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# Forest policy and sustainable forest management in Bangladesh: an analysis from national and international perspectives

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**Abstract** This paper includes a review of international sustainable forestry development followed by an analysis of forest policies in Bangladesh. There have been four different government forest policies in Bangladesh since 1894. The first two forest policies (1894 and 1955) were exploitative in nature. Most of the regulatory documents were developed during the first two policy periods. The third forest policy instituted in 1979 by the sovereign Bangladesh government had contradictory elements and mutually inconsistent policy statements. It addressed for the first time forestry extension through mass motivation campaign. Current forest policy formulated in 1994 has been considered to be the most elaborate policy in the history of the country. Under this policy, participatory social forestry has been institutionalized in Bangladesh. The analysis shows that, although it is possible to attain the stated policy targets, progress is slow and is blocked on several fronts. A number of identified technical, managerial and logistical problems are hindering policy and program implementation. In addition, corruption contributes to the observed problems. The real strength of Bangladesh forestry is locally based, participatory forestry, co-management of protected areas and highly motivated people who increasingly recognize the need for a healthy forest ecosystem that will provide future economic stability. Because it is the rich homestead forests of Bangladesh that generate the majority of commercial forestry products, it is important that education continues at the grass-roots level. In addition, educated forestry and environment professionals have been identified as the future driving forces towards better, and sustainable, forest management. Results of this study make it clear that Bangladesh and other developing countries are not presently in a position to accept and adopt internationally derived forest policies due to inadequate institutional support, political instability and poor governance. Therefore, along with development of criteria and indicators of sustainable forest management and forest certification, international policy scientists must consider institutional development, professional skill development, identification and adoption of indigenous technology and

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long-term financial support in developing countries. Without these, all international processes, policies and directives will be of little value and produce few substantive results.

**Keywords** Policy · Sustainability · Bangladesh · Forest certification · Criteria and indicators

## Introduction

Increasing pressure on forests from multiple sectors presents significant challenges to forest and environmental managers who must strike a balance between demand and the need to protect this important renewable resource. Maser (1994) suggested that the past abundance of forest products has evolved into present-day limitations, and if changes are not made, present limitation will become future scarcities. The development of international forestry policy is not a recent initiative, although it has gained more attention and fostered substantial debate since the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil in 1992. Although limited conservation efforts were initiated in many countries well before World War II, environmental initiatives and forestry management efforts accelerated after the Second World War. Since then, several organizations, and in particular the United Nations Food and Agriculture Organization (FAO), have taken the lead in promoting policy directives designed to encourage sustainable management of forests on a global scale. Although the international efforts provide a broad foundation for forest policy issues, realization and implementation of effective forest policies at the national, or even regional, level vary widely due to the lack of skilled manpower, minimal capital investment and lack of relevant expertise for translating international policy into national forestry plans. Nevertheless, most countries have implemented some forestry management strategies in recognition of the critical importance of their forest resources.

Bangladesh, with a total population of about 146.7 million (mill) people in an area of 147,570 $km^2$, is the most densely populated country in the world. Per capita land holdings are about 0.12 hectares (ha) [Government of Bangladesh (GOB 2002)] and the population density is approximately 1,127 persons $km^{-2}$ (FAO 2005). In 1991 the density of Bangladesh was only 69% (755 persons $km^{-2}$) of what it is today, which sharply illustrates the rapid population growth of the country [Bangladesh Bureau of Statistics (BBS 1993)]. The economy is based on agriculture and about 75% of the inhabitants live in rural areas [United Nations Population Fund (UNFPA 2006)]. Income distribution is highly skewed, with the upper 20% of the people sharing 42.8% of the national income, while the lower 20% share only 8.7% [World Resources Institute (WRI 2006)]. Along with acute poverty, illiteracy is another major issue facing the nation. Estimated adult literacy rates during the 2000–2004 period for both men and women were about 50% and 31%, respectively [United Nations Educational, Scientific and Cultural Organization (UNESCO 2006)]. The annual gross domestic product (GDP) growth rate is about 4.4% (FAO 2005).

As is occurring in many tropical countries, forests in Bangladesh are deteriorating at an alarming rate due to various socio-economic threats, biotic pressure and competing land uses. Estimated forest area of the country is about 2.53 mill ha (0.02 ha $person^{-1}$) which is about 17.49% of the total land mass (GOB 2002). Of the total forest land, the Forest Department (FD) directly controls 1.53 mill ha. The District Administration controls 0.73 mill ha and the remaining 0.27 mill ha are privately owned village forests (GOB 1995) (Table 1). Major forest types of Bangladesh include (i) tropical wet evergreen

**Table 1** Area covered by different forest types in Bangladesh

| Forest types | Total area (mill ha) | Total as a percentage of the total area of the country (%) |
|---|---|---|
| Hill forests | 0.67 | 4.65 |
| Moist deciduous forests | 0.12 | 0.83 |
| Natural mangrove forests | 0.60 | 4.09 |
| Mangrove plantation | 0.14 | 0.97 |
| District administration forest land | 0.73 | 5.07 |
| Village forests | 0.27 | 1.88 |
| Total | 2.53 | 17.49 |

forests, (ii) tropical semi-evergreen forests, (iii) tropical moist deciduous forests, (iv) fresh water swamp forests and (v) littoral and mangrove forests (Champion and Seth 1968).

