

ROLE OF FORESTS, FOREST INDUSTRY, AND FOREST  
EXTENSION & RESEARCH IN THE ECONOMY OF THE COUNTRY.

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INTRODUCTION :

With a little dispassionate thinking one is likely to conclude that possibly no other natural resource of the world has been so shabbily treated by the human beings as the forests had been from the pre-historic days till to-day, both collectively and individually. The original inhabitants of the earth lived mostly as denizens of the forests depended on forests and forest products for their food and shelter. But they gradually cleared the forests to their advantage to live a better life away from the forests. New society has grown, new civilization built up, new kingdom established, new economy flourished at the cost of and on destruction of forests. But hardly people have realised its importance or care to look back with any sense of gratitude to this important natural resource of the world, is so vital even in the modern civilized society. Forest and forest products have been playing important role to the nations in support of agriculture, in the growth of industry, giving protection in natural calamities and making provision for its growing population in earning livelihood and thereby helping economic development of nations in earning or saving foreign exchange. Forest products are again in the service of any individual from 'cradle to coffin' but very often an individual offers his gratitude by using his injudicious brutal axe in cutting a mighty tree, which might have grown for ever hundred years serving his fellow men for generations, and even without caring to replace this gift of nature by planting atleast a similar one in a suitable place.



It is this attitude of human beings that has been responsible for the destruction of forests in many parts of the world. As a result the human beings have brought their own sorrow and sufferings. It is of common knowledge that some of areas like those in the Near East (.9 per cent of the land under forests) or North Africa (1.5 per cent of land under forests) which today are sterile tracts of desert or near desert were formerly well forested, green and fertile. It is only sufferings that make people wiser, so it has been said that the importance or love of forests is felt only when a country reaches a stage having little or no forests. It is under that circumstances nations realise the economic importance of forests and forest products and take up extensive and expensive afforestation schemes to replenish the country with this valuable natural resource.

Inspite of unsympathetic attitude of the human being nearly thirty per cent of the earth's land surface is still under forests cover. But disparity in distribution has resulted in serious problems in certain regions. Forests cover about two-fifths of the Latin America, one-third or more in the U.S.S.R. and North America, and less than one-tenth in the Pacific Area. Average forest area per head for the world as a whole is just over  $1\frac{1}{2}$  hectares. Average per head however varies from region to region depending on population and climatic condition. At the present rate for the world as a whole about half a hectare of forests per head is needed for consumptive use. That might make one conclude that the world has more forests than its requirement. But one should not forget that in the economy of a nation the forests has three distinct roles - namely the cover of the land, the supplier of raw material and for protection against calamities.



Considering the multiple use it will be worth studying the "Role of Forests", Forest Industry and Forest Extension and Research in the Economy of the Country".

GENERAL BACKGROUND:

The historical events everywhere in the world distinguish three stages in the relationship between man and forest. The first stage is the fight against forest, the period where agriculture in its primitive form is engaged in a century long struggle against the ever-present and powerful vegetation of the trees. Although it may be a guesswork- the hostile attitude of the farmers towards the forest was possibly created at that stage. The ancient peasant must have hated and feared the forest as an evil spirit. Traces of that attitude still persists in rural areas. With agriculture getting a firm foot-hold, with expansion of the population, with the increased demands for land, and with primitive but growing standard of life, a stage of destruction of the forests is identified. Over a relatively short span of centuries many countries experienced the depletion of their forest wealth from abundance to scarcity. The effects on the economic structure of society were two folds: on one hand the untapped capital resources of the forests were leased, and the exploited resources carried a substantial part of the economic progress of these countries. On the other hand the wholesale destruction of forests did involve the destruction of the land and has over vast area left a barren, unproductive country.

First two stages of Man-Forest relationship outlined above, although differ in time and intensity from one part of the world to another, are more or less similar. The third stage which a forester or a lover of forest would hope to be the final, is the care of the forest. At this stag-



unconscious, undiscerning and undirected use of the forest will give way to a multitude of planned and conscious efforts to develop forests into an asset, in equilibrium with physical and economic structure of the communities. We need realise that these efforts differ as conditions change. The basic concept of development in any sector suggests its dynamic character. Same should be the case in forestry. There is an immense flexibility in forestry, which is reflected in its capability to meet more than one requirement under different socio-economic condition. The concept of multiple use is not empty. Forests are not themselves good things or bad things; they are useful or less useful depending on our requirements.

