

The Indian forestry system at a crossroads: an outsider's view

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SUMMARY

The paper is a summary of contributed papers in this volume from an outsider's view. The objective of the paper is to try to identify the most important issues for actions in order to enable the forest sector/system to meet future national needs.

The paper identifies four interlinked issues/components as priorities in order to promote sustainable development of the Indian forest sector. Nearly all of the papers identify a lack of reliable *Data and Inventories* with respect to functions, management and impacts of the Indian forest sector. Therefore, it is imperative to start the process of establishing needed inventories. This process should have *integrated and systems view* approaches. The new data and inventories should feed into the component of *Integrated Assessments*. In order to set appropriate strategies and policies, relevant integrated assessments are necessary with respect to outlooks and impacts of different actions. These integrated assessments should go far beyond the traditional forest sector to be meaningful and to deal with real issues causing the degradation of the Indian forest resources, like sustenance and livelihood pressures. The integrated assessments should feed into a *Strategic Planning* process. Currently there is no strategic planning process in place with respect to the forest sector. An ongoing institutionalised process has to be established with integrated and systems view approaches that attempt to interlink the major sectors affecting the over-utilisation of the Indian forest resources and deriving non-sustainable benefits from the sector. The strategic plan implementation will require restructuring of the existing *Governance and Institutions* with respect to the forest sector. The governance and institutions have to, in the future, operate in a much more integrated way taking on board crosscutting issues in order to address the real problems of the sector and to interlink more efficiently in governance between states and central government.

The four components above are strongly interlinked and should be regarded as one package for actions. Many more issues/concerns can be identified in the presented papers but I feel it is important to start with the implementation of a limited package of important actions in order to reach results.

Keywords: data, inventories, integrated assessments, strategic planning, governance

Le système de foresterie indien à la croisée des chemins: point de vue d'un agent extérieur

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Cet article est une synthèse des contributions de ce volume du point de vue d'un agent extérieur. L'objectif de cet article est d'essayer d'identifier les questions les plus importantes pour les actions visant à permettre au système/secteur forestier de pouvoir faire face aux besoins nationaux futurs.

L'article identifie quatre questions/faits liés, comme priorités pour permettre un développement durable du secteur de la foresterie indienne. Presque tous les articles identifient une carence de données et d'inventaires sûrs pour ce qui est des fonctions, de la gestion et de l'impact du secteur de la foresterie indienne. Il est par conséquent impératif d'amorcer un processus d'établissement des inventaires nécessaires. Ce processus devrait avoir une approche avec vue intégrée et de système. Les nouvelles données et les nouveaux inventaires devraient s'ajouter au contenu des évaluations intégrées. Les évaluations intégrées appropriées sont nécessaires pour établir des stratégies et une politique qui conviennent à la vision et aux impacts de différentes actions. Ces évaluations intégrées devraient aller bien au-delà du secteur traditionnel de la foresterie pour être significatif, et pour prendre en main les vraies causes de la dégradation des ressources de la forêt indienne, comme les pressions sur la durabilité et les revenus. Les évaluations intégrées devraient être incorporées au processus de planification stratégique. Il n'y a actuellement pas de processus de planification stratégique en place pour le secteur de la foresterie. Un processus institutionnalisé continu doit être établi avec des approches de visionnement intégrées et leurs systèmes, s'efforçant de d'établir des connections entre les secteurs majeurs affectant la sur-utilisation des ressources forestières de l'Inde, et qui dérivent des bénéfices non durables du secteur. La mise en pratique du plan stratégique nécessitera une restructuration des gestions et institutions existantes pour ce qui est du secteur de la foresterie. Les institutions et la gestion vont devoir opérer d'une manière plus intégrée dans le futur, en prenant compte des questions s'entrecoupant, pour pouvoir faire face aux problèmes réels du secteur, et créer des liens de gestion plus efficaces entre les états et le gouvernement central. Les quatre éléments ci-dessus sont fortement liés et doivent être considérés comme un tout pour les actions à prendre. De nombreux autres questions et soucis peuvent être identifiés dans les articles présentés, mais je pense qu'il est important de commencer par la mise en oeuvre d'un ensemble limité d'actions importantes pour atteindre des résultats.