The deforestation rate in Bangladesh, which was 0.9% in 1970, rose to 2.7% in the period from 1984 to 1990 (GOB 2001). At a population growth rate of 2% year$^{-1}$ (FAO 2005), such deforestation is likely to continue as the need for living space and resources grows, unless some action is taken to ameliorate demand (GOB 2001). Khan et al (2004) found that a significant portion of the country's designated forestland is actually devoid of trees. About 3.3% of hill forest areas and 31.9% of deciduous forest areas have been encroached upon (Muhammed et al. 2005). The Forestry Sector Master Plan (FSMP) defined a meager 0.84 mill ha, or 5.8% of the country's landmass, as 'area under forest vegetation' (GOB 1995; Chowdhury 1999).

Among the forests in Bangladesh, the homestead forests/village forests are especially rich in terms of yield, structure and species composition. It has been estimated that home gardens provide about 80% of the total fruit (Rahim and Islam 1998), 65–75% of saw logs and about 90% of fuelwood and bamboo consumed in Bangladesh (Khaleque 1987).

## Objectives and research methodology

Sustainable forest management and development are the major targets of the global community. As a member of the global community and signatory to various international forums and protocols, a nation assumes the responsibility of incorporating, into national forestry directives, available international guidelines on sustainable forestry such as forest certification, International Tropical Timber Organization (ITTO) guidelines, Kyoto protocol and other appropriate UN environmental and related protocols. The current study included a critical review and analysis of Bangladesh forest policies with regard to international sustainable forestry development. The main focus of this research was sustainable forest management and its sequential development. As such, some relevant sustainable development processes have been reviewed and discussed from a perspective of the Bangladesh forestry situation.

An analytical review of historical Bangladesh national forest policy, strategy and development goals was conducted. The Forest Policy of 1894, formulated during the Indian regime, the Forest Policy of 1955, formulated during the Pakistan regime, the Forest Policy 1979 and the Forest Policy 1994, both prepared by the Bangladesh government, were reviewed and analyzed, as were Bangladesh forestry documents and relevant literature.

A brief review of relevant regional and sectoral policies was conducted. Additionally a semi-structured questionnaire survey was completed by interviewing 24 experts and professionals to analyze the strengths and weaknesses of the present policy. On the basis of the results of this exercise, a set of recommendations was constructed to act as potential guidelines for future policy formulation.

## Forest policy and sustainable development: current thoughts and initiatives

Following the devastation of World War II, many nations, and especially Europe, experienced tremendous economic growth (i.e. rise in GDP) through substantial increases in industrial production and the output of consumer goods. Economic growth typically occurred in an inequitable manner within any given population, which elevated the exploitation of natural resources to a level not seen prior to the mid-20th century. The potential problems associated with environmental degradation and loss of natural resources was recognized by scholars in many countries. The 1972 report, 'The Limits to Growth' (Meadows et al 1972), presented a simplified world model, focusing on five major trends of global concern, viz. (i) accelerating industrialization, (ii) rapid population growth, (iii) widespread malnutrition, (iv) depletion of non-renewable resources and (v) a deteriorating environment. Two primary conclusions were reached in this report. First, if the present global growth trends in population, industrialization, pollution, food production and resource depletion continue unchanged, the planetary growth limits will be reached sometime within the next 100 years. The most probable result will be a sudden and uncontrollable decline in both population and industrial capacity. Second, it is possible to alter these growth trends by establishing ecological and economic stability. Not surprisingly, this report stimulated considerable discussion and controversy among the political and scientific world, and did much to promote the philosophy of sustainable development and popularize environmentalism.

The FAO has been intimately involved in international policy discussions since its establishment in 1945 (FAO 2005). Some of the first discussions related to policy and technical issues among national forest agencies of member countries were initiated by the FAO-led Committee on Forestry (COFO). Beginning in 1967, the FAO Committee on Forest Development (CFD) addressed, with increasing urgency, issues related to deforestation of tropical forests. In order to halt the net loss of tropical forests, the FAO, the World Bank, UNDP and WRI jointly launched the Tropical Forestry Action Plan (TFAP) in 1985, later renamed the National Forestry Action Plan (NFAP), and then National Forest Programs (NFP) in 1990. The International Tropical Timber Agreement (ITTA) and ITTO, which were formed in 1983 and 1986, respectively, support constructive dialogue on global forestry issues, and helped promote sustainable international trade in tropical timber. At UNCED, in 1992, forestry issues were perhaps the most controversial and polarizing between developing and developed countries. Intense negotiations among governments resulted in the non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests, popularly known as 'Forest Principles', as well as Chap. 11 of Agenda 21 'Combating Deforestation'.

