Community Forestry for Sustainable Forest Management: Experiences from Bangladesh and Policy Recommendations

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Abstract: This study follows the introduction of community forestry in Bangladesh and uses secondary information sources to analyze its effectiveness as a means of fostering sustainable forest management. We found that current forest management practices in Bangladesh have evolved from an emphasis primarily on production to a more people-centric model designed to support the conservation of forest resources. First introduced in the late 1970's, community forestry has proven a successful model for reforestation, afforestation, and diversifying economic opportunities in rural communities. A total of 30,666 ha of woodlot plantations, 8,778 ha of agroforestry plantations, and 48,420 km of strip plantations have been established by the Forest Department under community forestry programs since the mid-1980's. Furthermore, some mature plantations have been harvested and the benefits distributed among key stakeholders. The 1994 Forest Policy, the Forest (Amendment) Act of 2000 and the 2004 Social Forestry Rules are considered milestone achievements for the implementation of community forestry in Bangladesh. A Tree Farming Fund (TFF) has been established to provide a sustainable revenue stream for community forestry projects.

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Bangladesh has succeeded in reducing distrust and conflict between forestry officials and local farmers, encroachment on government lands, and the deforestation rate. But, program implementation has faced roadblocks that stem from a top-down bureaucratic approach and poor governance system. A number of NGO's are also working to promote community forestry with notable success, despite shortcomings that include strong profit motive, poor coordination with government bodies, lack of transparency, and non-uniform benefit sharing mechanisms. However, a traditional community-based forest management model known as village common forests (VCF) practiced by indigenous people of the Chittagong Hill Tracts (CHT) may be a useful guide for policymakers looking for ways to support sustainable forest management that involves local people.

1. Introduction

Community-based forest management (CFM) is a grassroots movement that has emerged in response to the failure of top-down state forest policies to ensure sustainable management and equitable access to forest resources (Guiang *et al.*, 2001). CFM became part of international development efforts in the late 1970's that focused on deforestation, a burgeoning fuelwood crisis, and the resultant negative impacts on livelihoods. Co-managed systems are more efficient because they can better serve the needs of local populations within the context of a region's ecology (Kumar, 2002). CFM initiatives are often the manifestation of rural communities' response to forest degradation (a decrease in the quality of forests in terms of vegetation, soil, ecosystem services and functions, etc.). That is, the degradation creates an incentive for forest communities to invest traditional knowledge and practices in conservation, reforestation, control of bushfires, and fighting illegal forest exploitation and encroachment (CIFOR, 2011). The collective actions of local communities have resulted in regeneration of forest lands and increases in biodiversity (Panigrahi, 2006). The underlying belief is that communities are in the best position to manage and protect forests if they participate in decision-making about the sustainable use of forest

resources. Community-based forest management strategies appear to reduce resource degradation while improving rural livelihoods (Malla *et al.*, 2003). A number of community-based forest management policies and practices aimed at developing effective institutions to manage forest resources have evolved in South and Southeast Asia (Balooni and Inoue, 2007, Pulhin *et al.*, 2007, Rasull and Karki, 2009). Currently, the international community is primarily focused on maintaining biodiversity and forest health, ensuring adequate forest productivity, and protecting the socio-economic functions of forest resources (Muhammed *et al.*, 2008).

Many developing nations around the world have been promoting decentralization of natural resource management with the hope that by providing secure tenure, people who depend on natural resources for their livelihoods will seek to conserve them (Aggarwal, 2006). As a result, worldwide the amount of forest area administered by state government is shrinking, while areas reserved for communities, private individuals, or farms are increasing. This trend is especially evident in developing countries (29%), when compared to developed countries (19%), or the world average (23%) (White and Martin, 2002). Generally speaking, there are three models that describe the legal transfer of rights to communities: 1) Some governments have begun to recognize pre-existing community ownership and reform their legal frameworks accordingly, 2) others are simply devolving responsibility for managing public forest lands to communities, and 3) some are reforming public logging concessions to support greater local access (*ibid.*). Forest and conservation policies, especially in developing countries, have traditionally been characterized by general distrust of local people's ability to manage the natural resources on which they depend (Heltberg, 2001). However, recent studies show there is growing evidence that local community-based entities are as good, and often better, managers

of forests than federal, regional, and local governments (White and Martin, 2002).

Bangladesh is a small (147,570 km^2) South Asian country that borders India on the west, north, and northeast, Myanmar on the southeast, and the Bay of Bengal to the south. It lies between 20° 34' and 26° 38' north latitude and 88° 01' and 92° 41' east longitude. According to a recent estimate, the country's total population is 142.32 million (964 persons per km^2), making it one of the most densely populated countries in the world with a low per capita GDP of US$755 (BBS, 2011). The country is also characterized by a minimal natural resource base and high incidence of natural disasters, including cyclones, floods, and droughts. Forests in Bangladesh, as in other tropical countries, are deteriorating at an alarming rate because of various socio-economic threats, biotic pressure, and competing land uses. Major problems that affect natural resource management in Bangladesh include high economic and spatial incidence of poverty, a high population growth rate, scarce financial resources, inappropriate application of technologies, institutional weakness, poor human resources, poor quality of data about the resource, as well as declining productivity and sustainability of forest resources (FAO, 2000). While forests have always played an important role in human history, their rational management became a key social concern in the 1980's in both developed and developing countries (Biswas, 1992). Faced with increasing rates of deforestation, and the attendant problems of loss of biodiversity and other socio-environmental costs, the issue of conservation and rational management of forests became an important item on the agenda of many national and international organizations. In recent years forest management practices have shifted from an emphasis on maximizing yield to maximizing sustainability through increased participation of local forest communities, conserving biodiversity, and maintaining forest-based

ecosystem services (BFD, 2011).

