

NEW PERSPECTIVES IN FORESTRY RESEARCH AND PROBLEMS OF ITS MANAGEMENT IN DEVELOPING COUNTRIES

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Significant changes have occurred all over the world in recent past in the concepts regarding nature and role of forests. Forestry has moved from backwaters to central stage in international forums. For almost a century, scientific forestry meant management of woodlands on the basis of classical principles developed in Central Europe especially in Germany when widespread wood scarcity and flood destruction caused by deforestation were occurred in that part of the world. The forests were considered essentially to perform two broad but ill-defined functions e.g. productive and protective. In the case of developing countries, scientific forest management was started in the nineteenth century to supply timber and other produce on sustained yield basis which actually meant timber supplies for large works such as railways and army barracks and in time of emergency or wars. In the process, attempts were made to convert their existing natural forests into normal forest but little success was achieved in this regards even after many decades of efforts. The protective functions of the forests were recognized for mountains, and submountain regions only. In some situations, especially in Indo-Pakistan sub-continent, effect of forests on general climate was also considered to be important. The local people living in the vicinity of forests however, hardly mattered in forest management and they were excluded from areas demarcated as state forests. This produced conflict between local people and forestry departments over the use of forest resources which continues till today and has been the main cause of forest depletion in the developing countries over the years.

As in other scientific fields, knowledge and

information about role of forests has increased tremendously since 1950s in social economic development and in natural ecosystems conservation. First, concept of multiple use forestry was put forward in Western countries. Foresters in the developing countries had hardly any time to transform this concept into actual field practices before they were caught in the energy crisis of 1970s. Whereas developed countries tried to cope with this crisis through developing energy efficient technologies, the developing countries with small forest resource base were encouraged to raise plantations of trees to meet their growing energy needs and to reduce their dependence on petroleum products. Therefore, small pilot projects were started in some countries which did not have significant impact on their economy. Nevertheless, this development introduced new thinking about promoting welfare of people through forestry development. New forestry disciplines of social forestry, agroforestry, community forestry and farm forestry were introduced in the literature which flooded the institutions. This also created confusion about their true meaning and a lot of rhetoric. People participation and rural development were the key words in this regards. The foresters started learning social sciences alongwith biological and technical disciplines of forestry. Many of them succeeded in converting themselves into 'social foresters' after some years.

Presently the whole world is in the grip of environmental issues. Forestry has been recognized to play a pivotal role in preservation of environment, climatic stability, and sustainable development in United Nations Conference on Environment and Development (UNCED) to be

held in June 1992 at Rio de Janeiro in Brazil, a role which was hitherto denied to it inspite of best efforts and intentions of foresters all over the world in past one hundred years. All decisions of this Conference such as the Convention on Biodiversity, the Convention on Climate Change, Agenda 21 and the Principles on Forests have something to do with forestry. It has suddenly brought foresters to limelight, increase their social responsibilities and has raised the expectations of the people for finding solutions to all problems of environment in forestry. The foresters are being asked to move from production and social forestry to eco-forestry. It is now not just forestry but ecosystem management to sustain a wide array of values and uses. More and more restriction are placed on cutting of trees in the forests at a time when the demand for forest products is increasing due to tremendous growth in population.

Role of Forestry Research

The above changes in the role of forests and attitudes and expectations of people from forestry has greatly complicated the task of forestry research managers in developing countries. After gaining independence in 1940s and 1950s, efforts were made by them to create national forestry research institutions or to continue the existing research institutions, in an environment of low literacy, under development and low priority for forestry sector. These institutions were expanded and strengthened in the next two decades with national resources and international assistance to carry out research in different aspects of production forestry and generate information and develop tools for its scientific management by the field foresters. In addition to developing infra-structure, laboratories and trained staff, all research efforts were directed towards maximization of wood production on state land. Maximum emphasis was placed on forestry

research projects relating to preparation of volume and yield tables, establishment of growth sample plots, introduction of fast growing tree species for plantation forestry, developing nursery and plantation management techniques, fertilization, economic studies, tree improvement, determining protection measures against attack of insect and fungal pests in man-made forests. These institutions were also responsible for training of field foresters in forest management including watershed management and range management because not all the land with the state as forests has tree growth and wood production value. Significant portions are alpine meadows, watersheds and rangelands. Forestry education was based on teaching of many disciplines, and was meant to produce forest managers instead of forestry professionals.