¿Hacia dónde va el sistema forestal indio?: un punto de vista desde fuera

S. NILSSON

Este estudio es un resumen de artículos escritos para este volumen desde el punto de vista de una persona de afuera. El objetivo del estudio consiste en intentar identificar las áreas que más requieren acción para permitir al sector forestal satisfacer las necesidades nacionales futuras.

En cuanto al fomento del desarrollo sostenible del sector forestal indio, el estudio identifica como prioridades cuatro áreas o componentes interrelacionados. Casi todos los artículos señalan una falta de datos e inventarios confiables en lo que se refiere a las funciones, la gestión y los impactos del sector forestal indio. Por eso resulta imprescindible iniciar el proceso de establecer los inventarios necesarios. Este proceso debería abarcar enfoques integrados y de visualización de sistemas, y los nuevos datos e inventarios deberían ser introducidos en el componente de evaluaciones integradas. En aras de establecer estrategias y políticas apropiadas, hace falta realizar evaluaciones integradas en cuanto a los impactos de diferentes acciones. Para tener un significado verdadero, estas evaluaciones integradas deberían trascender el sector forestal tradicional y tratar las cuestiones reales que causan la degradación de los recursos forestales indios, como el tema del sustento de la población local y las presiones sobre éste. Las evaluaciones integradas deben contribuir a un proceso de planificación estratégica. En la actualidad no existe ningún proceso de planificación estratégica para el sector forestal. Resulta necesario establecer un proceso institucionalizado continuo que abarque enfoques integrados y de visualización de sistemas y que intente interconectar los sectores principales que afectan el uso excesivo de los recursos forestales indios y que obtienen beneficios no sostenibles del sector. La implementación del plan estratégico requerirá la reestructuración de la gestión y de las instituciones actuales del sector forestal. En el futuro, la gestión y las instituciones deberán operar de forma mucho más integrada y tener en cuenta cuestiones multidisciplinarias para poder tratar los verdaderos problemas del sector y para establecer una comunicación más eficaz entre los estados y el gobierno central.

Los cuatro componentes mencionados arriba están muy interrelacionados entre sí y deben ser considerados como un solo conjunto de acciones. Se pueden identificar muchos temas adicionales en los artículos presentados, pero yo creo que es importante empezar con la implementación de un paquete limitado de acciones importantes para poder lograr resultados.

INTRODUCTION

The workshop, organised by the International Institute for Applied Systems Analysis (IIASA) and The Technology Information, Forecasting and Assessment Council (TIFAC) of India in the spring of 2007 in New Delhi engaged some of the key forestry experts in India. (http://www.tifac.org.in/abt/india_iiasa_workshop07.htm). Based on the workshop a number of papers were commissioned with the objective of gaining a consistent picture of the role of the Indian forestry system from a societal point of view. Another objective of these papers was to help identify the most important issues for future actions.

The commissioned papers are presented in this special issue; the objective of the present paper is not to make a summary of all of these papers, but rather to highlight important policy issues and strategy for the forest sector to accelerate the development of the Indian forestry system to meet future national needs. As seen in the papers presented, the Indian forestry system faces many problems and there is no way of dealing with all of these problems at once or simultaneously. Thus, I hope this outsider's view will help to set the right priorities for future actions and development of the Indian forestry system.

RESOURCES

The forest areas recorded by governments in India in 2005 were 76.96 million hectares (ha) constituting 23.4 percent of

the geographical area (D. Pandey). However, the latest two-yearly satellite assessment shows the forest cover of India to be 67.7 million ha with a growing stock of 4.6 billion m³. This forest cover corresponds to 20.6 percent of the geographical area. The National Forest Policy of 1988 identified a national goal of achieving forest cover of 33 percent of the land area. It can be ascertained how relevant such a goal is in reality by analysing the quality of the existing forest cover. Of the assessed forest cover of 67.7 million ha, only 5.6 million ha is very dense forest. Some 33.2 million ha is moderately dense forests and 28.9 million ha is open or degraded forests (N.P. Singh). Thus, *forest cover objectives that are not combined with quality objectives is of rather limited value.*

To date, there has not been any reliable assessment of the growing stock at state level, and there are a number of deficits as discussed by D. Pandey. He points out that there is no efficient inventory for "trees outside forests" (further discussed below), a lack of data on production of different products from the forests, and a lack of increment, biomass and growing stock data, etc. *All these deficits make the existing inventory information on forests less useful for policymaking.*