To address the degradation of tropical forests, policy and management regimes have been revised to reflect the change from centralized government management toward more participatory management systems (Biswas and Choudhury, 2007). A key drawback of the centralized management system is lack of ownership over forest resources, which often results in illegal cutting, forest encroachment, etc. Thus, participatory forestry has evolved with the broad aim of giving forest-dependent people ownership and a stake in managing forest resources so they have an incentive to protect the resource. Though these efforts have produced some good results, many have failed to provide local people meaningful and enduring involvement; thus, such efforts often collapse once the program ends. Participants naturally expect genuine involvement, as opposed to a purely 'ceremonial' role in the management process. Effective participatory forestry efforts must also include short-term income generating activities because traditional forest management activities often require long rotation periods before there is any return on an investment. Historically, the traditional customary rights of forest peoples, as well as migratory farmers, entitled them to use forest products for their livelihoods (Sood, 1996). It is impractical and socially unacceptable to evict these individuals because they often represent the poorer sections of society, having little or no means of livelihood, and are sometimes supported by political or social elites. Several forest management strategies have been implemented to stop deforestation, including the establishment of protected areas, use of armed forces, and creation of new revenue streams (White and Martin, 2002). However, community members ultimately determine the success or failure of projects in any particular community, and for projects to be sustainable all community members must be involved, or at least considered, in the decision-making process, and all must be

able to share in the benefits (Nath and Inoue, 2008). With this basic principle in mind, our study investigates the performance of different community forestry projects and the historical development of forest policy in Bangladesh.

2. Study Methods

This study primarily uses secondary information to understand and analyze the performance of community forestry programs. Most of these programs were implemented by the government with support from non-government organizations (NGO's), implemented entirely by NGO's, or initiated by community groups without any help from the outside. We also analyze the historical trend of forest laws and policy formulation to show how forest management has changed from a model of government-managed profit-maximizing forestry to a more people-oriented participatory model that focuses on conservation and economic security for forest communities.

3. Forests of Bangladesh

Bangladesh has only 2.52 mha (million hectares) (17%) of land designated as forests (BFD, 2011), although FAO (2011) estimates 1.442 mha (11%) as effective forest cover. The per capita forest area in Bangladesh is very low (0.009 ha) compared to average values in Asia (0.145 ha) and the world (0.597 ha) (Table 1). Distribution of forests in the country is considerably skewed, with 29 of 64 districts having no official forest area at all, and only 12 with an area of 10% or more (Jashimuddin, 2011). Deforestation rates around the world show signs of decreasing, but are still alarmingly high at an average of 5.211 mha (0.1%) per year (FAO, 2010). Bangladesh has also shown some positive progress reducing the rate of annual deforestation from 2.1% during 1960-1980 (Chowdhury, 2003) to about 0.2% between 1990 and 2010

(FAO, 2011). Looking at public forest land in Bangladesh, about 15% is closed canopy (more than 40% crown density), 19% is open forest (10 to 40% crown density), 12% is plantation, and the remaining 54% is used for non-forestry purposes (FAO, 2000). The growing stock of forests in Bangladesh is also low (48 m^3 ha^{-1}) compared to average values in South and Southeast Asia (99 m^3 ha^{-1}), and the world (131 m^3 ha^{-1}) (FAO, 2010). There is also a big gap between the supply and demand of wood in Bangladesh, which is forecast to increase by 2020 (FAO, 2000). The forest sector's contribution to GDP is underestimated at 5% because this figure does not include the value of fuelwood and other minor forest products used by rural people or the role of forests in harboring biodiversity, buffering watersheds that supply irrigation and hydraulic infrastructure, protecting coastal areas from natural disasters, and surrounding environment from pollution (BFD, 2011).

Table 1. Forest area and area change (Adapted from FAO, 2011).

Country / Region	Extent of forest 2010			Annual change rate			
	Forest area	% of land	Per capita	1990–2000		2000–2010	
	(1,000 ha)	(%)	(ha)	(1,000 ha)	(%)	(1,000 ha)	(%)
Bangladesh	1,442	11	0.009	-3	-0.2	-3	-0.2
Asia	592,512	19	0.145	-595	-0.1	2235	0.4
WORLD	4,033,060	31	0.597	-8323	-0.2	-5211	-0.1

3.1. Forest Management

The history of forestry in Bangladesh can be characterized as a classic example of continued deforestation and degradation. The forests were exploited to earn revenue and supply raw materials for the ship and rail industries during the British colonial era (1757–1947), and generate revenue and supply raw materials for forest industries during the period of Pakistan's rule (1947–1971), which also continued into the

current period of independent Bangladesh sovereignty (Iftekhar, 2006). The conventional central forest management system in Bangladesh has been deemed unsuitable for the resource base and the country's socio-economic situation. Because of an inability to prevent widespread overexploitation of forest resources, many state forest areas have been rapidly degraded under population pressure and increasing demands for forest products (Biswas and Choudhury, 2007). That said, the forests of Bangladesh have been under planned management–that includes formal polices and laws–for more than a century.

