



जहाँ है हरियाली ।
वहाँ है खुशहाली ॥



EXECUTIVE SUMMARY



National Status Report on Forests and Forestry in India

Survey and Utilisation Division
Ministry of Environment & Forests
Government of India, New Delhi

September 2006



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A. RAJA



**MINISTER
ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA
NEW DELHI - 110 003**

MESSAGE

The forestry sector in India is being re-defined with a growing emphasis on poverty alleviation and livelihood opportunities, while at the same time ensuring the sustainable management and use of forest resource. The current trend in forest management is towards greater people's participation and involvement of the multi-stakeholders dependent on the forests. The National Forest Policy (1988) and National Forestry Action Programme (1999) have also addressed our concern towards Sustainable Forest Management. However, much more needs to be done in this regard.


I am extremely happy to note that an International Tropical Timber Organisation (ITTO) Diagnostic/Technical Mission is visiting India from 11th September, 2006 to 30th September, 2006, to assist the Government of India in identifying the factors limiting the achievement of Sustainable Forest Management. As a producer member country of ITTO, India is committed towards sustainable management of its forests.

I have been told that as a preparatory work for the visit of the ITTO Diagnostic/Technical Mission to India, the Ministry of Environment and Forests with the help of a number of renowned experts, consultants and resource persons, has prepared a National Status Report and its Executive Summary analyzing the various factors related to Sustainable Forest Management. I congratulate the Mission members, consultants, experts, collaborators and all resource persons who have sincerely worked in preparing this Executive Summary.

I hope the information contained in it will be of immense importance in identifying the factors which limit the progress towards achieving 'ITTO Objective 2000' and Sustainable Forest Management.

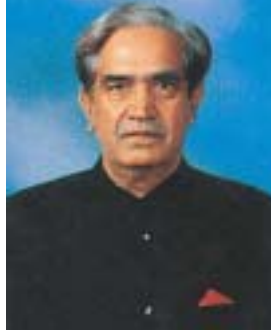
I also hope that the Ministry of Environment and Forests in consultation with the ITTO Mission will be able to carry out a detailed analysis and provide valuable suggestions which would be highly beneficial to the sustainable development of the forests in the country.

Date: 08.09.2006

 (A. Raja)
Minister for Environment & Forests



**SHRI NAMO
NARAIN MEENA**



**MINISTER OF STATE FOR
ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA
NEW DELHI - 110 003**

MESSAGE

To assist the Ministry of Environment and Forests, Government of India in promoting Sustainable Forest Management, an International Tropical Timber Organisation (ITTO) Diagnostic/Technical Mission is visiting India from 11th September, 2006 to 30th September, 2006. It is expected that the ITTO Diagnostic/Technical Mission will interact with Government Representatives, NGO Representatives, Communities and other Stakeholders in identifying the factors which impede our progress towards achieving Sustainable Forest Management.

India has taken several policy initiatives for the management of its forest resources benefiting its people and also for providing forest goods and services to the society. The realization of the ecological, cultural and socio-economic importance of tropical forests led to the establishment of the ITTO in 1986. India is an active producer member country of the ITTO.

I welcome the ITTO Diagnostic/Technical Mission to India and sincerely hope that their interactions and deliberations will lead to effective recommendations towards achieving Sustainable Forest Management and strengthening the forestry sector in India. On this occasion, I would also like to congratulate Shri J.C. Kala, Director General of Forests & Special Secretary, Dr. Bipin Behari, Deputy Inspector General of Forests and others in the Ministry, Mission members, consultants, experts, collaborators and all other resource persons who have been actively involved in assisting the ITTO Diagnostic/Technical Mission.

(Namo Narain Meena)
Minister of State for Environment & Forests

Date: 12.09.2006



J.C. KALA



**DIRECTOR GENERAL OF
FORESTS &
SPECIAL SECRETARY
ENVIRONMENT & FORESTS
GOVERNMENT OF INDIA
NEW DELHI - 110 003**

FOREWARD

Forestry in the country has undergone a paradigm shift over the few decades, as the focus has shifted from sustained timber yield forest management to a sustainable eco-system management, encompassing the environmental, economic and social dimensions as well. Increasingly, the forestry sector is being seen as a crucial component in eradicating rural poverty and providing livelihoods to the communities dwelling in and around the forests.

India is a producer member country of the International Tropical Timber Organisation (ITTO), and is committed to the 'Year 2000 Objective' for operationalizing Sustainable Forest Management. The Government of India has initiated several steps to control and reverse the unsustainable trend in forest management and to move towards sustainable forestry. India has developed its own set of Criteria and Indicators for sustainable management of tropical forests under the Bhopal-India Process. A project on operationalizing Sustainable Forest Management through people's participation is being implemented by the Indian Institute of Forest Management (IIFM), Bhopal and is being financially supported by ITTO. The ITTO has recently approved financial support to another project on strengthening the forestry database, which is being implemented in Indian Council of Forestry Research & Education (ICFRE), Dehradun.

In this context, an ITTO Diagnostic/Technical Mission is visiting India to study the status of Sustainable Forest Management of our tropical forest resource. I am sure that the ITTO Diagnostic/ Technical Mission will have a chance to see and appreciate our efforts in managing our tropical forests on a sustainable basis, despite the burgeoning population pressure and a yawning gap between demand and supply and the depleted resource base.