Throughout the 1990s, the main focus within the UN has been to develop coherent policies to promote the management, conservation and sustainable development of all types of forests [United Nations Forum on Forests (UNFF 2006)]. UNCED provided both a definition and a concept of sustainable forest management and paved the way for strong

international discussion on forestry policy matters. While the UNCED 'Forest Principles' gained considerable political popularity, at the operational level the technical aspects of the principles were not well understood. It was clear that additional efforts were needed to more precisely define the appropriate criteria and indicators (C&I) on sustainable forest management at international, regional and national levels. The concept and the terminology associated with C&I were first introduced by ITTO in 1992 (ITTO 1992, 1998). Because of vastly different ecosystems and regional pressures and demands, a standardized C&I "formula" would not be applicable to all forests; regional initiatives would need to be implemented in order to develop functional C&I. Some of the regional processes of note are the (i) Pan-European process on C&I for sustainable sorest management (the Helsinki Process), (ii) the Montreal process on C&I for the conservation and sustainable management of Temperate and Boreal forests outside of Europe, (iii) the Tarapoto proposal for C&I for sustainability of the Amazon forest, (iv) the dry-zone Africa process, (v) the Near East process, (vi) the Lepaterique process of Central America, (vii) the regional initiative for dry forests in Asia and (viii) African Timber Organization's (ATO's) identification and testing of C&I for sustainable forest management.

All the processes resulted in adoption of seven, globally accepted elements for sustainable forest management that are being practiced in about 150 countries (FAO 2001). These seven C&I are (i) extent of forest resources, (ii) biodiversity, (iii) forest health, (iv) productive functions of forest resources, (v) protective functions of forest resources, (vi) socio-economic functions, and (vii) legal, policy and institutional framework. While these seven common sustainable forest management themes have been accepted on an international scale, the degree to which they are incorporated into local C&I varies considerably from country to country. To provide additional guidance and maintain momentum within the process, the Intergovernmental Panel on Forests (IPF), from 1995 to 1997, and the Intergovernmental Forum on Forests (IFF) from 1997 to 2000, both under the auspices of the United Nations Commission on Sustainable Development, met and constructed platforms for international forest policy development. The IPF and IFF examined a wide range of forest-related topics over a 5-year period and identified more than 270 sustainable forest management proposals, collectively known as the IPF/IFF Proposals for Action. Although these proposals were not legally binding, participants in these processes do have a political obligation to implement the agreed proposals, and each country is expected to conduct a systematic national assessment of the IPF/IFF Proposals for Action and to plan for their implementation.

The major goal of the UNFF, which was established in 2000 by the Economic and Social Council of the United Nations (ECOSOC), was to promote management, conservation and sustainable development of all types of forests. In order to strengthen the international arrangement on forests (IAF), the UNFF, at a 2007 meeting in New York, set an ambitious goal of negotiating both a non-legally binding instrument (NLBI) on all types of forests and a new multi-year programme of work (MYPOW), extending until 2015. While some recommendations were produced, the 2007 meeting failed to generate an action plan for implementation [International Institute for Sustainable Development (IISD 2007)]. It was also clear during the meeting that participants strongly disagreed as to whether an NLBI or a MYPOW would be the most effective option for strengthening the IAF.

## Sustainable development and forest certification

The term "sustainable development" expresses the idea that economic growth must occur in harmony with the environment (Wilson et al. 1999), meeting current needs without

compromising the ability of future generations to meet their own needs (Brundtland 1987). As defined in Agenda 21, sustainable development is a new global partnership for economically viable, socially just and environmentally sound development, not only for the present, but also into the future (UNCED 1992). While sustainable development is a popular theme in many private and public sectors from a conceptual standpoint, fruitful progress is another matter. Nevertheless, it is recognized as a key factor in global stability, and was discussed at length and in great detail at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002. A product of the WSSD was a set of goals to be achieved by 2015, popularly known as millennium development goals (MDGs), in which sustainable environmental development is a premier component.

There are likely a multitude of factors contributing to the limited acceptance and slow implementation of sustainable development initiatives, but three general reasons are progressivism, reductionism and pragmatism. Progressivism is the concept that humankind has, throughout history, found workable, and often highly successful, solutions and will continue to do so in the face of challenges to existing paradigms. The idea of reductionism is that, while human behavior appears to be complex, it ultimately follows basic market laws. Finally, pragmatism dictates that clear and measurable targets are needed to achieve substantive progress. These three ethics are equally applicable to sustainable forest management. Daly and Cobb (1994) identified two sustainability paradigms: neoclassical and ecological. The neoclassical paradigm views human-made capital as the most important, while in the ecological paradigm it is natural capital, or nature itself, that should be the primary driver for sustainability. In the neoclassical paradigm of sustainability, natural capital imposes severe constraints on growth, and economic collapse may be a consequence of ecosystem collapse (Simon 1996; Solow 1993). Avoiding an environmental disaster through rational use of natural resources, therefore, while not necessarily an end in itself, is needed to achieve economic and societal stability.