Scientific forest management started with establishment of the Imperial Forest Department in 1864 during British colonial rule (BFD, 2011). The Forest Department (FD) initiated a plantation system in 1871, siting the first teak plantation at Sitapahar. Forests in hilly terrain were initially managed on a care and maintenance basis, while the lowland *Sal* forests came under the Department's jurisdiction during the 1950's (FAO, 2000). Forest management plans were prepared for each management division. These plans guided managers' day-to-day activities, outlining where trees should be cut, how many should be cut, and what should be re-planted on an annual basis (BFD, 2011). The first working plan was implemented in the Sundarbans in 1893. In those days, forests were managed primarily for revenue collection under control of the Revenue Department. Thus, the Forest Department focused mainly on extraction and replanting of valuable trees without considering local people or their participation in managing forests (Hossain, 1998).

Although traditional forest management techniques included both economic and ecological objectives, Bangladesh experienced rapid deforestation because of various socio-economic and socio-political factors (Muhammed *et al.*, 2005). These factors have minimized the utility and use of traditional forest planning and management. Unplanned

and unforeseen human pressures have exceeded planned conservation efforts, leading to widespread deforestation and fragmentation of forest resources (FAO, 2000). Dense population and limited land area compelled policymakers to consider alternative management practices. One such alternative, social forestry, was introduced in Bangladesh in the late 1970's and has proven to be successful. The Forest Department has shifted its role from custodian to a more participatory model that includes local people in forest protection and reforestation activities, as well as a benefit sharing mechanism (BFD, 2011). At the same time, development objectives at the national level have come to focus on forestry as a means for positively impacting social, economic, and environmental conditions, further underscoring the need for a socially-oriented system of forest management.

3.1.1. Forest Laws

The first forest law on the Indian subcontinent was enacted by British colonial rulers in 1865; it was amended in 1878 and again in 1927. During the current period of Bangladesh sovereignty, the Forest Act was first amended in 1989 to strengthen forest protection by providing stiffer penalties and restricting the discretionary powers of forest officials and local magistrates. This amendment increased traditional forest protection measures without introducing social forestry. It was not until 2000, when another amendment was introduced, that the concept of social forestry began to take shape (Alam, 2009). The Forest (Amendment) Act of 2000, under which the Government formulated the landmark 2004 Social Forestry Rules (SFR), is considered a milestone for the implementation of community forestry in Bangladesh. The SFR were subsequently amended in 2010 to support more equality in participant selection criteria–opening the process to women and the poor–and increasing benefit sharing by adjusting Participatory Benefit

Sharing Agreements (PBSA).

3.1.2. Forest Policy

The establishment of a forest policy in Bangladesh dates back to the colonial period of British rule, with the first forest policy being enacted in 1894 and subsequent modifications in 1955, 1962, 1979, and later in 1994. Throughout the British colonial era forest policy was oriented toward revenue generation and maximum resource exploitation. Forest policy established under Pakistani rule (in 1955 and 1962) showed a high degree of continuity with its colonial heritage and maintained an emphasis on commercial and industrial interests. This trend continued after Bangladeshi independence in 1971, with limited revenue collection and industrial use, and imposing ban on timber extraction in selected forest types. The first national forest policy of Bangladesh was enacted in 1979. This policy clearly established a participatory approach for the management of government-owned forestland and plantations on marginal lands (Muhammed *et al.*, 2005). It also paved the way for social forestry in Bangladesh, but failed to effectively address the issue of broader participation in forest management (Millat-e-Mostafa, 2002).

Negative social impacts from years of excessive government-sponsored commercialization of forest interests include the systematic alienation of local communities, disregard for local economic and subsistence needs, and the progressive diminution of traditional rights. However, the current forest policy formulated in 1994 represents a significant move toward people-oriented forestry and demonstrates the government's determination to protect and develop forest resources through popular participation. In an effort to better integrate community forestry into forest management practices, the government also formulated the 2004 Social Forestry Rules. These policy reforms have: 1) Increased opportunities for local communities to participate

in forestry activities and share experiences with the FD, 2) changed FD officials' attitude toward the participation of local communities in forestry activities, 3) made people more aware of and confident in the FD, 4) made it possible to involve the poorer sectors of society in forestry activities, thereby contributing to poverty reduction, 5) increased the transparency of the FD's operations, and 6) created a social forestry wing and new technical positions within the FD's operating budget. However, additional reforms are urgently needed to further increase the efficiency of the FD and improve its governance capabilities (ADB, 2007).