The present ITTO Mission is headed by a forester of repute, having a good knowledge of the strengths and weaknesses of Indian forestry. The other two eminent Mission members are also well versed about the Indian situation. It is hoped that the Mission members will objectively analyze the forestry situation and make practical and useful recommendations.

The Executive summary of the Status Report on Forests in India has been prepared by Dr. Ram Prasad, Principal National Consultant, an Ex-IFS officer. His effort is duly acknowledged. This report has been enriched by the inputs from other distinguished foresters and scientists. I take this opportunity to convey my thanks and sincere appreciation to all of them. Dr. Bipin Behari, DIG (Forests) and the National Focal Point for ITTO in the Ministry, Mr. A.K. Joshi, AIG (Forests) and Mr. B.K.P. Sinha, Director, Amity School of Natural Resources and Sustainable Development have put in their best in organizing the events for the Mission besides making valuable contribution as resource persons. They deserve to be profusely thanked and appreciated for their efforts.

Date: 08.09.2006


(J.C. Kala)
Ministry of Environment and Forests

National Status Report for ITTO Diagnostic / Technical Mission in India

Executive Summary

1.0 Status of Sustainable Forest Management in India

ITTO Diagnostic Mission in India is aimed at identifying factors that most severely limit progress towards achieving ITTO objective 2000 of Sustainable Forest Management (SFM) to which India as a Producer Member Country (PMC) is a signatory. Based on the diagnosis of factors responsible for the present state of (un) sustainable forest management, the Mission is to assist in formulating an action plan to over-come these constraints. For this purpose, a comprehensive National Status Report on forests and forestry has been prepared with several thematic country reports and case studies as annex to the country report. Apart from the Principal National Consultant who prepared the national status report, 14 other distinguished foresters and forestry scientists having special expertise in their respective fields have written thematic papers and case studies detailing the national scenario on the subject. All these provide a vivid description of different aspects of the present state of sustainable forests management in India.

- 1.1 About 75% of India's forests are categorized as tropical dry forests with rainfall range of 500 –1000 mm / year generally received on 60-70 days during July – September. These forests are relatively open. The people living in and around these forests depend heavily on them for livestock grazing and fodder, fuel wood, poles, bamboo and gather a variety of NTFPs for self-consumption and sale to supplement household income. Many of these forests are fragile and unsustainable harvest, even if light, can lead to severe degradation, weed infestation and increased susceptibility to fire and insect damage. Large areas have degenerated into grass and scrub land. Dry forests in these areas often merge into arid or even arid margin zones where the natural tree cover becomes increasingly sparse.
- 1.2 India also has some primary growth evergreen forests in Western Ghats, Andamans, and Northeastern part of India. These tropical evergreen forests are rich in bio-diversity. However, these forests in the past 2-3 decades have been subjected to unsustainable logging. Due to their eco-sensitivity and other environmental and social concerns the country's Apex Court has had to order restriction on felling in some of these areas.
- 1.3 The tropical dry forests pose management challenges very different from those of the moist tropics. Most of the native species are slow growing and drought tolerant. During hot dry spells, biological activity is reduced to a minimum as a means of survival. Despite considerable area coming under Joint Forest Management (JFM), the menace of fire, grazing, weed infestation and forestland encroachment continue to create problems for sustainable forestry development.
- 1.4 The wood produced is usually hard and durable. A high proportion of tree species coppice produces vigorous new growth when the main trunk is cut. Fires during extreme summer cause extensive damage to young regeneration requiring it to take longer period for establishment. Fire destroys other ground flora elements many of which otherwise yield valuable NTFPs. Due to recurring fire and coppice the trees have lost their vigour. The artificial regeneration becomes inevitable. Wild life is a significant element in the management of these areas. In fact, most of the tiger reserves are in these forests offering most conducive setting for generating local employment through eco-tourism.
- 1.5 Where the rainfall is scarce but reliable, sustained yield management is technically feasible. This is based on replacement or enrichment planting. The drier the area or the more erratic the rainfall, the poorer the

record of replacement planting tends to be. The management emphasis in these areas has consequently been shifting towards the regeneration management of existing forests with indigenous and endemic species and re-forestation of degraded areas by adoption of natural seedlings. Many research plots in which biomass removal, grazing and fire have been excluded for a period of 4-5 years have shown a remarkable ability to regenerate both from coppice and seed that has lain dormant in the soil. A very common example is of a scheme called Rehabilitation of Degraded Forests (RDF), which greatly relies on this system of regeneration management. This suggests a method of management capable of restoring and sustaining the productive capacities of large areas of forest in these tracts where the rootstock is still intact.