Trees outside forests, mostly growing on private lands, is a major resource in India and is assessed to have a growing stock of 1.6 billion m³ (D. Pandey), nearly one-third of the growing stock of what is classified as forests. It is assessed that about 80 percent of all timber produced in India comes from non-forest areas under private ownership. There is an inventory assessment of trees outside forests at the national level but there are major deficits at state level. There is

in general a severe deficit of increment data and volume functions for trees outside forests. *This makes existing inventory information on trees outside forests of limited value.* The potential for increased production from trees outside forests is huge but the production is constrained by a *number of bottlenecks.*

A third important “wood” resource in India is bamboo. Pande and Pandey assess that there are currently about 11.4 million ha of bamboo in India producing some 13.5 million tonnes per year and about 85 percent of the bamboo resource grows on government land. There seems to be a tremendous potential for increased bamboo production, but production is subject to *severe constraints.*

K.D. Singh sets a perspective on the Indian forest resources by describing the historical development and outlooks on the development of the resources. It can be concluded that the development of the Indian forest resources is to a large extent dependent on the *socio-economic development of the poor people and tribes living in the forests and on the fringes of forests.*

K.D. Singh and Nilsson stress the ongoing degradation of the Indian forest resources. The socio-economic developments in the country have brought forest management, in very large parts of the country, to a stand-still. Large tracts are devastated within short spells and the continuous march of degraded areas is unchecked”. Thus, there are many deficits in the Indian “forest” inventory systems and many of the important functions for the Indian society by the forests are not monitored at all.

The deficits of the “forest” inventories are symptoms of other deficits in the overall Indian forest systems. I see strong links between strategy/policy setting and functioning inventories. In India there seems to be a number of problems:

- *Lack of a strong body for strategy and policy planning with respect to the Indian forest system.*
- *Lack of a strong demand for development and delivery of consistent and relevant data by the inventory systems.*
- *The current system is not carrying out efficient analysis or evaluation of the existing data with respect to strategy and policy setting.*
- *There is currently no feedback system from the inventory system for identification of important research issues.*
- *It is also debatable as to whether the Forest Survey of India with its role as information provider for integrated assessments and policy analysis should report to the Board of Forestry. This question is further discussed in the “Future” section.*

TREES OUTSIDE FORESTS

Above it was identified that trees outside forests are an important resource and especially for the forest industry in India. Krishnankutty *et al.*, and Ahmed have each carried out case studies for different states with respect to trees outside forests.

The authors conclude that there is a big potential for

expansion of trees outside forests. There is land available, but there are constraints on the accessibility of land for tree plantation. An increased plantation of trees outside forests would help with the current very tight balance of industrial wood in India, fuelwood supply, soil/water conservation, shelter, rural economic development, poverty reduction, carbon balance, etc. It seems likely that fast growing plantations (in different forms) outside forests *would be a win-win situation* for the forest industry, farmers, communities and the environment. Given this positive outlook it is strange that there is *no specific policy in place* in India *to promote* and support *plantations* outside forests (D. Pandey). It can also be concluded that there is no consistent legislation on how to utilise trees outside forests (the legislation varies from state to state). There seems to be lack of funds for developing the trees outside forests sector. The land ceiling laws have to be adjusted to make it possible to further develop economically viable plantations outside forests. Laws and procedures related to harvesting, transport and selling of privately grown trees should be modified to stimulate the development of efficient markets for privately grown wood. Private industry cannot use governmental land for forest plantations according to current regulations. The current situation, in combination with the rapid development of the population in forests and on the fringes of forests, contributes to the *illegal logging* that is prevalent in India.

As pointed out above, there is a big potential for increased bamboo production, but again with constraints. Forest land cannot be leased for bamboo production and private land owners are hampered by regulations involving harvesting, transport and trade. These legal bottlenecks have to be removed in order to increase bamboo production. Thus, *market forces alone cannot function as a vehicle for stimulating bamboo production.*

Both the situations with respect to trees outside forests and bamboo demonstrate serious strategy and policy failures. For an outsider the solution seems simple. There are huge potentials which would be win-win situations for the whole of Indian society but which cannot be utilised for legal, institutional, etc., bottlenecks. *The solution is to remove these bottlenecks.*

One of the dominating trends in the Indian forest system is the *increasing importance* of trees outside forests and bamboo. This trend should be one of the corner-stones in any new strategy for the Indian forest sector.