3.2. Community Forestry in Bangladesh

Community forestry (CF), commonly known as social forestry (SF), participatory forestry (PF), or agroforestry (AF), has been practiced in Bangladesh for more than three decades. SF programs have been initiated to meet local populations' forest product needs, reverse ecological degradation, and improve the socio-economic condition of rural populations (BFD, 2011). Such programs have become highly attractive and acceptable to many rural people, especially the landless and small farmers. The basic principle is integration of local people in reforestation activities with multiple objectives that include ecological, economic, and social benefits (Ahmed and Akhtaruzzaman, 2010). Community forestry has generated sufficient resources and income to raise the rural poor above subsistence levels and proven that it can play a significant role in rural poverty alleviation in Bangladesh (Zashimuddin, 2004). Apart from making resources available and generating employment and income, community forestry is also playing a vital role in conserving the environment.

The forest policies that institutionalize participatory social forestry in Bangladesh are considered to be the most elaborate in the country's

history. However, progress remains slow because inadequate institutional support, political instability, and poor governance hinder policy and program implementation (Muhammed *et al.*, 2008). Khan and Begum (1997) showed that participatory forestry in Bangladesh has reduced distrust and conflict between forestry officials and local farmers, encroachment on government lands, and rates of deforestation. In participatory forestry programs, locals are involved in tree plantation activities, while unauthorized settlers have been given usufruct rights in designated forest areas through benefit-sharing agreements (BFD, 2005). Participation in resettlement programs has increased household incomes, employment opportunities, and financial and non-land assets. Safa (2004) found that participatory management regimes contribute to sustainability and improve settlers' standard of living, suggesting it is an efficient management option for sustainable forest management in Bangladesh.

Community forestry is not a very old concept in principle, but indigenous and other forest-dependent communities have shown remarkable success in managing forest resources for centuries in Bangladesh and other parts of the world. The Village Common Forests (VCF) managed by indigenous communities in the Chittagong Hill Tracts (CHT) is one such example of sustainable forest management. Community forestry projects in Bangladesh can be classified into three categories based on who initiated the program–the government, an NGO, or the local community. Regardless of the initiating organization, these initiatives are unique and have their own stories of success or failure that depend on management practices and local conditions.

The Bangladeshi government – primarily through its Forest Department – has sponsored several initiatives to involve communities in conserving state-owned forest reserves (especially in *Sal* and hill forest areas), un-classified state forests (hill forest areas owned by district ad-

Table 2. Historical development of community forestry programs in Bangladesh.

Programs	Period
1. *Taungya* System	1871
2. Forestry Extension Service Phase I	1962-1963
3. Betagi-Pomra Community Forestry Project	1979-1980
4. Jhumia Rehabilitation Programme in CHT Phase I	1979-1989
5. Development of Forestry Extension Service Phase II	1980-1985
6. Community Forestry Project	1982-1987
7. Afforestation and Nursery Development Project	1987-1995
8. Jhumia Rehabilitation Programme in CHT Phase II	1990-1995
9. Participatory Social Afforestation	1991-1998
10. Forest Resources Management Project: Forest Directorate Component	1992-2001
11. Extended Social Forestry Project	1995-1997
12. Coastal Project	1995-2000
13. Forestry Sector Project	1997-2004
14. Sundarban Biodiversity Conservation Project	1999-2006
15. Nishorgo Support Project	1999-2008
16. Char Development and Settlement Project-III (2nd Phase)	2005-2010
17. Reedland Integrated Social Forestry Project	2005-2010
18. Afforestation in the Denuded Hill Areas of Division (2nd Phase)	2008-2012
19. Biodiversity Conservation and Poverty Alleviation Through Afforestation in the Greater Rajshahi and Kushtia Districts.	2008-2012
20. Participatory Social and Extension Forestry in Chittagong Hill Tracts	2008-2012
21. Community Based Adaptation to Climate Change through Coastal Afforestation	2009-2012
22. Revegetation of Madhupur Forests through Rehabilitation of Depended Local and Ethnic Communities	2010-2012
23. Poverty Alleviation through Social Forestry	2010-2013

Source: Adapted from BFD (2011), Muhammed *et al.* (2005), Zashimuddin (2004), Biswas and Choudhury (2007), Hossain (1998), Banglapedia (2006).

ministration), mangrove forests (Sundarbans and coastal areas), and marginal lands (roadsides, railways, canal embankments, etc.). It is estimated there are about 4.65 mha (which is about 31% of the country's total area) of land available for social forestry in Bangladesh (BFD, 2011). The first attempt at community forestry in Bangladesh can be traced back to the Betagi and Pomora community forestry projects in 1979 and 1980, respectively, in the Rangunia sub-district of Chittagong (Zashimuddin, 2004, Islam, 1998). There is also evidence that the *taungya* system, derived from the Burmese terms for hill cultivation– *taung* means hill and *ya* means cultivation (Poffenberger, 2000), was introduced much earlier in the CHT by the Forest Department. This program encouraged the hill people to produce crops and trees at the

same time in an attempt to improve traditional shifting cultivation and settle the cultivators, who were also involved with some of the first teak (*Tectona grandis*) plantations as early as 1871 (Table 2). Forest extension activities were also launched in 1962–63 with the establishment of two forest extension divisions–first at Dhaka and Rajshahi, and later at Comilla and Jessore. Extension activities were primarily confined to establishing nurseries in the district headquarters to raise and sell seedlings to individuals and organizations in urban areas. Since 1982 the Forest Department has successfully implemented some community forestry programs and others are in development (Table 2). While traditional forest management resulted in a net loss of forest cover, social forestry is playing a vital role in the expansion of forest cover while benefiting thousands of poor people (Muhammed *et al.*, 2005).

