Research, Science and Technology Development in Sustainable Forest Management

By

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1. Focus of the Discussion – the Context

- Availability of technologies for sustainable forest management (SFM) in general;
- Science and technology under common property regimes;
- Science and technology in the rehabilitation of degraded landscapes;
- Science and technology in gazetted forest area;
- Science and technology for the forest and agriculture inter-phase;
- Valuation of the forest resource; and
- Opportunity for reducing pressure on natural woodlands.

2. Discussion

Technology for SFM in General

The role of technology in SFM is to increase and maintain the productivity of the forest, generally speaking, technology are available for the management of some key forest types (viz thinning, coppicing and pollarding regimes and fire management). However the effectiveness of such technologies is confounded by the following issues:

- The effect of the human element especially under common property regimes;
- The multi-species nature of woodland in which each species has its own silvicultural requirements; and
- The multiple uses of woodlands (e.g. for poles, browse and watershed protection) where each use has its own silvicultural requirements.

Way forward: The application of modelling and allied techniques can help to address some of the foregoing concerns and improve the relevance of the available and any real technologies in SFM.

Science and Technology under Common Property Regimes

It is difficult for industrial forests to manage communally owned woodland because of the following:

- The majority of natural woodlands in the region have low biological capital and hence management costs are usually higher than the results and benefits; and
- The benefits that accrue from management improvements cannot be internalised.

Way Forward:

- There is a need to enhance the value of woodlands by introducing value-adding technologies for both timber and non-timber forest products so that communities can realize tangible benefits. Examples of this include processing of indigenous tree fruits, beekeeping and tree species substitution in various applications; and

- There is need to empower communities through the formation of resource user through groups and formulation of by-laws that regulate the use of specified forest products.

Science and Technology in the Rehabilitation of Degraded Landscapes

The region is experiencing unproceeded deforestation due to a variety of reasons. This has, among other things, led to land degradation and biodiversity losses. Consequently, bringing back such lands will increase the forest resource base and create favourable habitats.

Way Forward: There is need for an elaborated research programme on tree species selected and management for the rehabilitation of degraded areas. This subject has received limited attention to date.

Science and Technology in the Gazetted Forest Areas

About 10% if the regions land area was set aside as gazetted forests, such forests were largely meant for biodiversity conservation and watershed management and not for utilization. However, these forest areas are coming under considerable pressure from neighbouring communities who illegally and unsustainably derive a wide range of benefits from them. Such human interventions also interfere with biological processes that occur within the forest. These concerns have given impetus to the concept of shared Forest Management whose impact still remains to be seen.

Key questions being raised on the concept relate to the following:

- What resources should be shared and how should they be shared given the inherently low biological of these forests?

- What should be the role of communities in enhancing the productivity of the forest resource in order to ensure that benefits continue to flow into the future?

Way Forward: There is need to develop series of models that address the above questions. Basic technological information for use in such models already exits. The Canadian Forest Model example could be a good starting point.

Science and Technology for the Forest/Agriculture Inter-phase

The greatest threat to forests in the region is agricultural expansion. However there is scope for developing a mutually beneficial co existence between the two in certain niche through Agro-forestry or farm forestry initiatives such integration also addresses the problem of land tenure associated with trees under open access regimes.

Way Forward: There is need to adept the existing agro-forestry/farm forestry technologies (e.g. hedge grow inter-cropping, alley cropping and live fencing) to various niches and to develop new ones that further enhance the result and benefits to farmers and the environment.

Valuation of the Forest Resource

The forest resource itself and the appropriate values its various goods and services are not well understood within the region such an understanding had the following benefits:

- It helps to increase the visibility of forestry within the national accounting process and hopefully entice government, to allocate more financial resources towards SFM; and

- Helps in forest resource planning at both the national and local levels. The current planning processes are largely based on inadequate information.

Way Forward**:** The is an urgent need to develop appropriate methodologies in the following areas:

- Forest Resources inventions at different levels; and

- Valuation of timber and non-timber forest products and services.

Opportunities for Reducing Pressure on Natural Woodland

Most of the problems encountered in the forestry sector are due to outside pressures, which deplete the forest resource. Given these undue demands, natural woodlands, given their slow growth rates, are failing to cope.

Way Forward:

- Where appropriate, considerable effort should be put into research on exotic plantations. Emphasis should be on screening for fast growth and drought tolerance; and on product and market development. The latter could involve the development and testing of "out grower scheme" models. Under such a scheme, the smallholder timber would sell their timber to the large and established growers who own value adding equipment; and

- There is also need to intensify efforts in the search of alternative energy sources, intensification of agriculture and industrialization in order to relieve pressure on forests.