RESOURCE CONSUMPTION

The forest/tree resources deliver many different products to Indian society. C.N. Pandey and Rangaraju discuss the consumption of industrial wood and the associated industrial wood balance for India. K.D. Singh elaborates on the consumption and production of wood fuel. Chauhan *et al.* analyses the uses of non-timber forest products. Roy and K.A. Singh and N.P. Singh, respectively, discuss the fodder and grazing situation. Subramaniam produces an overview of ecotourism. With respect to demand and supply of industrial

wood raw material, C.N. Pandey assesses that there will be a *supply gap of nearly 95 million m³* in 2020, and that the consumption of industrial wood products is currently depressed because of raw material supply problems. In the paper it is pointed out that there are huge uncertainties in demand and supply assessments because of a *lack of data and statistics*, especially with respect to consumption.

S.K. Pande and S. Pandey assess that there is potential to increase the bamboo market by about seven to eightfold. This would mean production of the magnitude of 95 million tonnes/year compared to the current 13.5 million tonnes/year.

K.D. Singh elaborates on the fuelwood situation in India. There are more than 100 million households in India that are dependent on bioenergy for survival. The demand for fuelwood is currently assessed at 200 million tonnes/year and is assessed to increase to *225–230 million tonnes in 2020*. The annual increment of the Indian forests is assessed to be 87.6 million m³/year, and *some 26 million m³* are assessed as *potential fuelwood*. However, it should be stressed that far from all fuelwood used can be classified as wood. Having said that, I think it can be safely stated that in the current situation we do not know the sustainable supply/demand balance with respect to fuelwood in India. It can only be concluded that there is a substantial over-consumption of wood fuel in relation to sustainable supply capacities, meaning unsustainable pressure on the forests but not necessarily pressure that will contribute to a severe solid wood deficit. The future fuelwood problematic is strongly linked to the *development of poor people living in rural areas*. Plantations outside the forest could also help in easing the fuelwood problem. The paper illustrates, again, that there is a *lack of data (inventories) and statistics for relevant analysis of the future demand and supply of fuelwood in India*.

The Chauhan *et al.* paper analyses the importance of non-timber forest products (NTFPs) in India. The paper identifies some 25 NTFPs relevant with respect to India. Generally, NTFPs are utilised for local use and trade (and crucial for rural subsistence) which are not accounted for in the statistics. But there is also a rapidly growing export of NTFPs. However, there are *many data gaps with respect to production and consumption of NTFPs* and data are not collected in a *uniform* fashion in the country. The existing production estimates are doubtful because methodologies are not presented. However, based on the information available it can be clearly stated that the gross domestic product (GDP) contribution from NTFPs from forests is higher than the GDP contribution from timber from the forests and the growth rate is more rapid for NTFPs. Thus, an *important trend is that the economic returns of NTFPs have overtaken the values of economic timber production*. Considerable restrictions have been placed on felling of trees and this activity, therefore, has ceased to be a preferred option. *This is another corner-stone to build on in any new strategy for the Indian forest system*.

Roy and K.A. Singh, and N.P. Singh, respectively, discuss one important NTFP, namely, fodder and grazing. The

forests play an important role both for fodder production and for grazing (the latter can also generate substantial pressure on the forests). Roy and Singh conclude that there is a serious gap in the supply of both *green and dry fodder today and in the future in India*. Only about 35 percent of the green fodder needed can be supplied today and in the future (2020). The situation is somewhat better for dry fodder with a supply of 65–70 percent of demand. *The conclusion is that a large part of the livestock population is suffering and will suffer from malnutrition*, and this will affect the food supply to the Indian population. The authors stress that in order to *improve the fodder balance an efficient system of inventory, yield assessments, assessments of qualities and impacts on the forests by the fodder production in forests are needed*. N.P. Singh demonstrates the dilemmas with respect to forest grazing. The increasing population in India causes a decrease in the land resource for livestock production, and at the same time, a strongly increased demand on livestock products. India's livestock population is huge (India has the world's largest cattle population) and the shortage of livestock feeds and fodder results in malnutrition and low livestock productivity. This development forces the people to have ever-larger herds which, in turn, further *increases the natural resource degradation*. This degradation restricts the grazing and forage possibilities in the country. It seems to be important to carry out *outlook analysis of sustainable fodder harvest and grazing*, as well as on how big a *livestock population* can be supported from forest land, based on the carrying capacity of different forest types. This will require a *multi land use concept*.