- 1.6 Indian forests are rich in several types of non-timber forest products. They include commercially important gums and resins in drier forests, economically important leaves used for country smoke, leaf plate making, several types of flowers, dye plants, fruits, nuts, seeds, roots etc. Sustainable management of NTFP resource in these forests is also one of the main objectives of forest management.
- 1.7 The main problem in implementing SFM in most forests is the intensity of land use and the extent of unsustainable utilization of forest products for subsistence forest based rural economy. Even in badly degraded areas, people may rely completely on what is left of the forests for fodder and fuel. Closing off areas for regeneration, even though it will produce a long-term burden upon people, where lands are in common ownership. There may also be difficulties in arriving at satisfactory methods of sharing out the various benefits and cost involved. Some of these problems are said to be responsible for partial success of JFM.
- 1.8 Plantation forestry has been a well experimented mode of artificial regeneration particularly of species like teak, bamboo, eucalyptus, poplars, *D. sissoo*, tropical pines etc. Some of the older plantations of these species raised by state forest departments and Forest Development Corporations have very high-capitalized value. However, in the wake of wide spread criticism by environmentalists and academicians that these plantations of monoculture raised by clearing bio-diversity rich natural forests are undesirable. As a result, the plantation activities slowed down greatly. It further received a set back due to ban on clearing original growth for plantation stipulated in the Forest Conservation Act (FCA, 1980). Most secondary dry deciduous forests with potential for high quality teak and bamboo plantations are highly degraded, with almost complete absence of natural regeneration. In order to restore productivity and efficiency these areas need intensive silvicultural operations such as clear felling and planting of natural species like teak and bamboo with adoption of established young regeneration of non-teak species. In conclusion the efforts should aim at the application of practices and ways that are ecologically sound, economically viable, socially responsible and environmentally acceptable, and which do not reduce the potential of the forest resources to deliver multiple benefits. Some of these broad principles hold great promise for sustainable forest management and development of India's forest resources.
- 1.9 Capacity development for production forestry emphasizing on high tech clonal plantation may be necessary for restoring productivity and efficiency. So far, forestry has largely been a state controlled enterprise. The time has come to recognize and support the private efforts in forestry sector. Public Private Partnership (PPP) offers best strategy for sustainable development of forest resources in India. There are several success stories (e.g. ITC, Bhadrachalam, Wimco etc.), which need to be expanded. Non-fiscal incentives such as easing of legal hurdles on felling and transport and providing technical assistance in raising quality-planting stock may encourage larger participation of private tree growers.
- 1.10 The era of scientific forestry began in 1864 by the appointment of Detrich Brandis a German Forester, as the first Inspector General of Forests. This was followed by the creation of a separate forest service, and the promulgation of legal measures, notably, the 1865 Forest Act which was revised in 1878 to confer powers to the newly constituted Forest departments. Concepts of working plans and management units and Forest Divisions/ conservancies (conservator circle) were established for the scientific management of state owned forests during this time. By 1900 most of the exploitable areas and important tree species (teak, rosewood, *Shorea robusta*, Oaks, conifers, etc) were brought under working plans. All Silvicultural systems were designed and implemented for commercial harvesting and regeneration of important timber

species for resource generation without much consideration for the ground flora or non-commercial trees as well as the ecological consequence of such management practices.

- 1.11 The post independence National Forest Policy (1952) laid down that one third of the country's land area should be under forest cover for ensuring a balanced and complementary land use system. It introduced the fundamental concept of self-sustenance for meeting local and national need, advocated extension forestry provided for the management and control of private forests, containment of shifting cultivation and creation of village forests. The policy also advocated for the setting up of protected areas for the protection of wild animals. However, the policy had a distinct bias towards timber yield and revenue generation by replacement of inferior species by a number of valuable commercial species and had no clear provisions for management of non-timber forests. It proposed administration of forests in functional terms i.e., protected forests, forests, for national use, village forests, and tree lands. The element of people's participation was unthinkable as the population around forests was considered as biotic pressure.
- 1.12 Last quarter of 20th century witnessed drastic changes in forestry programme and policies. Production forestry received major attention. All non-teak forests were considered inferior, and therefore planned to replace by teak, bamboo, eucalyptus etc. Emphasis also shifted to a broad spectrum of goods and services provided by the forests. In order to attract institutional finance, the state forest departments were advised to set up Forest Development Corporation. For meeting the manpower requirements of corporate functioning, Indian Institute of Forest Management (IIFM), Bhopal was set up. Another development was the launch of social forestry to meet the growing demand of fuel and fodder. However, due to institutions not geared for social engineering as also due to lack of social orientation of forestry professionals, social forestry did not meet the high expectations of policy makers and the common man. It was further strengthened by constitution of National Wastelands Development Board (1985) for greening 5 million ha of wastelands every year. It was also to meet the fuel and fodder requirement of local people and to arrest the degradation of natural forests. JFM was launched in 1990 as a follow up of the New Forest policy. With these positive developments considered necessary for the implementation of sustainable forest management, India played a key role on international dialogue on forestry issues at Rio in 1992.
- 1.13 The principle of sustained yield management was provided in the framing up of working plan prescriptions. Many critics considered sustained yield forestry as narrow and irrelevant to SFM in a comprehensive sense. However, they probably over looked the implications of sustained yield forestry. Sustained yield in perpetuity meant normal series of age gradations or age classes, a normal increment and a normal growing stock. If all these characteristics are met, should automatically mean that the management practices are intended to provide full range of forest products and services and this precisely is the foundation of sustainable forest management.
- 1.14 With the new emphasis on environmental conservation, NTFPs have recently emerged as eco-friendly products since their harvest / gathering is believed to be causing less damage to the eco-system compared to logging. NTFPs deserve special mention because of their potential to support economic development consistent with the principles of SFM. NTFPs play an important role in the social and traditional life of millions of forest depended population, particularly the tribal and land less people, women and other sections of rural poor. According to a study about 67% of all gatherers are women and 13% are children. It contributes to over 75% of total forest export revenue in India. Nearly 400 million people living in and around forests in India depend on NTFPs for sustenance and supplementary income. NTFPs contribute significantly to the income of about 30% of rural people. Several studies suggest that NTFPs contribute 29-24% of household income of the rural people. More than 80% of forest dwellers depend on NTFPs for basic necessities. NTFP collection comprises the main source of wage labour of 17% of land less laborers, and 39% more are involved in NTFP collection as a subsidiary occupation.
- 1.15 Despite very high potential of NTFPs, its sustainable management is a serious issue requiring urgent action. NTFP gathers are highly unorganized, coupled with lack of market access to gatherers, lack of inventory data, lack of value addition and resultant non-remunerative prices. As a result, the gathers having little opportunities for alternative employment and income particularly during lean period, resort to unsustainable