Forest certification is a significant tool for achieving sustainability through the global marketplace for forest products. To be sustainable, forest product markets, like forest management, must consider environmental, social and economic factors. To ensure that wood and paper products originate from both legal and sustainable sources, governments are establishing procurement policies, while companies and forest-sector associations are creating corporate social responsibility programmes [United Nations Economic Commission for Europe/FAO (UNECE/FAO 2006)]. To obtain certification, government or private forest owners must follow a well-defined series of steps, the details of which will vary from agency to agency and country to country. The Forest Stewardship Council (FSC) is the leading organization that is entrusted with a certification mandate. Other certification agencies include the Program for the Endorsement of Forest Certification (PEFC), Sustainable Forestry Initiative (SFI), Canadian Standards Association (CSA) and American Tree Farm Systems (ATFS). Through mid-2007, the total global certified forest area was about 291.8 mill ha (UNECE/FAO 2007), out of which FSC-certified forest area accounts for about 92.9 mill ha in 78 countries (FSC 2008).

Approximately 52% of the EU/EFTA forests, 34.9% of the North American forests, 5% of the forests of the Oceania region, 2.3% of the forests of the CIS region and 1.3% of Latin American forests have been certified by various certification agencies (Table 2 and Fig. 1). Regrettably, less than 1% of Asian and African forests are currently under a certification program. Overall, progress towards broader certification is slow, particularly in developing countries where a higher percentage of the populace relies on forests for their food and livelihood. The problem is exacerbated by a lack of expertise, institutional weakness, implementation costs and poor political commitment.

**Table 2** Status of forest certification from 2005 through 2007

| Region | Total forest area (mill ha) | Total certified forest area (mill ha) | | | Area certified (%) | | |
|---|---|---|---|---|---|---|---|
| | | 2005 | 2006 | 2007 | 2005 | 2006 | 2007 |
| North America | 470.6 | 140.2 | 157.7 | 164.2 | 29.8 | 33.5 | 34.9 |
| EU/EFTA | 155.5 | 78.5 | 78.9 | 80.8 | 50.5 | 50.7 | 52.0 |
| CIS | 907.4 | 8.8 | 13 | 20.6 | 1 | 1.4 | 2.3 |
| Oceania | 197.6 | 3.4 | 6.4 | 9.9 | 1.7 | 3.3 | 5.0 |
| Africa | 649.9 | 6.2 | 2.1 | 2.6 | 1 | 0.3 | 0.4 |
| Latin America | 964.4 | 2.3 | 11.1 | 12.1 | 0.2 | 1.1 | 1.3 |
| Asia | 524.1 | 0.8 | 1.1 | 1.6 | 0.2 | 0.2 | 0.3 |
| World total | 3869.5 | 240.2 | 270.3 | 291.8 | 6.2 | 7 | 7.5 |

*Source*: UNECE/FAO (2007)

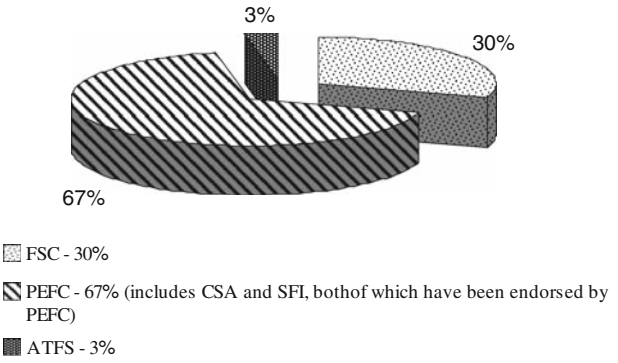



**Fig. 1** Global share of certified forest area. *Source*: UNECE/FAO (2007)

## Lessons learned

Efforts continue on several fronts to promote management, conservation and sustainable development of all types of forests. Currently, the major thrust of the international community is to maintain biodiversity and forest health, ensure adequate productivity and protect the socio-economic functions of forest resources. To attain these goals, every country must ensure that adequate legal, regulatory and institutional frameworks are in place on which effective and enforceable policy can be built. Without this stable base, a sustainable system of resource utilization that balances economic, environmental and societal needs cannot be maintained. Forest certification can be a powerful tool for forest management by helping to ensure that forest products are harvested in a manner that does not compromise environmental health or social stability, Unfortunately, developing countries like Bangladesh are not currently in a position to accept and adopt many of the international sustainability measures due to a variety of social and economic obstacles that are not easily overcome.