Subramaniam discusses ecotourism in India. He points out that ecotourism has to be developed in the larger context of tourism and the social fabric that motivates travel to and in India. In the paper it is pointed out that the existing infrastructure is an impediment to the solid development of forest ecotourism, as are the forest regulations and existing management of forests. The *data and statistics* are very weak on the current volume and characteristics of tourism in India and hardly any information exists on forest ecotourism. This makes it difficult to execute any *demand analysis* of ecotourism in India. But there is also a supply-side issue to forest ecotourism. There is hardly any information available on interesting areas/places for forest ecotourism. *In order to develop the forest related ecotourism there is a need to map out (inventory) interesting and potential areas for forest ecotourism*.

This mapping should not only target so-called trophy tourism but include areas that fulfill the basic principles of ecotourism. After the mapping and inventorying this information has to be analysed with respect to how these areas can fit into an overall efficient tourism concept. Subramaniam also points out that there is *hardly any management of the supply side* of forest ecotourism. It seems to be a major effort, and it will probably take a long time to develop forest ecotourism in India.

FORESTS AND ENVIRONMENT

The forests of India render a number of environmental services/functions. Chaturvedi *et al.* and Rawat and Kishwan, respectively, discuss different aspects of the interaction between forests and climate and climate change, respectively. The land sector is assessed to have a net flux of 1–5 million tonnes of carbon(tC)/year to the atmosphere. A mitigation potential is seen in forest plantations outside forests. However, the authors point out that the flux estimates are uncertain. This is caused, as pointed out earlier, by the *lack of relevant inventories and lack of relevant growth/volume functions and relevant biomass estimates*. It is stressed that some 70 percent of the forest grids are assessed to be experiencing the impacts of climate change. To me it seems that *impact and adaptation analysis* due to climate change are of utmost importance. The climate change will bring droughts, floods, storms, insect outbreaks, etc. All of these will affect the Indian forests in a negative way with respect to productivity, extent, biodiversity, etc. Rawat and Kishwan demonstrate a potential for bioenergy generation through fast growing plantations in India to reduce greenhouse gas emissions from the land sector.

Das discusses Indian water problems and their links to the forests. In India the usable ground water has decreased during the last decades from 1 125 to 800 billion m³. The average water availability will decrease from 825 m³/year/capita in 1996/1997 to 557 m³/year/capita in 2050. There are serious spatial mismatches between supply and demand of water, and about 80 percent of the land area is prone to water stress and drought impacts. Land use practices will be crucial for the future drinking water supply in India. Upland forests will play an important role for downstream water supply. To avoid loss of soil fertility, soil and water conservation have to be implemented on a large scale. Agro-forestry is an important component of this conservation. Thus, there is a *need for intensified integrated water management including the forest in the future*.

J.S. Singh and Kushwaha, Mathur and Sinha and Chatterjee analyse the biodiversity issue with respect to India and forests. Most of the terrestrial biodiversity now resides in the forests in India, as other terrestrial habitats have lost most of their natural state. Thus, forests are the key for biodiversity in India. Forest degradation and biodiversity losses continue rapidly because of increased pressure by population growth and associated land use change. Factors such as unregulated grazing, shifting cultivation, illegal logging, and forest fires drive the degeneration of the forest resources. It is obvious that the *protection of the forest does not function in practice*. The authors point out that *there is no biodiversity inventory available for forests*. The analysis by all authors strongly demonstrates that the *forest biodiversity problem is more of a social problem than a forestry problem*. The authors illustrate that the *issue of biodiversity/conservation is strongly influenced by demographics, governance/institutional structures, and socio-economic conditions (poverty)*. Chatterjee points out that the sustainability of the complex of nature resources and biodiversity is *politically*

sensitive and seldom discussed in a transparent manner. The *Tribal Forest Rights Act* is likely to contribute substantially to the decline of biodiversity. To me it seems necessary to establish suitable living conditions (economic, security, social, etc.) *for the poor people living in and close the forests in order to be able to improve the biodiversity status*. There are currently *no strategies for dealing with the complex of degradation of the natural resources*.