and destructive harvesting to maximize their collection and sale. They are often paid less on the pretext of poor quality of products but traders themselves encourage poor gatherers to collect even before maturing the products and collect more even resorting to felling / topping / pollarding of trees and plants. Due to uncertainty in getting benefits from timber harvesting being a long-term proposition, NTFP for their capacity to yield round the year benefits proved to be an important incentive to the participating communities. There is thus, a need to strengthen this useful link between NTFP management and JFM so that the synergy of their linkage can be profitably channeled for the well being of the forest dependent communities and ensure sustainable forest management. The high potential of NTFPs should therefore be rationally used through scientific approaches and research, acquisition of technology and people's true participation.

- 1.16 The concept of people's participation in forestry has gained acceptance in India and there has been attempts to introduce limited participation as seen in different models of JFM. However, informed, active and organized participation is yet to become a favourite of forestry. Local organizations such as co-operatives are still rare in forestry (with the exception of primary producer's cooperative for Minor Forest Produce in the state of Madhya Pradesh and Chhattisgarh). There is need to do much more to fully involve people in SFM. The efforts of self initiated forest protection groups prevalent in the state of West Bengal, Jharkhand, Orissa, Uttranchal, for example, need also be recognized as reliable strategy for SFM.
- 1.17 Human Resource Development is an important aspect of any enterprise. Governance and sustainable management of forests makes it a unique enterprise requiring manpower-having expertise in diverse fields viz, the environmental (ecological), production, economic, financial, social, cultural, administrative, technical etc. A forestry cadre has to be equipped to deal with most of these subjects. With the globalization of forestry issues, there is increasing pressure on forestry cadres to be expert / professional to deal with varying situation most prudently and judiciously. Continuous efforts to up date the knowledge and skill of forestry cadre therefore, becomes important. The biggest crisis is an aging cadre of frontline foresters with average age of over 60% staff being above 55 years (case of Madhya Pradesh and Chhattisgarh which between them employs about 30% of the country's total forestry personnel). Although all personnel receive training in technical forestry at the time of recruitment, they lack knowledge of the current global forestry issues such as IT application, IPR issues, climate change, carbon sequestration, forest certification, SFM etc. They also lack skills required for social engineering, which is an important requirement for participatory forestry. Further the Sustainable Forest Management has thrown new challenges for assessment, monitoring and reporting for which the field foresters are therefore, not sufficiently equipped/strengthened to implement SFM.
- 1.18 There are a number of National training institutions imparting training to forestry professionals. Professionals at middle as well as policy level also need to be equipped with the knowledge of forest policy analysis and implementation, particularly in the context of Sustainable Forest Management. There are state level training institutes to train forest guards, foresters, forest rangers etc. Similarly there is Indira Gandhi National Forest Academy, Dehradun for training of newly recruited Indian Forest Service officers. State Forest Service institutions are also there to train newly recruited Asst. Conservator of forests. In addition, there are specialized institutions like IIFM, Wild life institute, Indian Institute of Remote sensing (IIRS) etc; providing training in Forest management, wild life, and remote sensing application. These institutions have multi-disciplinary faculty but they need international exposure and orientation to be more effective trainers and researchers.
- 1.19 Indian Forest Act 1927, continues to be the main legislation for forestry issues. While policies have undergone changes, the legislation has not correspondingly changed. Thus, the laws, rules and regulations relating to forestry are incongruous with policy provisions. The laws focus on prevention of offenses rather than on promotion of development. There is thus an urgent need for formulating a new forest enactment with related rules, regulations and procedures which could help facilitate promotion of institutional autonomy and functional decentralization of the impediments for participation of the people and the private sector in forestry and support investment in the sector.