At the current time, standardized benchmarks for documenting progress towards sustainability cannot be universally applied to all countries. Sustainability of forestry resources is likely to have a different meaning in each country and, consequently, the means by which sustainability is achieved will also be different. Nevertheless, international

criteria can be used as guidelines for developing strategies and priorities at a national level. For example, in Bangladesh, forest sustainability is likely to focus more on satisfying the demand for forest products that arises from local participatory social organizations, maintaining core forest areas through nature conservation programs and also creating co-management strategies for the buffer zones of natural forests. In this manner, a balance is struck between livelihood and conservation.

## Forest policy review and analysis: Bangladesh perspectives

Governmental policy is a broad mandate that provides a roadmap for formulating legally binding acts and rules that translate to a course of action, or inaction, to achieve the desired goal(s) and/or objectives (Enters et al. 2003; Anderson 1984; Heidenheimer et al. 1983; Mayers and Bass 1999). The success of a policy depends on the functional role of all stakeholders. If the forest policy fails to adequately address the problems and issues, it is likely to be rejected by the stakeholders and may end in a crisis (Cubbage et al. 1993). The challenges to policy makers can be substantial since varied interest groups can have conflicting ideas and agendas, which may or may not provide room for negotiation (Krott 2005). In formulating and analyzing forest policy it is important to review past events and laws. The choice of policy instruments is influenced by the political, economic, physical and biological factors of a particular country, as well as international forestry paradigms.

### Brief history of Bangladesh forest policy

Sectoral plans prepared in consonance with national guidelines are the basic development principles in Bangladesh. The FD under the Ministry of Environment and Forest is responsible for formulating forest policy and other forest regulations. The origin of Bangladesh forest policy lies in the historical forest management of undivided India. Public rights to forest use were regulated to some degree in ancient India during the emperorship of Chandra Gupta Maurya in 321 D.C. (Dwivedi 1980). During the Mughal period (1526–1700), hunting was given priority and, as such, some gazette notifications were made. This aspect of forest management was incorporated into British policy during the colonial period. Under the political influence of the British government, the first formal forest policy was enunciated in 1894 (Mustafa 2002). After partition of British India, when Bangladesh was still a part of Pakistan, the Pakistan government formulated forest policy in 1955. The first forest policy of sovereign Bangladesh was declared in 1979. The most recent forest policy was issued in 1994 and has yet to be fully implemented. Degradation of forest areas and forest resources in Bangladesh has continued. In response, increasing emphasis has been placed, over the last two decades, on social forestry, which provides a new dimension of small-scale, participatory forest management, leveraging local understanding and knowledge for the utilization, protection and maintenance of forest ecosystems.

## Review and analysis of forest policies in Bangladesh

Since the British colonial rule, four national forest policies have been enacted in Bangladesh. Other sectoral policies have also been issued, including the National Environment Policy,

Agricultural Policy, Water Policy, Industrial Policy and Land Use Policy. Many aspects of these varied allied policies overlap with each other and with forest policies, resulting in conflicts and inconsistencies that frequently hinder forest program implementation.

### Forest Policy 1894

The first formal forest policy on the Indo-Pak subcontinent was declared in 1894 by the ruling British government. This policy provided the basic guidelines for the formulation of Acts and Rules for forest management. The exploitation of forests occurred at an ever-accelerated pace under British rule, with little consideration for preservation or conservation of resources. Not surprisingly, the 1894 policy did little to improve this situation and, by prioritizing crop production, encouraged the rapid conversion of forest land into agricultural use. Nevertheless, the first Forest Act 1927 was formulated under the 1894 policy. Legal classification of major forest-related rules (forest manual, transit rules, stumpage appraisal, etc.) was framed after this policy. While these rules helped bring forest management under official control, their main purpose was to maximize forest revenue by introducing feudal lords to oversee different forest regions. Therefore, despite the introduction of formal management, commercial interests continued to dominate activities and overall forest health was not improved.

### Forest Policy 1955

The first national forest policy of Pakistan was promulgated in 1955. The forests of Bangladesh (East Pakistan, at that time) were governed under the guidelines of that policy. The introduction of a number of formal forest management plans, followed by an inventory of different forest zones are considered to be a significant achievement under this forest policy. However, this period also saw an ever-widening social and political divide between the people of East Pakistan (Bangladesh) and the ruling government in what was then West Pakistan, Administration of East Pakistan was reminiscent of colonial rule and governmental interest in Bangladesh forests was primarily monetary; maximizing of revenue was a major target. With that goal in mind, clear felling of trees followed by artificial regeneration with different long rotation, and short rotation, species became a general practice and ultimately proved to be a highly detrimental forest management practice. The Forest Policy of 1955, while well intentioned, was overwhelmed by political and economic interests, resulting in few positive changes in forests and forest sustainability.