3.2.1. Components of Community Forestry

Key components of community forestry projects implemented in Bangladesh include establishment of woodlot plantations, agroforestry plantations, strip plantations along roads, railways, and canal embankments, rehabilitation of landless farmers in the Chittagong District and shifting cultivators in the Chittagong Hill Tracts, village reforestation, institutional planting and seedling distribution, establishment of nurseries and training centers, establishment of a plantation center, and training of various stakeholders involved in the program. Major objectives of these projects include increasing timber production, poverty reduction, and enhancing the Forest Department's institutional capacity. Forest-dependent local people and indigenous communities are the major stakeholders in these programs. Participatory projects generally grant each single participant one ha for management as a woodlot, every five participants one km of strip plantation, and each family two ha for settlement and agroforestry. Participants are allowed

to grow fruit and other crops between trees, participate in wage labor for plantation maintenance, and retain intermediate products from thinning and other forest management activities.

Experience gained from community forestry programs in Bangladesh has helped policymakers accommodate technical problems faced during the implementation of different projects. For example, the SFR, through Participatory Benefit Sharing Agreements (PBSA) (Table 3), provided program participants with the legal right to participate in plantation activities sponsored by the FD and then claim their due share of the benefits after harvest. Compliance with the SFR, particularly in signing the PBSA and providing copies to group members, seemed generally satisfactory, though in some cases certain 'formalities' took an unusually long time to complete (ADB, 2007). Many believe participatory forestry cannot be sustained on government and grant money alone; the Tree Farming Fund (TFF) has been established to reduce dependency on government and grant money. The TFF is intended to cover 50% of replanting costs, with the remaining 50% covered by project revenue. If the TFF is unable to cover its share of the replanting cost, participants are asked to contribute volunteer labor to cover the shortfall. This combination of TFF funds and participatory labor are intended to make participatory forestry more sustainable (BFD, 2011).

3.2.2. Making Community Forestry Work

Participatory forestry in Bangladesh has achieved notable success in terms of funds allocated for afforestation, though there is significant controversy over the effectiveness of these programs to achieve the desired outcomes. For example, the Integrated Protected Area Co-Management (IPAC) project supported by USAID (United States Assistance for International Development) in Dudhpukuria has made

Table 3. Participatory Benefit Sharing Agreements (PBSA) under SFR 2004 (BFD, 2011).

Type	Stakeholder	Share of benefit (%)
A. Woodlot and Agroforestry in areas	Forest Department	45
	Beneficiaries	45
	Tree Farming Fund	10
B. *Sal* forests conservation and development	Forest Department	65
	Beneficiaries	25
	Tree Farming Fund	10
C. Strip plantation in the private or public lands other than Forest Department owned lands	Forest Department	10
	Land owning agency	20
	Beneficiaries	55
	Local Union Parishad	5
	Tree Farming Fund	10
D. Char land and foreshore plantation	Forest Department	25
	Beneficiaries	45
	Land owner or tenant	20
	Tree Farming Fund	10
E. *Khari* (natural canal or ditch) and pond bank rehabilitation and plantation in Barind Tracts	Forest Department	25
	Beneficiaries	45
	Land owner or tenant	20
	Tree Farming Fund	10
F. Plantations and natural forests except *Sal* forests	Forest Department	50
	Beneficiaries	40
	Tree Farming Fund	10
G. Social forestry in the forest department owned lands initiated by local people	Forest Department	25
	Beneficiaries	75
H. Social forestry in the government, semi-government or autonomous organization lands initiated by local people	Forest Department	10
	Beneficiaries	75
	Land owning agency	15

significant inroads protecting the forest from illegal logging through regular community forest patrols via a partnership between the FD and local community (NSP, 2011). According to Islam (1998), the Betagi-Pomra community forestry model has provided employment opportunities, encouraged afforestation and more efficient cropping patterns, helped transform illegal settlers into forest stewards, opened access to more efficient market mechanisms, built community capacity and resiliency, encouraged social equity, and decreased crime, among other positive benefits. Boykoff (2011) has documented a positive impact on local people's understanding of forest management–quoting one community member, "If there are trees in the forest this will help our

community."

Community forestry has successfully contributed to the establishment of participatory forest resource generation and management, in the process garnering much interest among local community participants. Project activities have significantly contributed to improving relations between the FD and local communities living in and around forest areas. Local communities' confidence in the FD has increased and they have a positive view of FD participation in plantation activities. CF projects have created beneficial opportunities for the rural poor living in and around plantation sites, especially disadvantaged women who have an opportunity to earn substantial income. Since the mid-1980's, a total of 30,666 ha of woodlot plantations, 8,778 ha of agroforestry plantations, and 48,420 km of strip plantations have been established by the Forest Department under the community forestry programs (Table 4). Approximately 19,790 ha of woodlot and agroforestry plantations, as well as 8,566 km of strip plantations, have been harvested, distributing about US$18.91 million among 85,900 beneficiaries. That equates to approximately US$220.00 per participant, as well as contributions of nearly US$4.17 million to the TFF (Table 5). Safa (2004) also argued that participatory management has had positive impact on peoples' livelihoods and the sustainability of forest resources.