In the 1980s, forestry research moved into new area of social forestry to facilitate people participation in forestry activities. The research was started with studies on the effect of trees shelterbelts on crop production on the farmlands. The choice of this topic is obvious. This model is mechanistic and data regarding biological interaction between trees and crops can easily be measured and analysed. Research in other aspects of social forestry such as community forestry was not possible at this time because the subject is too complicated to lend itself into an array of researchable projects. On the whole, forestry research institutions had hardly any facility of scientific staff for social sciences research. Their knowledge of crop sciences was also limited. A multidisciplinary integrated approach was prerequisite for research in this area. But, neither the forestry institutes had in-house facilities for this purpose nor did they develop links with institutes conducting agricultural and social sciences research. Lack of communication between the institutes was especially noticeable. Therefore, most of the studies till todate are confined to

determination of biological and economic consequences of growing trees in conjunction with agricultural crops, survey of tree growth on farmlands, wood consumption patterns by rural communities, etc. These studies were carried out exclusively by forestry scientists.

Presently, the forestry has to deal with a wide range of values and uses in order to deal with environmental issues. What are the components of research in this area which the forestry research institutions are expected to tackle? In the first instance, research emphasis would move from topics dealing with one parameter to those of multiparameters of forest ecosystems. In fact more and more emphasis would be placed on modelling approach focusing on a ecosystem as a whole encompassing soil, water, trees, ground flora, forage species, hydrological behavior of watersheds, and sociological and economic dependence of people living in its vicinity. A tremendous amount of information on ecosystem conservation and management will have to be generated and then integrated for sustainable management of the ecosystem. This is rather a tall order for forestry research institutions. Will they manage to bring together resources both financial and human, and generate and integrate information for this purpose.

Future Task of Forest Research Managers

It is imperative that forest research manager not only find out adequate human and financial resources for conducting research but also to integrate research activities across many disciplines and institutions, and with forest managers on the ground, and with educators of forestry profession. This would require modifying organizational structures, and a

number of actions; motivating and rewarding scientists for cooperation across discipline lines, and institutions, and involvement of scientists in planning ecosystem management activities. The research managers must insure the participation of forest scientists in the education process. He would encounter many institutional barriers and would therefore, require considerable time in accomplishing these tasks. Most of the scientists are trained to work in one discipline and therefore tend to work as individuals and not in interdisciplinary teams. A major infusion of new people would be needed to bring about change in the structure and functions of the research organizations.

While emphasizing above, the needs of people for forest goods and services must be kept in view. It is this increase in the needs due to increase in population that depletion in forest resource base and ecosystem degradation has occurred in the past. All research efforts will have to be continued to enhance resource base and increase forest production and at the same time insure ecosystem conservation. Therefore existing facilities for adaptive and applied research on introduction of exotic species, tree improvement, fertilization, improved wood utilization, slope stabilization, etc. will have to be expanded. In addition, basic studies on physiology of tree crops, and seeding, population genetics, effect of climate changes on forest migration, and ecosystem changes with people interventions should be started. As mentioned above, an integrative approach will have to be adapted in both adaptive and basic research activities. All this would require expansion of physical facilities and training of manpower of forestry research organization for which they would depend upon the political,

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CONCLUSION

The role of forestry and activities of forestry research institutions in the developing countries have expanded in the past. However, this expansion has not kept pace with changes especially those related to growing population

and resultant ecosystem degradation. The research organizations were rather slow in their response to these changes because of their structural limitations. These limitations will have to be overcome now so that these organizations are in a position to provide research information for integrated approach to ecosystem management. Forestry research managers have a special role to play in this regards, and would need special skills and talent to meet the emerging challenges