PLANNING AND POLICIES

K.D. Singh presents an overview of the overall policy initiative in Indian forestry over time. This overview will not be repeated here, but one observation can be made. The forest policies implemented during the period 1980–2000 have been only *partially successful*. The reason for this is not easy to detect. My assessment is that the policies *did not have the systems view which would have enabled the crosscutting demands on land and resources from other sectors and actors* on the Indian forest system to be factored in. Hence the achievement of only a partial success.

S. Singh discusses one specific forest policy instrument, namely, the Forest Rights Act of 2007. This Act has the objective of recognising the rights over forest land and resources of tribals and other forest dwellers who were never given titles to their holdings, and also of vesting those people with the said rights. Singh states that the Act will not help the traditional forest dwellers, nor will it help to conserve the forests, and will probably make both worse off. The Forest Rights Act has also been discussed in a number of the other papers with similar conclusions. The Act does not provide equity and is difficult to implement. Based on equity, all “eligible” forest dwellers, should get a 4 hectare allowance, according to the Act, which would mean that 40 million ha would be needed. This would take more than half of 67 million ha of forest cover assessed in the latest forest inventory and would wipe out all of the current 16 million ha of protected areas. Singh states rightly that the protected areas are for all future people of India and not just for one group. Finally, Singh concludes that the Act will be a bonanza not for the tribals but for bureaucrats and *Panchayat* functionaries.

To me it looks like the Act has just tried “to get rid of the tribal problem” and is a strong illustration of *failing to look into the problem from a holistic/systems point of view*.

Kishwan *et al.* analyse the statistical reporting system in the Indian forest sector. The authors stress that the availability, accessibility consistency, quality and lack of data is of *major concern for policy makers and scientists*. The reporting of statistics is taking place at the state and national levels. At the state level the major sources of information are working plans and the annual administrative reports of the state forest departments. The administrative set-up varies from state to state and the data collection does not dovetail in with national reporting. The authors also question if *the right data are collected from a problem-solving and policy point of view*.

It does not seem that any kind of *systematic analysis* has been carried out on what the *information needs* are for relevant future policy setting. This brings me back to an earlier discussion on the need for establishing a *coherent system with respect to strategic/policy planning, inventories and statistical reporting systems*. My view is that the establishment of this system is an urgent task.

Kishwan *et al.* also identified limited use of information and communications technology (ICT) approaches in the current statistical and reporting systems. Kumar's paper illustrates some reasons why this is the case. The paper describes the classical difficulties (and mistakes) in trying to implement forest management information systems in Karnataka. Before such development starts there is a need to identify what the data needs are and by whom and how the data should be generated and distributed. Dovetailing between users at different levels is a crucial part of the design of any system. Thus, we are *back to the issue of developing relevant inventories, statistics and reporting systems*.

ECONOMIC ASSESSMENTS

Barik and Mishra deal with the forest contribution to the economy of the northeastern States of India; Verma deals with a framework for economic forest resource accounting in India; and Chopra and Dasgupta attempts to assess the economic values of the ecosystem services in India.

These papers are somewhat an extension of the Kishwan *et al.* paper identifying problems with statistical reporting in the Indian forest sector. *Relevant statistics* are the basis for assessing the economic importance/impacts of the Indian forest system. *Relevant economic assessments* are also crucial for setting relevant *strategies and policies* with respect to the sector. All three papers conclude that *quality data are missing* not only on tangible but also on the intangible benefits of the sector, *making economic assessments a daunting task*. Currently, forests officially contribute 1–1.5 percent to Indian GDP and the total forest sector contributes 2.2 percent, although all three papers conclude that forest resources and the sector are *undervalued* in current accounts. This is not only because of how the accounts are calculated (methodology) but also because many of the intangible values are not included.

In the papers it is stated that people are aware of the uses of forests but not of their value, *resulting in overexploitation*. The papers illustrate that Indian forests only represent *10–20 percent of the real value in the national accounts*. One result of this is that by not taking the true value of forests into account, the forests *have had fewer budget allocations and investments* than needed. The forests play a major role in the well-being of many of the Indian population. The *intangible benefits* of the forests are important for this well-being and these are largely excluded from the accounts. According to the three papers, the major predicaments for proper economic accounting are *inconsistent data and lack of data*. Data exist in different government departments and there is a strong need to bring these organisations together to work

out a methodology for relevant data collection for economic accounting to support relevant strategy and policy setting by the government.