### Forest Policy 1979

The first national forest policy of independent Bangladesh came into effect in 1979 (GOB 1979). Policy statements were somewhat vague and contradictory. For example, the policy stated that the 'Forest should be carefully preserved and scientifically managed' but also stated that 'Modern technologies shall be employed for extraction and utilization of the forest produce.' When forests are kept for preservation only, there is little incentive to expand forest-based industries. Due to these inconsistencies, the 1979 policy guidelines could not be fully implemented and, in fact, may have fostered activities that were ultimately detrimental to forest health. One section of the policy, for example, stated that timber resources should be increased by establishing large-scale plantations. A review of historical information identified a specific event that typified the policy contradictions and

inconsistencies. A large area of coastal mangrove plantation was developed during the 1980s, but due to a lack of an appropriate land tenure agreement, these forests were illegally cut and the land was encroached upon. This hostile situation developed because of the non-cooperation between the land administration authority and local elites who were supported by certain political leaders.

There are several other examples of policy directives that were unrealistic or have been poorly implemented. The policy states that a cadre of officers shall be organized for the purpose of enforcing regulations within the forestry sector. However, only 114 persons were actually placed in these roles; a force much too small to be effective. While the policy states that the forestry sector shall be recognized and relevant laws be updated, no progress was made toward this end, even after 10 years. One of the most serious roadblocks to successful forest policy is the failure of enforcement and assessment of penalties. The Forest Laws of 1927 were finally amended in 1989, but with only minor changes to the penalty provisions. The 1989 'Brick Burning and Control Law' was enacted in association with the 1989 amendments to the forest laws. However, this law has failed to show any significant impact in controlling brick burning using fuel wood and timber extracted illegally. Another policy provision is that steps shall be taken to conserve forest and wildlife, and to utilize forest recreational potential. A wildlife circle was created under the auspices of this policy statement and began to make some significant steps towards wildlife management. After the initial, temporary financing ended, and with no additional monetary resources available, the circle was abolished.

In the northern part of Bangladesh, which is the most depauperate in terms of forest resources, a forestry extension service was started with the goal of educating residents about the value of forests and helping them re-establish wooded areas. A tree campaign was initiated and seedlings were distributed, free of charge, to the public. While, overall, these activities received popular local support, forestry professionals were far less enthusiastic and felt that they were alienated from the people who used the forests on a regular basis. They had little incentive or desire to discuss forestry issues, environmental threats or the consequences of deforestation with other stakeholders. This attitude held by professionals is likely due to an engrained bureaucratic mentality and an opinion that they, rather than local lay people, should be the sole custodians of forest resources. Judging by this review of recent historical events and activities since the passage of the most recent forest policies, it is clear that, although some initial progress has been made in the areas of wildlife management and forest conservation, continued progress is lacking. It appears that it is not the policy itself that is responsible for inadequate forest management practices, but rather inefficiency and short-sightedness on the part of the forestry personnel.

## Forest Policy 1994

This Forest Policy of 1994, which was formulated with technical and financial assistance from the Asian Development Bank (ADB), emphasizes preservation and management of trees outside of designated forests through a participatory approach with local residents. Important aspects of the policy include encouragement of tree growing by communities and local groups along roads, stream banks and marginal lands and State support of all forms of local forestry and forestry-related businesses. The FSMP (1995–2015), Forest Act of 2000 (Amendment), Institutional Restructuring (1998–2000) and Social Forestry Rules of 2004 occurred subsequent to the 1994 Forest Policy. To date, the results of these initiatives have been underwhelming. Out of the 29 policy statements in the current forest policy, most have not been implemented. The first policy statement, for example, sets a

target of bringing approximately 20% of the land under the afforestation program between 1995 and 2015. In 1995, the country's designated forest land was about 10%. To achieve the stated goal (an additional 10%), the rate of land transfer (beginning in 1995) to the afforestation program would need to be 0.5% year$^{-1}$.

The estimated value of 10% forested land in 1995 is quite misleading because the FSMP identified a meager 0.84 mill ha, or 5.8% of the country's landmass, as 'area under forest vegetation.' This discrepancy suggests that, at the time, there was a paucity of accurate data regarding forest coverage in Bangladesh. A more effective application of this policy statement is for the recovery of former forested areas that have been encroached upon and otherwise degraded. A laudable goal of the FD would be to restore historical forest areas (i.e. 17.49% of the total land area of Bangladesh), as well as to expand forest coverage, using participatory social forestry, into non-traditional forest areas such as strip plantations, marginal and fallow land, and newly accreted coastal regions.

Muhammed et al (2005) reported that by 2002, forest resource cover had increased by only 1%, or about 0.14% year$^{-1}$, which is far below the targeted incremental increase described in the 1994 policy. This very small increase suggests that either the original policy declaration has not followed or that the estimated target was highly unrealistic. More likely, both factors have contributed to the lack of progress. One policy statement clearly emphasized the importance of transportation of forest products within Bangladesh. Despite a recognition of the critical nature of an efficient and cost-effective transportation system, major obstacles remain. Social forestry plantations are being felled, but there is no transit rule for movement of social forestry products. This is now a major issue for the FD, from which transit passes (TP) are issued to the timber bidder and other customers. Without the appropriate TP, primary purchasers must sell their timber in nearby localities where it commands comparatively low prices.