Experiences from Bangladesh show that community involvement in forest development and management has increased, but communities do not always fully benefit because they often lack the legal recourse to deal with dispute resolution (ADB, 2003). Forest officials' attitude toward community-based initiatives is hindering proper implementation of many community forestry programs. A majority of foresters believe local people can receive benefits from the program, but are not competent enough to participate in planning decisions. They also feel land used for community forestry should remain under government con-

trol, that their chief role is to protect forests or produce revenue for the government, and that local people are the primary cause of deforestation (Khan, 1998). Forest officials are generally oriented toward traditional forest management and do not accept local people as development partners (Hossain, 1998). Generally speaking, foresters feel local community involvement will undermine their legal control over nationalized resources (Poffenberger, 2000). Furthermore, widespread corruption and poor governance in the forestry sector (Muhammed *et al.*, 2008) is hindering the progress of social forestry programs. In addition to eliminated corruption, Miah *et al.* (2011) suggest greater political will is needed to support community forestry, as well as initiatives that bridge the gap between policy, science, and practice. They also note many regulatory policies and measures are too vague to be of much use, creating loopholes that lead to abuse. In some cases participatory forestry actually increased deforestation because local people were not meaningfully involved in management, lacked economic alternatives to deforestation activities, and doubted the programs would lead to any long-term economic advantage. Furthermore, some participants secretly sold their allotted plots to local elites, undermining the entire process.

Table 4. CF project achievements since the mid-1980's in Bangladesh.

Components	Achievement
Strip plantations	48,420 km
Woodlot plantation	30,666ha
Agroforestry plantation	7,738 ha
Embankment plantation	1,338 ha
Foreshore plantation	645 ha
Village afforestation	7,421 villages
Seedling for sale and distribution	201 million

Source: Muhammed *et al.* (2005).

Table 5. Summary of harvested community forestry plantations in Bangladesh from 1999 – 2010 (BFD, 2011).

Area Felled km/ha	Total sale Proceed (Million US$)	Participant Involved ('000)	Participant Share (Million US$)	Tree Farming Fund (Million US$)	Government Revenue (Million US$)
19,790 ha & 8,566 Km	42.39	85.90	18.91	4.17	18.93

4. NGO-Initiated Community Forestry Programs

Since the independence of Bangladesh in 1971, many national and local NGO's have also actively participated in community forestry and rural development activities, often in collaboration with different national and international donor agencies and government institutions. Some of these NGO's have also worked in partnership with the FD to sponsor different development projects. As there is no complete database of NGO's working on this field, it is impossible to list all of these partnerships, their activities, or evaluate their success. However, there are more than 100 NGO's involved in social forestry programs, of which BRAC, Proshika, Caritas, CARE-Bangladesh, RDRS, TMSS, and Poush, have achieved notable success (Hossain, 1998, Safa, 2006). Some international agencies are also working in this field, including the UNDP, IUCN, ADB, GTZ, USAID, DFID, JICA, and Arannayak Foundation. Many of these NGO's focus on homestead plantations, strip and block plantations, natural forest protection, and nursery establishment.

Non-governmental organizations are better positioned to mobilize local people because of the highly credible local networks and technical support facilities they typically maintain. In contrast to the Forest Department, NGO's have successfully implemented technology transfer programs to restore degraded lands, reduce poverty, and enhance rural livelihoods (Safa, 2006). Using participatory forest management

for natural forest protection is perhaps one of the most significant contributions NGO's have made to the development arena. Several NGO's have successfully involved local residents in the *Sal* forest areas of Dinajpur, Thakurgaon, Tangail, and Gazipur in the protection of coppice *Sal* forests (Zaman *et al.*, 2011). Some NGO's have also initiated programs in the Chittagong Hill Tracts to protect and develop village common forests (VCF), while also improving the livelihood of local people to reduce their dependency on forests. These projects were primarily sponsored by DANIDA and the Arranyak Foundation, using local NGO's such as Taungya, Biram, the Humanitarian Foundation, and Tah Zing Dong because there was no government initiative in place to safeguard these common forests (Jashimuddin and Inoue, 2011). Several authors have also highlighted the role of NGO's in maintaining and safeguarding common forests in CHT and elsewhere (Nath and Inoue, 2008, Nath *et al.*, 2010, Duthy and Bolo-Duthy, 2003, Halim and Roy, 2006). According to Safa (2006), NGO-sponsored community forestry has resulted in more than 33,472 km of roadside plantations and 53,430 ha of reforestation countrywide over the past two decades, though actual results may be greater. In short, NGO's have added a new dimension to forest management (Zaman *et al.*, 2011), though their involvement is not without criticism. Some suggest their strong profit motive attitudes, poor coordination with government bodies, lack of transparency, and non-uniform benefit-sharing mechanisms at least partially undermine their efforts (Safa, 2006).