These papers contribute to the overall conclusion reached by earlier papers, namely, the need to establish an integrated group of experts to identify the most important strategic issues to deal with, the assessment analysis to be made, and *what data should be collected to support this work*.

STRATEGIC PLANNING

K.D Singh points out in the very first paper that stress on the forests is more of a *social problem* than a *forestry problem*. The major problems are linked to *poor people and tribes* living in the forests and on the fringes of the forests. And there is *no clear strategy in respect of how to improve the living conditions for these people*. Efforts such as Scheduled Tribes Rights Act of 2006 and joint forest management have not had the desired impact. The latter has more or less been hijacked by the forest departments and become part of the same. The difficulties with the Forest Rights Act have been discussed in a number of the papers (e.g., K.D. Singh and S. Singh).

There have been numerous efforts to establish strategic planning in the Indian forest sector, as discussed by Singh and Nilsson. Examples of these efforts are timber trend studies, National Commission on Agriculture recommendations, strategic planning by the Forest Survey of India, and the National Forestry Action Plan. These activities either failed to really take off or have faded away. The conclusion is that there is *not really any strategic planning taking place in the Indian forest sector today*. The problems in the sector have now reached an acute state and as K.D. Singh and Nilsson point out, "the time has come to have a bold strategy to solve the poverty problems in the tribal and rural forest areas with people and industry as major partners." *The authors demand efficient governance, building on solid strategies*. It is important to point out that in earlier days there was a close correlation between the traditional forest sector and the sphere of interests of the forests. Today, we have a much larger sphere of interests with respect to forests, and the traditional forest sector has become much, much smaller in relative terms. This is a *dilemma* for the Ministry of Environment and Forests of the Government of India. Today we need *broad integrated strategies including forestry in a much broader societal framework*.

Unfortunately, the required strategic planning cannot be limited to what is happening in India but must also include global developments. Roberts illustrates how the impacts of globalisation on the forest sector must be considered in any strategic planning in India. Nowadays, India is more open to the world economy than at any other time during post-Independence and is more economically dynamic than ever before. The opening of the economy and joining *globalisation* create challenges for India. Further improvement in infrastructure is crucial, a special concern being the growing demand on natural resources; further

integration with global capital markets and more efficient administrations and institutions are required. Roberts foresees fierce competition over land and raw materials between agriculture/bioenergy/conventional forest industry. As pointed out in other papers, the *wood supply* situation for the forest industry is already tight and the competition mentioned above, in combination with existing high wood costs in India, will force the industry to *import a substantial amount of fibres or to invest in plantations and processing capacities abroad*. The only hope of keeping domestic wood prices under control, with an increasing demand over time, is to *get increased production outside forests*. The strategic choice for the conventional forest industry is between *investing in India or abroad*. Currently, the developments in India point to *investments abroad being the optimal choice unless major strategic changes are made*.

THE FUTURE

A few trends can be identified with respect to the Indian forest system, which should serve as pillars/platforms for any new actions in the sector in India:

- *Non-timber forest products have assumed a higher value/contribution to the Indian economy compared to timber from the Indian forests. This gap is assessed to grow over time.*
- *Some 80 percent of timber production for the forest industry stems from trees outside forests. There is a huge potential to increase timber and bamboo production from plantations outside forests, although this potential is seriously constrained by administrative, institutional and governance hindrances.*
- *Over the years the forests have suffered degradation/depletion because of an ever-increasing demand on forest products and forest services. This depletion is not a specific forestry problem but rather a social problem linked to population growth and poverty among tribal and rural people living in or on the fringes of the forests.*

These trends should play an important role in any future actions with respect to the Indian forest sector.

A number of important issues for action come through repeatedly in the papers presented and these issues are interlinked.

Data and inventories (1)

Nearly all papers discuss the lack of comprehensive data and reliable information to cope with emerging issues. It is high time a group of experts joined forces to identify what data needs to be collected to gain sufficient understanding of the functioning and development of the Indian forest sector. Data collection and inventory establishment have to be built with a systems view of the role of the forest sector in the Indian society. In this process it is important to identify what role different agencies should play in data collection and distribution, especially between states and the nation. Currently, we can conclude that the Indian forest sector is at

a crossroads but we do not really know at which crossroads because of a lack of reliable information. The new data and inventories should feed into the next component.

