forestlands for cultivation, burning of the forests, and random cattle grazing in younger plantation areas have been sharply reduced.
- Due to the relentless campaign people have adopted the practice of collecting dry twigs, dry leaves, brushwood, and annual herbs and shrubs for daily consumption as fuel.
- People have given up the age-old habit of extracting tree seedlings, saplings, and poles for use as fuel, paving the way for renovation and regeneration of forest.
- A campaign against burning has enhanced the growth of seedlings in degraded forests.

Towards conservation and sustainable livelihood

Plantation for regeneration of forest started in 1999 in the government forestland, and a large area has been planted. Between 1999 and 2002, 928 hectares of land were brought under forest. The JFM movement also inspired private landowners to grow forests on their own land. During that time 794 families were brought under the program and 127 hectares of land were covered.

During the same time 300 hectares of privately planted forests were created. Altogether 1,855 hectares of forests were created between 1999 and 2002. About 400,000 nursery seedlings were raised by the JFM volunteers and used for afforestation. The plantation was mixed in nature and the rate of growth of the plants has been excellent. Species planted in the area include acacia, mahogany, teak, neem, bamboo, jackfruits, and olive.

More than 40 percent of the land on the range is under government forestland and is fertile and productive. These lands are elevated uplands and can be managed for community development under JFM. Degradation of these forestlands will lead to deterioration of the productivity of agricultural land (about 20 percent of the area) and fisheries (about 5 percent) and would threaten the water supply in the area. Unless forest can be protected in the area, the socioeconomic conditions of the inhabitants will be adversely affected.

The socioeconomic benefits for the people living on the fringes of the forest must be considered if sustainable forestry development is to be achieved. Hence the adoption of JFM and participatory forest management, and the bringing of 3,254 hectares of range forestlands under JFM activity.

Altogether five JFM committees have been formed:

Boxanagar-Kalsimura: 620 families

Kalamchora: 400 families

Ashabari: 350 families

Rahimpur: 300 families

Putia: 250 families

Total: 1,920 families

Three more committees will be formed soon at Veluarchar, Manikynagar, and in North Kalamchora gaon panchayat areas.

Achievements

Villagers are now collecting fodder, fuel, bamboo, wild vegetables, fruits (for example banana), and jackfruit free of costs from the forestland and also earning wages by working in reforestation schemes.

Altogether six lakes to the extent of 6 hectares have been dug in the forest areas, and the villagers are using them for irrigation in the fields, fisheries, and duck rearing. The JFM committees have leased out the lakes to different self-help groups. There is scope for digging further lakes in the area.

Many villagers have reported an increase in the number of animals, including different kinds of snakes, hares, wild boars, squirrels, civets, and birds. In addition, the water level has risen, and atmospheric conditions have improved due to the increase in forest cover.

The Forest Department has assessed the incomes for JFM beneficiary families as follows:

- After five to six years income from jackfruit plantation per hectare per year would be about Rs. 200,000.

- From bamboo plantation, income after three years, per hectare per year, would be about Rs. 150,000.
- From medicinal plant products, canes, and arjun flowers, income per hectare per year would be about Rs. 50,000.
- So the average income per hectare per beneficiary would be Rs. 133,000 per year.

From 3,254 hectares of forestlands (fully stocked, mature forest plantations), total income/share of the beneficiaries would be:

- Per year minimum income @ Rs.100,000 x 3,254 hectares = Rs. 325.4 million
- Considering 3,000 beneficiary families,
  per beneficiary family income per year = Rs. 100,000 (approx.)
- After 25 years aged plantation/forest thinning
  Timber shares of the beneficiaries = Rs. 2,600 million
- Per beneficiary timber share from 25-year-old plantations = Rs. 867,000

Prospects

There is scope for fresh extension of JFM participatory forest management in the range. It was observed that the JFM committees could not be formed in three places, namely Veluarchar, Manikyanagar, and North Kalamchora. One of the reasons behind this is that smuggling is still prevalent in the area, reducing the motivation to undertake JFM.

A number of villagers have stated that they were interested in small-scale and medium-scale industries where local resources can be used as raw materials, for example small match factories and incense stick factories where bamboo, which is available in abundance, can be used for the industry. They are also interested in entrepreneurial training. As the area is well connected with the subdivisional town at Sonamura and has good market connectivity there is potential for such enterprises.

This model is an exemplary one that can be used for experimentation in different parts of the state and region. This lessons can also be applied in insurgency-prone areas of the state. There is no doubt that if poverty can be reduced by introducing livelihood initiatives, insurgency will slowly fade away.

Persons consulted

Mr. Ashok Chowdhury, ranger of Boxanagar.

Ramu Das, Vice-President, Boxanagar JFM Committee.

Abu Jafar, Chair, Boxanagar JFM Committee.

Mrs. Abala Das, Swaraj self-help group.

Abdul Malek, a smuggler turned JFM volunteer.