5. Community-Initiated Common Forest Management

Common property management regimes often emerge as a way to secure control over a territory or a resource, and to exclude outsiders or to regulate individual use by members of the community (Arnold, 1998). As such, the birth of community-managed village common forests in the

CHT is a direct result of resource constraints caused by deforestation and a need to limit access to common resources (Halim and Roy, 2006, Baten *et al.*, 2010). According to Nayak (2002), local resource degradation had elevated to the point that people were traveling further and further to acquire needed resources, ultimately resulting in conflict with neighboring communities and the Forest Department. This conflict ultimately encouraged communities to enact forest protection measures to help restore local degraded lands needed for subsistence activities. The concept and use of common land is not new in the region. During the British colonial period, indigenous villagers who lost access to land that was nationalized were forced to move onto state-owned reserve forests. There they relied on their traditional resource management patterns to retain forest cover for long-term use. This gave birth to the village common forests of today where *jhum* cultivation (a local name for slash and burn agriculture, also known as shifting cultivation, practiced by the tribal groups in the CHT that involves clearing a piece of land by setting fire or clear felling and using the area for growing crops of agricultural importance such as upland rice, vegetables or fruits, and moving to new site after a few cycles) is prohibited by socially enforced sanctions and religious taboos (Roy and Halim, 2002). These forests are directly managed, protected, and used by indigenous village communities (Halim and Roy, 2006, Rahman, 2005, Baten *et al.*, 2010) under the leadership of the *mauza* (the smallest administrative unit for revenue collection in the CHT) headman, *karbari* (village head or elder), educational or religious institutions, or a committee formed by leaders from one or more villages (Halim *et al.*, 2007, Islam *et al.*, 2009, Tiwari, 2003, Roy, 2000, AF, 2010, Saha, 2010).

Village common forests are generally small, averaging from 20 to 120 ha in size and consisting of naturally grown or regenerated vegetation. There is controversy about the total number of VCF, but numbers

may be in the range of 700–800 (Saha, 2010). VCF management in the CHT has set a standard for the protection of biodiversity and natural environments (Baten *et al.*, 2010). VCF play an important role in conserving forest resources and are usually very rich in biodiversity, harboring rare plant and animal species that are not usually found in state-owned reserves or unclassified forests due to continued deforestation and land degradation. A recent study recorded a total of 162 plant species from 60 families in the VCF of the Bandarban Hill District, with larger valuable tree species that are not usually found in other forests (Jashimuddin and Inoue, 2011). These VCF still provide fuelwood, herbs, roots, bamboo shoots, wild fruits, vines, and leaves for cooking or medicinal use. Some VCF consist predominantly of bamboo brakes, while others contain a more heterogeneous stand of flora and fauna; many also contain herbaria for the village, which the local *vaidays* or *ojhas* (village shamans) use to prepare traditional medicines, while others are regarded as sacred (Roy and Halim, 2002). Use and extraction of produce from VCF is need-based, with each person taking only what is required.

The VCF system is still used today; in many cases VCF are the only remaining natural forests in the surrounding area and considered a repository of traditional knowledge. Indigenous communities are the key protectors of these rich bio-cultural systems that have survived many centuries as a model of sustainable human-forest interaction. However, population pressure, new market facilities, ignorance, exploitation, personal greed, tenure insecurity, and poor government policies regarding settlement have undermined these traditional systems, exerting unsustainable pressures on these VCF. As a result, their overall condition is degrading as their numbers and size also shrink (Jashimuddin and Inoue, 2011). The government has yet to take any action that would halt this loss, though several national and inter-

national NGO's are working to improve VCF management through programs designed to improve local economic conditions (*ibid.*). The government may also consider sponsoring similar programs.

6. Discussion

The history of forestry in Bangladesh is a classic example of continued deforestation and degradation. While traditional forest management resulted in a net loss of forest cover, community forestry programs are playing a vital role in the expansion of forests while also benefiting thousands of poor people. As a result, the country's Forest Department has shifted its role from custodian to a more participatory approach that includes local people in the reforestation and protection of forestlands. This new approach has reduced conflict and distrust between forestry officials and local farmers, encroachment on government lands, and the deforestation rate. The 1994 Forest Policy, Forest (Amendment) Act of 2000, and 2004 Social Forestry Rules are considered milestone achievements for the implementation of community forestry in Bangladesh. The creation of a Tree Farming Fund (TFF) has helped make community forestry projects more sustainable. Despite some criticism about the effectiveness of these programs, as well as the impact of corruption and poor policy implementation, there has been measurable success on the ground.

Community forestry programs in Bangladesh are typically organized by the government, non-government organizations, or by the community itself. Participatory forestry programs typically involve locals in tree plantation activities, while illegal settlers have been given usufruct rights in designated forest areas through participatory benefit sharing agreements. National development plans have also encouraged a more positive perception of forestry as an important sector that impacts social, economic, and environmental conditions, pushing for more socially

oriented forest management. Experiences from Bangladesh show that community involvement in forest development and management has increased, but communities do not always fully benefit. In many instances, potential beneficiaries of forest development and management lack legal recourse to deal with dispute resolution. Thus, in some cases, participatory forestry has actually increased the rate of deforestation because potential participants have little confidence they will receive any long-term return from such programs. In these cases, some participants have secretly sold their allotted plots to local elites, thereby undermining the intended outcome of participatory programs.