Strengthening the FD and the creation of a new Social Forestry Department was also discussed in the policy. An institutional restructuring was initiated in 1998 but is yet to be completed. In this regard, it is felt that the institutional reform did not follow the intention of forest policy. Instead of a separate Social Forestry Department with proper staffing and the sole responsibility of minding social forestry activities, a Social Forestry Wing has been created under the auspices of the FD, having neither specialized manpower nor autonomy. Without resources and decision-making authority, this wing is very limited in its ability to fulfill the stated policy goals and objectives. While interviewing the professionals of the FD, some suggested that, rather than support institutional reform, it was more important to fund ongoing development projects that were no longer supported by donor countries. The last policy statement emphasized the amendment and promulgation of relevant laws, rules and regulations in consonance with this policy. In recent years, some progress has been made toward promulgation of the Social Forestry Rules, which were finally approved in 2004.

The information presented in this review shows that progress towards sustainable forestry development in Bangladesh is hindered at many levels. The Social Forestry Wing, which was established as a weak substitute for a functional Social Forestry Department, is not yet fully operational. The Master Plan and forest policy should be reviewed and updated at periodic intervals to accommodate changing circumstances and to avoid or correct problems that may be preventing policy and program implementation. However, no review or updates have occurred since the enactment of the Forest Policy in 1994 and the Master Plan in 1995. Although some practical steps have been undertaken, they are still inadequate. Under these circumstances, the stated vision and goals of either the Master Plan or the 1994 Forest Policy will not be obtained. In the FSMP, in order to reach the

**Table 3** Expenditure scenario in the forestry sector of Bangladesh

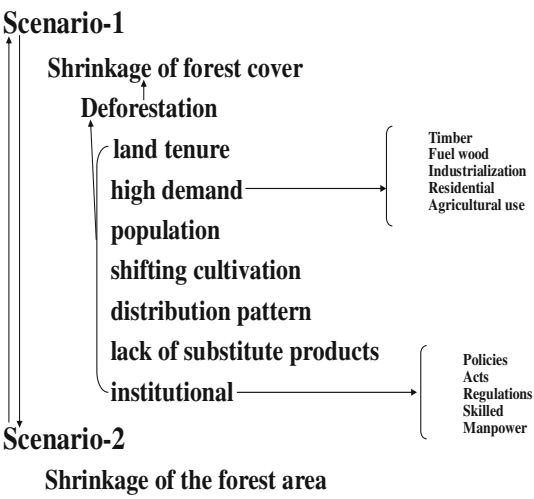
| Year | Estimated expenditure (mill US$) | Actual expenditure (mill US$) | Actual expenditure as a percent of estimated expenditure |
|---|---|---|---|
| 1995–1996 | 68.38 | 13.4 | 19.6 |
| 1996–1997 | 68.38 | 14.0 | 20.5 |
| 1997–1998 | 68.38 | 13.2 | 19.3 |
| 1998–1999 | 68.38 | 11.6 | 17.0 |
| 1999–2000 | 68.38 | 17.4 | 25.4 |
| 2000–2001 | 68.38 | 20.4 | 29.8 |
| 2001–2002 | 68.38 | 17.9 | 26.2 |
| Total | 478.66 | 107.9 | 22.5 |

*Source*: Field survey (2006)

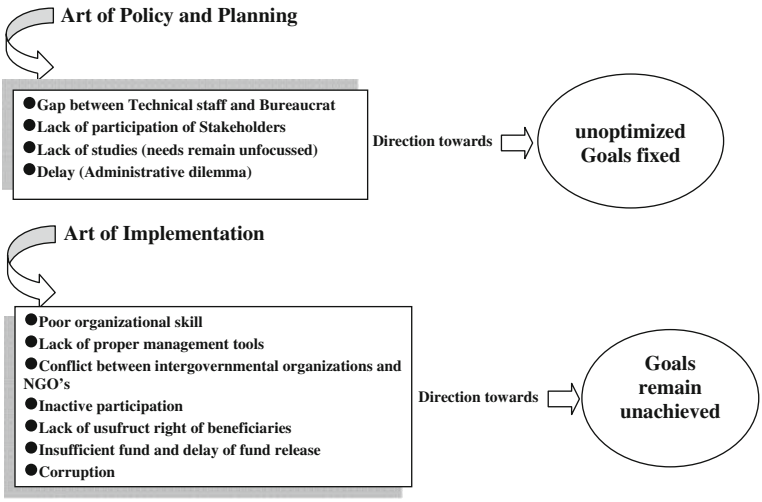
stipulated forestry target, it is estimated that US $1,368 mill for 20 years (1995–2015), or US $68.37 mill year$^{-1}$, would need to be spent. Muhammed et al. (2005) showed that actual expenditures in recent years for forestry-related activities (Table 3) have remained well below the estimated allocation. Such suboptimal financing is a major cause of poor performance. At the current pace of spending, the Master Plan target will never be achieved and the forest policy will lose its effectiveness.