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- 1.20 The National Forestry Action Programme (NFAP) was launched in 1990 for a period of 20 years (four Five Year Plans from 10th Plan onward starting in 2002). The NFAP projected large gaps between demand and supply of timber, wood fuel, and fodder resources and recommended several strategic action points to reduce the gap.
- 1.21 Sustainable Forest Management has very high positive externalities. If all costs and benefits, direct and indirect, private and social are taken into consideration, SFM is the most efficient, effective and least cost option for management of forest resources. The components of SFM depend on ecological, social and economic conditions. SFM should cover all aspects of forestry, in an appropriately balanced manner. It needs to incorporate natural forest, large plantations, animals, micro flora and fauna, water and soil, as well as traditional knowledge and heritage. SFM is specific and practical action for translating the concept of sustainability into reality in forestry. SFM in India would involve:
- Production of wood and non-timber forest products, first for meeting subsistence needs and the surplus for commercial purposes.
 - Protection or setting aside areas to be managed as plantation or wild life reserves for recreational and environmental purposes.
 - Regulating the conversion of forestlands for non-forestry uses.
 - Regeneration of wastelands and degraded forests.
 - Functional and land capability classification of forests and land use planning to ensure healthy and sustainable land use systems within acceptable safe minimum standards.
 - Protection of adequate extent of natural forest for their long-term contributions, including conservation of bio diversity, wetlands values and other externalities and controlling deforestation.
 - Management and utilization of forest resources for maximizing their sustainable contribution and value addition towards improved welfare of society.
 - Promotion of efforts for producing forest goods and services out side forest areas (e.g. agroforestry plantations, home gardens) and development of potential substitutes for wood from non-forest sources (e.g. rubber wood, coconut wood).
 - Waste reduction and waste recycling programme
 - Feasible medium for encouraging participation of people and the private sector.
 - A proper and realistic system for cost, values and benefits attributable to forestry to ensure a strong ecology - economy interface.
 - Forest management is no longer seen as timber oriented activity, yet total protection of natural forests in practical terms, for conservation purpose alone is impossible.
- 1.22 In conformity with the International thinking on SFM, Indian Institute of Forest Management, Bhopal under the guidance of Govt. of India and in collaboration with several state forest departments and other stakeholders developed a set of 8 criteria and 43 indicators between 1998-2000. This was named as Bhopal – India process for sustainable Forest Management. Later on IIFM, Bhopal also joined FAO, ITTO, UNEP, and USFS to organize a meeting of 10 Asian counties (1999) having substantial areas under dry forests, to develop a set of 8 criteria and 49 indicators. Both these sets of C&I were more or less similar in design and application. As a follow up ITTO sanctioned a project to Govt. of India in 2001 for implementation of C&I for sustainable forestry development with community participation. IIFM, Bhopal in collaboration with 06 JFM committees in Madhya Pradesh and 02 in Chhattisgarh State are implementing this. In the past 5 years of this project it has broadly covered the following aspects:
- Awareness building among forestry professionals, NGOs and communities, about C&I for SFM.
 - Developed the format for collection of C&I related information.
 - Imparted training to local field foresters and community members for the field implementation of C&I dovetailing in the JFM activities.
 - Brought several research and extension publications on C&I for SFM.
- 1.23 About 100 years of working plan based forest management is broadly based on the fundamentals of SFM. However, the information gathering, its analysis and application is a serious issue to be achieved through

a small project like this and it is too early to expect C&I implementation in one go. It requires efforts by state forest departments, NGOs, communities and different national institutions to join hands to implement this. Practical guidelines for the assessment, monitoring and reporting on national level criteria have been developed as an output of ITTO project. FAO (2003) also published the practical guidelines for dry forests of Asia. It is now necessary to develop baseline data or benchmark to implement the assessment and reporting progress towards sustainable forest management. While information on some indicators may be available, there are some indicators for which long-term research may be needed. The collection of information would require resources and trained manpower and therefore, before one can expect the institutionalizing of SFM in India, several research projects may be needed at least one for each major forest types.

2.0 Factors which limit progress towards achieving objectives 2000 of SFM

- 2.1 ITTO objectives 2000 to which India is a signatory stipulated that by this time all-tropical timber (and of course the NTFPs,) in the international market should come from sustainably managed forests only. However, even 6 years after this resolution of the member countries things appear to be unsatisfactory. In India, despite several forestry innovations in the last quarter of twentieth century unsustainable management and utilization of forest resources have been the cause of concern particularly for their environmental and socio economic impacts and implications. The depletion of dense forest cover between 2001-2003 to the extent of 6.4% is on unacceptable scale threatening the countries overall environment and sustainable development objectives.
- 2.2 Managing forest harvest at sustainable levels, improving management practices enhancing forest conservation, providing forest derived benefits to a broader range of stake holders, and offering non-distortion incentives to individuals and corporations to encourage development of forest resources are elements of adaptive forest management system. SFM is an enormous task requiring adequate financial provisions, trained manpower, uninterrupted supply of materials and management. Governments have often claimed of having introduced decentralized governance and decision making but there is a visible gap between promise and action. Major issues and constraints in implementing SFM are (i) governance related, (ii) issues related to Database (iii) institutional issues (iv) issues related to science and technology (v) issues related to forest utilization and trade, (vi) environmental issues (vii) socio-economic issues (viii) general and over arching issues. There is a lack of political / policy commitments to the cause of SFM.

3.0 Economic value of Forests / Green Accounting and Non-Market Valuation of Forests

- 3.1 The current approach for accounting of forestry sector contribution to GDP grossly under estimates its contribution to the national economy. While recorded removals of timber and other forest products are considered, the unrecorded removals of forest products (there is substantial unrecorded removal of fuel wood, fodder and several NTFPs) and the ecological services such as watershed functions, eco-tourism, grazing, water etc are not considered.
- 3.2 The grazing in forests (about 30% cattle graze in forests), eco-tourism, and watershed functions are reflected in the economic growth of animal husbandry, tourism, and agriculture. Similarly, fuel wood is the most reliable source of rural energy but its contribution is also not shown against forestry sector. According to an estimate about 270 million tones of fuel wood, 280 million tons of fodder, over 12 million cu m of timber and several hundred thousand tones, of NTFPs are removed form forests annually. The direct market value of these products aggregates over INR 300,000 million per annum. These figures do not take into account the unrecorded removal of NTFPs for subsistence needs and other goods and services. If all these are also taken into account the value may be worth about INR 59,300 billion as calculated by CSE in 2005. There have been some other estimates, all of which put the contribution from forestry many times more than about 1.2% being currently shown in the GDP. This distortion is responsible for the low priority given to sustainable forest management and the consequent insignificant budgetary allocations to forestry.