In contrast to initiatives sponsored by the Forest Department, NGO's have added a new dimension to community forest management programs. They have successfully leveraged established local networks and technology transfer expertise to build community capacity and resiliency around forest resources. That said, criticism of NGO efforts includes strong profit motive attitudes, poor coordination with government bodies, lack of transparency, and non-uniform benefit-sharing mechanisms between NGO's. On the other hand, traditional village common forests in the CHT play an important role in conserving forest resources and are usually very rich in biodiversity, harboring rare plant and animal species. Village common forests developed in response to resource constraints caused by deforestation and a need to limit access to forest resources. However, outside pressures have begun to erode these historically stable community-based management regimes. As a result, the number and extent of these richly diverse islands continues to decline.

Community forestry has great potential for increasing forest cover in degraded and marginal lands across Bangladesh. Community forestry programs provide economic opportunities to reduce people's dependence on forest resources, helping to recover biodiversity and increase

carbon stocks–two important goals under the United Nations REDD+ Programme. Bangladesh can easily compete to receive sufficient funds for promoting and encouraging VCF management systems in support of the REDD+ program.

7. Conclusion and Policy Recommendation

Community forestry has become a highly attractive and acceptable program, especially among the rural poor and landless, because it offers local communities economic opportunities and gives them a role in managing their own resources. Passing some of this responsibility on to local communities puts them in control of their own destiny while also reducing forest management and protection costs typically incurred by the government. Significant achievements of community forestry programs in Bangladesh over the past three decades include the empowerment of women and disadvantaged groups in society, motivation and awareness of reforestation on marginal lands, and improvements on degraded forest and community lands. But, the potential benefits of community forestry are yet to be seen in Bangladesh because of poor governance, lack of transparency in managing project funds, bias in the selection of beneficiaries, lack of social equality, and absence of alternative income generation activities, among others. It short, poverty is to blame for many of these shortcomings. However, the traditional community-based forest management system, known as VCF, practiced by the indigenous people of the CHT can be a model system and useful guide for politicians looking to formulate new policies for sustainable forest management in Bangladesh and other developing countries. Such policies should ensure transparent governance of participatory forestry programs, focus on developing social and livelihood capitals, use financial incentives to encourage communities to protect degraded forest lands for the conservation of biodiversity, bestow tenure security,

and recognize the traditional and customary resource rights of indigenous communities and acknowledge the value of their resource management systems. Replicating the VCF management system may also be a fruitful approach for devolving use rights and authority over forest resources and resolving area-specific conflicts. Involving NGO's in resource conservation and rural development programs, with appropriate supervision, may also be an effective technique. Finally, negotiating for the inclusion of community forestry practices in Bangladesh under the climate change mitigation and adaptation strategies set forth by the REDD+ Programme could provide valuable funding and expertise to drive community-based conservation efforts in Bangladesh.

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持続可能な森林管理のためのコミュニティ林業：バングラデシュの経験と政策提言

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要約: 本研究ではバングラデシュにおけるコミュニティ林業の導入に焦点を絞り、二次データに基づいてコミュニティ林業の成果の分析を試みる。過去の森林管理と異なり、現代では木材生産だけでなく森林が提供する他のサービスの提供もその目的として位置づけており、また人々の森林管理への参加を通して森林への依存度を下げようという理念を掲げている。科学的な森林管理はイギリス植民地時代に制定された森林政策や法律のもとで 19 世紀に始まった。続くパキスタン時代やバングラデシュ独立後も同様なやり方で資源開発がなされたが、その結果、森林は大規模に減少した。代替案として 1970 年代後半から導入されたのがコミュニティ林業で、森林被覆の拡大と多くの人々への便益という両面で効果があった。1980 年代中頃からのコミュニティ林業プログラムの下で、30,666ha の植林地や 8,778ha のアグロフォレストリー植林地が森林局によって造成された。すでに収穫がなされた植林地から利益を得た利害関係者もいる。1994 年の森林政策、2000 年の改正森林法、2004 年の社会林業規則は、バングラデシュにおけるコミュニティー林業の実施において非常に重要なものである。なかでも樹木育成基金（TFF）の創設は、コミュニティ林業プロジェクトの持続性を確保するうえで不可欠なものである。森林官と地元農民との間に横たわっていた不信感や軋轢を軽くし、国有地での違法耕作や森林減少を低下させることに、これらはかなり効果を発揮した。しかし、上意下達で官僚的な性質を持つアプローチやガバナンスのまずさによる失敗もみられる。多くの NGO もまたコミュニティ林業を手助けし代替収入源の確保を試みることで顕著な成功をおさめた。しかし、利益追求の誘因が強かったり、政府機関との調整が不足したり、活動の透明性に欠けていたり、利益分配の方法が平等でなかったり、という欠点も指摘される。チッタゴン丘陵の先住民による伝統的コミュニティを基盤とする森林管理は「村落共用林（VCF）」として知られるが、これはバングラデシュや他の途上国での地元住民の参加による持続可能な森林管理に向けた新たな政策形成のための一つのモデル、あるいは政策策定者のための指針になり得るものである。

キーワード: コミュニティ林業、森林管理、森林政策、農村開発、バングラデシュ