Integrated assessments (2)

To make good and appropriate strategies and policies with respect to the development of the Indian forest sector/system, relevant integrated assessments are required. Currently, *there are no such assessments*. The assessments have to follow the *systems view* principle covering all important aspects of the role of the Indian forest sector in Indian society. This means issues such as demand/supply of timber, non-wood forest products, ecosystem services, socio-economic aspects, poverty, etc. The assessments should feed into the component on “*strategic planning*” (3).

The integrated assessments should have a forward-looking approach and a systems view with respect to their impact on future options. This should be an *ongoing activity* and should probably be carried out by *an independent body* using data and inventories developed under component (1).

In spite of the fact that we know we are missing important data for good integrated assessments this should *not be a reason for not starting the integrated assessments immediately*. We should start right away with a simple analysis based on the data and information available today and improve the analysis whenever better data and knowledge become available. The important aspect is that even simple integrated assessments should have a *systems approach and go beyond the traditional forest sector timber trend studies right from the start*.

Strategic planning (3)

The forest sector/system in India currently *lacks a strategic planning process* with respect to the forest sector/system. National development is rapid. Therefore, there is a need to have an *ongoing strategic planning process in place that targets integrated strategies and policies* based on a systems view. An ad hoc process will not function satisfactorily in this case. The strategic planning process has to emerge to execute integrated assessments. There must be very close interaction between the *strategic planning process* and the *integrated assessments*. The strategic planning process should be an interactive process, making it possible to request certain analyses in the form of integrated assessments and the integrated assessments should, in turn, be able to produce independent strategy and policy identifications and present those to the strategic planning process.

There is a need to identify how this strategic planning process should be organised, hosted and mandated. In the first round the *champions* need to be identified to get *this process established* as soon as possible. All of this will be a waste of time and resources if the *governance and institutions* (4) are not adjusted and restructured to deal with these new tasks.

Governance and institutions (4)

From an outsider’s view there are many urgent governance and institutional issues to deal with. I do not think that interaction between state and national levels function

efficiently enough for this to be the basis of setting strategies and policies. The papers have strongly demonstrated that there is a need for *interaction between different sectors* in order to achieve sustainable development of the forest sector. An example of this need is how to deal with poverty-ridden people living in the forest and forest fringes. Many other examples can be shown based on the analyses in the papers. The integrated and systems issue of strategic/policy planning has to *design the governance and institutional structure rather than the other way round*. The current structure is complicated and there are big difficulties involved in introducing changes. Therefore, I think that bold thinking is needed in this respect. I will illustrate my way of thinking on this issue. The conclusion is that there is a big potential for tree and bamboo plantations outside forests. But there are serious constraints from the governance and institutional points of view. Hence, limited progress is made. At the same time harvesting timber from forests is becoming more controversial, and non-timber forest products have become more important than timber from forests. The result of this is that only some 20 percent of timber now comes from forests, and the figure is declining. In this situation I believe bold thinking is needed with respect to a *revival of a high level body responsibility for making strategies and policies as well as the institutional adaptations required*. A Central Board of Forestry, along with its support organ Central Forestry Commission, was constituted in 1950 to provide guidance to the government in the formulation of policy and programmes, with the central government and state forest ministers as members. Its importance could be gauged from the fact that meetings were occasionally chaired by the prime minister. The compilation and reporting of forest sector statistics were implemented under the authority of the Board through the Central Forestry Commission which worked directly under it. Since 1984, with the transfer of the responsibility of the forest sector to the Ministry of Environment and Forests, the functions related to statistical data compilation, reporting and policy analysis seem to have become dormant.

Based on the analyses of the papers many more urgent issues could be identified. I think it is important to concentrate on limited, important and interlinked issues as a package for actions so as to make any impact with respect to sustainable development of the Indian forest sector/system.

There are many *research issues* to be discussed and identified for the solid development of the package of the four issues discussed above. This process should *run in parallel* to the development of the four issues.

The most important factor for change is to have a critical mass of "*champions*" thinking in a similar direction. I think that through the involvement of *Indian experts* in writing the papers in this volume we have established a *critical mass of important experts* to make improvements happen. Thus, I think it is very important to *have these experts strongly involved in the succeeding process which will deal with the implementation of the four driving issues discussed above*.