4.0 Sustainable Forestry Development in relation to National Employment Guarantee Scheme.

- 4.1 In order to address the issue of rural unemployment and poverty, the Government of India has launched a National Rural Employment Guarantee Act (NREGA, 2005). This act assures employment for at least 100 days to every household and therefore, provides much needed income security to rural poor, the agricultural workers in lean agricultural season. Different forestry works are also covered under this scheme. While Panchayat implements most rural development works (rural roads, water harvesting structures, improvement of agriculture, development of irrigation facilities etc), forestry works are implemented by Forest Department.
- 4.2 The selection of project for implementation in a particular area is to be decided by rural development and Panchayat departments who prefer non-forestry works so as to have full control on the performance and monitoring of the works. Forestry being a technical work and forest department having a strong presence in rural areas, the rural development and Panchayat institutions are generally less inclined to sanction forestry works. However, in forest rich areas with higher concentration of tribal population, some forestry works do get budgetary support. In these areas JFMC's that are basically the Panchayat outfits (of course fully controlled and operated by forest department) could obtain funds under NREGP and carryout forestry works under the overall guidance of forest department. Forest Departments may provide the quality planting material.

5.0 Forestry and Millennium Development Goals

- 5.1 Forestry is strongly correlated to MDGs. While MDGs 1 and 7 are directly related to sustainable forestry development, the other goals (2, 4, 5, 6 & 8) are indirectly related. It is estimated that one – third of the world's poor live in India; 34.6% of Indians fall below the internationally recognized "dollar-a-day-standard (UNDP, 2003)". Close to 85% of the total population have either no access to safe drinking water or have access only after spending a lot of time and energy. Child and mother mortality is the reflection of poverty and malnutrition. Rich forest areas managed on sustainable basis should enhance household income and reduce the mortality rate. Forests are considered as mother of rivers and other water sources. SFM can thus ensure access to clean drinking water.
- 5.2 The menace of Naxalism and other forms of extremism are prevalent in forest rich areas of the country. So far these rich forest resources have been taken away by contractors depriving the locals from getting their due benefits which indicate that the socio-economic problems are not being adequately addressed due to forest depletion. Sustainable forest management properly implemented in these areas could ensure flow of products and services and thus could minimize the hardships of forest dependant people. Growing extremism in the forest concentrated areas need highest attention for institutionalizing JFM. Half hearted approach may alienate the communities and then it would be too late to implement SFM. Sustainable management of NTFP resources in close collaboration with communities can achieve all 8 MDGs. Resources, trained manpower and proper participatory planning could save the situation.

6.0 Forest Policy; the way forward

- 6.1 There have been several forest policy innovations in 20th century. These innovations led to the development of 1988 forest policy. This policy provided the framework for practicing sustainable forest management through people's participation. JFM provided a necessary framework for the inclusion of communities into SFM who had felt alienated from forest department. Although much needs to be desired from the implementation of JFM in India, it has provided a good opportunity to communities to manage forest for their socio economic development. After about 15 years of JFM programme having been implemented by almost all the state forest departments, a number of forest policy issues need to be urgently addressed. Adequate orientation and training could help the frontline foresters and communities to have better understanding of SFM. The different state forest departments should be willing to further open up and accord due recognition to the communities efforts.

7.0 Forestry Research and Development

- 7.1 Indian Council of Forestry Research and Education (ICFRE), Dehradun is the apex organization for forestry research and education. It has thematic institutions under its control in different agro-climatic regions of India. Some state forest departments also have their own research institutions engaged in research on local forestry issues.
- 7.2 ICFRE's Mission is to generate, preserve, disseminate and advance knowledge technologies and solutions for addressing issues related to forest and promote linkages arising out of interactions between people, forest and environment on sustained basis through research, education and extension.
- 7.3 ICFRE has developed a national research plan focusing on the following areas.
- Eco-restoration of degraded forests and other sites.
 - Development of agro-forestry / social forestry models
 - Planting stock improvement
 - Bio-diversity conservation
 - Soil and water conservation
 - Participatory forest management.
 - Human resource management.

The research on different aspects of NTFPs, forestry and livelihood issues, climate change, carbon sequestration, production forestry, IPR issues, forest certification etc. are some new thrust areas requiring the attention of ICFRE.

- 7.4 ICFRE in the present form has been in existence for about two decades. It was hoped that restructuring of FRI into ICFRE would make it more effective and efficient in providing research leadership in the country by networking various national and state level institutions. However, much needs to be desired from the present organization. To make it more effective it requires considerable strengthening in terms of qualified and trained research personnel, facilities, infrastructure, equipment and funds. Problem solving task – orientation participation of clients in research planning, demonstration of research results, dissemination and sharing research information, networking of different institutions, establishment of technology centres, to highlight the “do how” aspect of research are *inter alia* the areas requiring special attention.