## Synthesis of policy and forest management problems

In order to determine current conditions relative to forest policy formulation and implementation, and to identify the causes of the depletion of forests, and forest resources, in Bangladesh, data were collected from forestry professionals (expert group survey) through (i) a questionnaire survey and (ii) personal discussions. Flowchart 1 depicts factors responsible for forest and forest resource shrinkage in Bangladesh. Using the information gathered from the expert group, current forest policy planning and implementation scenarios were configured (Flowchart 2). The various factors that negatively impact both




**Flowchart 1** Factors affecting forest and forest resources in Bangladesh. *Source*: After Expert group survey analysis 2005–2006




**Flowchart 2** Current state of forest planning in Bangladesh. *Source*: After Expert group survey analysis, 2005–2006

policy and planning and implementation of effective forest policy are shown. Issues such as lack of communication between the bureaucracy and technical staff, poor stakeholder participation, lack of valid studies, inter-organization conflicts and corruption all contribute to un-optimized policy goals and targets that cannot be realized under current conditions.

It is clear, however, that many new and timely initiatives have recently been instituted that promote people-oriented forestry programs, with a bottom-up planning approach, giving social forestry an organizational structure with relevant laws that institutionally support local forest management practices. It is the homestead forests that are the real strength of forest resources in Bangladesh, as evidenced by the fact that more than 85% of the current demand for forest products is being met by homestead forest production. The success of participatory forestry is not surprising considering how important forest resources are to many local populations. Once people are educated on the positive relationship between a healthy forest ecosystem and long-term economic return and stability, they are highly motivated to maintain, and improve, the local forest resources. A co-management approach in protected areas, initiated through a nature conservation project funded by the United States Agency for International Development (USAID), is showing significant promise in Bangladesh. A number of universities are offering forestry and environmental education services that will provide technical expertise in the future.

Despite the strengths at a local level and promising programmes currently underway, there remains an overall negative picture with regard to implementation. Although existing policy is not without fault, it is the system itself, and the drivers of that system, that are the major causes of failure. Not only is there a significant lack of trained forestry personnel, but many currently employed in critical roles have a mindset that is not conducive to cooperation and progress on a local scale. Working with residents, listening to and understanding their concerns and viewpoints require patience and behavioral knowledge and skills that may be lacking in current professionals. Working closely with local residents is sometimes the last choice of many traditional foresters. In addition, inadequate funding can seriously undermine implementation of positive forestry practices.

## Conclusion and recommendations

Discussions of international and regional policy are ongoing, with the goal of halting deforestation and shifting to a philosophy, and applied strategy, of sustainable development. Sustainable forest management requires the active participation, integration and coordination of every stakeholder, from planning to implementation. Without this "buy-in" by all vested parties, the concept of sustainability will not be realized. Although it is possible to attain a state of global equilibrium where the basic material needs of each person on earth are satisfied, achieving that goal will not be easy. Along with development of simple C&I for sustainable forest management and forest certification, policy makers must also focus on institutional development, professional skill development, use of indigenous technology, long-term financial support and use of appropriate and modern technology. These factors/goals are especially important in developing countries where effective, enforceable forest policies have historically been lacking.

Despite a century-old scientific forest management plan in Bangladesh, depletion of forest resources and lands has continued, illustrating the failure of policies to attain the stated objectives (Flowcharts 1 and 2). The major reasons for policy failures include institutional and management deficiencies, lack of political commitment, inappropriate policy instruments, poor coordination, dependency on external financial and technical assistance, corruption and land use conflicts. While a rising human population that exceeds the local and regional carrying capacity poses various socio-economic threats to forests, other factors may be even more critical. Bangladesh, for example, is highly dependant on external funding to carry out forestry and other programs. Disruption of those funds, or redirection of funds to other needs, can have significant negative effects on many environmental and sustainability initiatives. Progress also depends on cooperation, commitment and maintenance of effective programmes through political changes and shifts in philosophy. While underdeveloped countries can usually formulate judicial forest policies, they are often unable to maintain the actual pace of implementation. It is not unusual for conflicts to develop between sectoral policies. The landuse policy of Bangladesh, for example, does not conform well with forestry activities (Choudhury 2003). In addition, the National Water Policy is not consistent with forestry policy regarding placement of commercial plantations (GOB 1999).

As shown in this review and analysis, participatory forestry policy and environmental planning in Bangladesh are completely under State control. Because a "bottom up" approach to planning has yet to be implemented, actual needs are not always met. Gonzalez et al (2006) studied a small community-based organization in the mountains of Puerto Rico and found that their bottom-up planning strategies were effective. Promotion and implementation of locally derived, grass-root strategies, including participatory forestry management, co-management of protected areas and forestry and environmental education, are likely to have a positive impact on the future of forests in Bangladesh, despite the current pitfalls and negative directives that often dominate current policy.

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