8.0 Tress outside Forests (ToFs)

- 8.1 Nearly 31 million cu m of timber comes from Trees outside Forests (ToFs) and 12 million Cu m from Govt. forests. The forest assessment report (2003) indicates that the ToF area covers 3.04% of the geographical area of the country. According to a guest mate, about 2% area is likely to be covered by young plantations (2-6 years) whose canopy is yet to develop to be captured by satellite. That means tree resources outside forests are about 5% of the total geographical area. It is less likely that one-third of the country's geographical area would be covered by natural forest but it is most likely that ToFs would make good the short fall between current forest and tree cover of 23.68 % and the targeted area of 33 %.
- 8.2 NFAP (1999) had also stipulated bridging the supply – demand gap by improving forest cover density and productivity on about 31 m ha and by raising plantation on non-forest and farm lands. The task force on greening India has suggested 43 m ha degraded land under watershed approach to bring 33% of geographical areas of the country under forest / tree cover by 2012. Under this stipulation, it was proposed to regenerate 15 m ha of degraded forests by JFM approach; agro-forestry in 10 m ha irrigated areas and 18 m ha rain fed areas.
- 8.3 Private participation in forestry is comparatively a new development. Certain forest-based industries (ITC, WIMCO etc) have joined with farmers for production of raw material. Some of the clonal plantations of Eucalyptus and Poplars have registered a growth of 20-58 cu m per ha per year. The net income to farmer

is ranging between Rs.50,000-150,000 per year. These efforts are also helping to bridge the gap between demand and supply. These private sector companies have their own R&D facilities. Efforts are needed to encourage more public-private participation (PPP) for improving the household income and forest productivity.

9.0 Bamboo and Rattans

- 9.1 Bamboo occurs as understorey in tropical moist and dry deciduous forests. Rattans are mainly distributed in three major geographical regions, the Western Ghats of peninsular India, sub Himalayan hills and valleys of eastern and northeastern states. For artisans, Bamboo is of great ecological importance. In dry deciduous, semi moist deciduous forests, when tree shed the leaves, the green bamboo foliage prevents soil desiccation and erosion and helps the forest floor with profuse addition of leaf litter. It has great potential for reforestation as it covers the site quickly and is ready for harvesting in 5-6 years. Households on farm boundaries and home garden and in other vacant areas also grow bamboos and they are used in construction, scaffolding, anchor, thatching, agricultural implements, baskets, etc. and for cash income.
- 9.2 Gregarious flowering and lack of subsequent care have contributed to the decline in bamboo areas. Gregarious flowering of muli bamboo (*Melocana baccifera*) in North – Eastern India and *Dendrocalmus strictus* in central India has posed serious problem of fire, rodent population, seed storage and use, shortage of food and possible outbreak of epidemic. Rehabilitation and regeneration of flowered bamboo areas need to be researched and packaged for its sustainable management and development.
- 9.3 Rattan is being extended to other hospitable eco-climate zones. National Afforestation and Eco-Development Board (NAEB) in Govt. of India are providing some financial assistance for this activity. However, unscientific and unregulated harvesting needs have to be controlled so that the fast decline of this important NTFP could be prevented.

10.0 Forest Based Industries

- 10.1 Despite the great economic linkages, flexibility (for capital and technology) and diversity of forest resources (timber / non – timber) forest based industries have not proven as engines of growth particularly in the rural and remote areas. Forest based industries suffer from sets of problem, but timber processing industry need special mention because of its pervasiveness and potentiality. These are generally characterized by insufficient profit, low technology, sub- normal wage rates, wasteful conversions, restrictions on establishment of new sawmills, lack of skilled manpower etc.
- 10.2 Forest based processing sector is however, dominant in the area of harvesting, processing and marketing. About 90% of forest-based products are manufactured in the private sector while about 97% of the forests are owned and managed by the Government. The raw material requirements of the privately owned forest industries were being met by adopting different arrangements such as auctions, negotiated sales and allocations' agreements. With logging bans / restrictions, they are now in the grip of raw material shortages.
- 10.3 India produces a range of processed forest (wood and non-wood) products ranging from sawn wood, panel products and wood pulp to bamboo and rattan ware and pine resin. Total industrial wood consumption by wood based processing industries is about 25 million cu m. This however, accounts only for about 15% of total consumption, 85% is consumed in the form of wood fuel. No information is readily available on processing based on NTFPs.
- 10.4 The demand for wood as standing trees in forest depends on the efficiency in logging, processing and product use, as well as on the level of recycling. Optimizing the demand for wood can enhance conservation and sustainable management of forests. Management of forests for non-wood benefits, being generally non-destructive is compatible with the principles of SFM. Value addition on forest resources, through harvesting primary and secondary processing and marketing is an important means of improving employment, income and social welfare. There is a need to address the aspects related to product development, downstream

processing, pricing policies and market surveys and analysis. Forest product research is another area where emphasis is called for.

11.0 National and State Government, and Local authorities in Forestry and SFM

- 11.1 The MoEF at the central level is the apex forest policy formulation and implementation agency. Forestry being a concurrent subject, the different international and regional dialogues on forestry, wild life and related issues are represented by the Ministry. The State forest departments continue to play the prime role as custodians of the public forest resource, responsible for its administration and control, carrying out the authority and function. All forested states have set up state owned enterprises, designated as Forest Development Corporations to be responsible for all (or part of) the business/ commercial entities, efficiently by following business principles.
- 11.2 Panchayati Raj Institutions (PRIs) have 3-tier structure viz, the village, blocks and districts. At village level Panchayat institution, JFM committees derive their legitimacy. Social forestry, fuel wood plantation and NTFP ownership in tribal areas are mandated to PRIs. In urban areas, Municipalities and other local civic bodies are tasked with urban forestry. However, in the absence of a proper organizational set up, legislation and lack of innovative mechanisms in these civic authorities, urban and recreation forestry has not received due attention. These bodies need to take up activities like protection of municipal watersheds, landscape design, recycling of solid waste, tree care, and supply of fuel wood for urban poor etc.

12.0 Non Government Organizations

- 12.1 Civil society has become more prominent in forest policy debates since the 1970. There are about 34,000 NGOs working in the field of forestry ([www. ngoindia.com](http://www.ngoindia.com)) Ministry of Environment and Forests, Govt. of India has outlined (1988, 1990) the potential roles for NGOs.
- Need for committed intermediaries to bridge the gap and promote trusts and understanding between public administration and peoples organization.
 - NGOs are expected to motivate and organize the villagers. N G O roles are envisage at the local and pragmatic level rather than at higher level , affecting policy and structural relations
- 12.2 NGOs have been very effective in motivating local communities in the formulation of self-help groups and also in training JFMC members. However, some NGOs have extreme view on the JFM and they are inciting communities to forcibly encroach the forestlands. These NGOs also oppose international assistance, particularly from World Bank, in forestry sector. Discounting on the activities of these extremist elements, a large number of NGOs are contributing to the success of JFM and through this to SFM. Assisting these NGOs by training and financial assistance may be a desirable strategy for implementing SFM.

13.0 Forest Certification

- 13.1 Communities and NGOs can play a very positive role in sustainable forest management. Forest certification could help communities to get remunerative prices for their collection of NTFPs. Their training and extending financial assistance is required to involve them in developing benchmarks and standards for certification of NTFPs, medicinal plants and forest management. At international level also, it has the potential to promote export of timber, handicrafts etc. whereas the margin of green premium is still not sufficient.

14.0 Forest Fire Management

- 14.1 Despite attractive provisions for benefit sharing mechanism in JFM forest degradation and fire continue to be the subject of great concern. Forest fires sweep the Himalayas and tropical dry deciduous forests destroying grasses, ground flora, young regeneration and even the tall trees during scorching summer when fire catches the crown. In most cases it is man –made fire resulting from grazing, encroachments, NTFPs collection etc. There is a general paucity of forest fire related information. The data collection and

reporting is inadequate. The fire fighting activity is poorly planned and implemented. When fire spreads from areas not under JFM, even JFM protected areas are also burnt. For sustainable forest management, integrated forest fire management with components like education, engineering and enforcement is desirable. Research, planning and management of forest fire have become important aspects for attaining the goals of SFM. It is desirable to have an integrated forest fire schemes for different areas, which are generally prone to forest fires.

15.0 Forest Information System

- 15.1 Forestry information system is very weak, unreliable and inconsistent. In the absence of reliable statistic, decision-making becomes very difficult. To assess the progress towards sustainable forest management a large amount of data and information needs to be generated. A strong network of institutions has to be developed to ensure uninterrupted flow of information at FMU, state and National level. Apart from Govt. agencies and institutions, JFMCs, NGOs and other organizations could be networked for collection of information and development of forestry database.

16.0 Constraints and Issues

- 16.1 Based on the foregoing discussion several serious constraints and important issues are evident. These among others include; slow pace of policy reforms and ineffective regulatory mechanism, over emphasis on Government involvement and control, difficult administrative procedures, weaknesses and conflicting authority and development, inadequate planning capability etc. The investment in forestry is not commensurate with its role in sustainable development. Forestry continues to be in the public domain with inadequate space for private participation. People's participation needs to be streamlined. Research and extension is inadequate. Insufficiency of human resources skills, lack of coordinated holistic approach to development, neglect of NTFPS, market weakness, technological inefficiencies and inadequacies in management, lack of effective land use policy, low priority for forestry, wide gap between rhetoric and action, and above all lack of adequate awareness about the multiple (particularly the environmental) roles and benefits of forests and its relevance to poverty alleviation and sustainable development.

Acronyms and Abbreviations

C&I	Criteria & Indicators
CSE	Centre for Science and Environment
FAO	Food and Agriculture Organization of United Nations
FCA	Forest Conservation Act
FMU	Forest Management Unit
GDP	Gross Domestic Product
ICFRE	Indian Council of Forestry Research and Education
IIFM	Indian Institute of Forest Management
INR	Indian Rupees
IIRS	Indian Institute of Remote Sensing
ITC	Indian Tobacco Company
ITTO	International Tropical Timber Organization
JFM	Joint Forest Management
MDG	Millennium Development Goals
NAEB	National Afforestation and Eco-Development Board
NFAP	National Forestry Action Programme
NGO	Non Governmental Organisation
NREGA	National Rural Employment Guarantee Act
NREGP	National Rural Employment Guarantee Programme
NTFP	Non Timber Forest Product
PRIs	Panchayati Raj Institutions
PMC	Producer Member Country
PPP	Public Private Partnership
RDF	Rehabilitation of Degraded Forests
SFM	Sustainable Forest Management
TOF	Tress Outside Forest
UNDP	United Nations Development Programme
USFS	United States Forestry Service
WIMCO	Western India Match Company

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