#### FORESTS AS A COMPETITOR FOR LAND:

The historical development process has left to the forests such areas as are essentially residual lands. Depending on the state of agriculture and other accidental factors the actual forest cover of a country gives little or no indication of the distribution which is required from a national point of view. Neither the quantity nor the quality of the forests are likely to represent what is desirable or express an equilibrium.

The present forest area of East Pakistan is nominally quite considerable, approximately 1/6 of the surface. But not much more than half this acreage, or some 5000 sq. miles, are land under forest cover and/or forest management. One can not off hand declare this are "sufficient" or "insufficient" without qualifying for what purpose the forest should be adequate. We shall discuss the productive role of the forests a little later. For the time being it is sufficient to point out that , broadly speaking three regions are occupied by forests proper: (1) The tidal area



notably the Sundarbans, where the mangrove forest is the vegetational climax and in all contexts, also an economic one, superior to other land uses. (2) The reserve forests in Chittagong Hill Tracts and certain other upland regions (Sylhet, Comilla, Chittagong). Here the forests occupy land which is unsuited for conventional lowland agriculture but to some extent available for fruitcrops, tea gardens, and the major land-use in the Chittagong Hill Tracts - shifting agriculture. (3) The scattered forests in Central East Pakistan suitable for agricultural use and under considerable pressure from the surrounding, densely populated, agricultural land.

The approximate areas of these forests are :

The tidal forests : 1.5 Mill acres.

The upland forests: 1.2 Mill acres.

The dry, lowland forests: 0.5 Mill acres.

One of the central question in the country's forest policy is to decide if the present distribution of the forest land is the desirable one or if the land use for economic or social reasons should be changed. The decision must be based on criteria which are easier to evaluate in principle than in practice: Income-earning capacity of forestry versus agriculture in the short and in the long run; capital expenditure per unit area; and capital output ratio; employment and productivity of labour; demand on foreign currency; linkage with other sectors of the economy; and - essential, because of the particular time horizon of forestry - the projected economic structure of the country thirty or fifty years into the future.



The time-lag between investment (sowing, planting, weeding etc.) and harvest is only a few months in agriculture, but several decades in forestry. This makes it very difficult for private individuals in a society where the access to capital and credit is extremely limited to engage in forestry as an investment. On the contrary there will be a marked tendency to disinvest, to harvest the trees before they are mature. This is the main reason why forestry generally is considered as an area for public enterprise only.

Secondly the products from forestry on any scale above the negligible can not be part of a subsistence economy, but must be marketed must enter the monetary sector of the economy. Direct consumption or marketing directly for consumption as particularly for fuelwood is necessary and essential when other household fuels are scarce and when a wood working industry has not been extensively developed. Producing fuelwood for consumption is generally poor business in itself. Furthermore it is a production with little if any impact on the economy as a whole, because it does not feed an industry, does not add to the industrial base, has no forward "linkage". On the other hand adequate supplies of wood for fuel may discourage the destructive use of cow dung for household fires and may save valuable currency. At present it is estimated that 80-90% of the output from forests and village groves in East Pakistan is used as fuel.

Per acre income from forests managed on the principles of sustained yield such as the new plantation forestry under development, should compare favourably with conventional dry-land forestry, is superior to shifting agriculture, and is probably the only possible income to be derived from the tidal areas. On the low-lying areas and particularly where wet-land agriculture is the rule forestry is the economic inferior land use. But the border line between land



economically suited for forestry and land where profit from agriculture will be the higher is difficult to draw. One important factor must not be overlooked: In a country where forest products have no substitutes in the rural economy a certain minimum area must be allocated to the growing of trees. Because transport of wood over long distances involves very high costs relative to the value of the product itself a balanced distribution of forests is important. Otherwise abundance and scarcity may continue to exist side by side even in a small region like East Pakistan. Further such tree growth in villages will support small cottage industries and employ idle labour force and thereby help the economic development of the village people. This source though will mainly meet the requirement of fuel wood for local consumption but sometimes can supply the woodworking industries not only with such precious species not grown in the forests but also can be helpful to meet the requirement of forest products in the locality. By planting of species like jackfruit, kapok etc. and suitable exotic species people can derive economic benefit individually and also help the national development.

The means by which a net profit is created differs from agriculture to forestry. In agriculture labour input is high and capital input is increasing with advances in agricultural techniques. In forestry labour intensity is low, even in intensively managed forests less than 10% of agriculture's. And income is accruing through an accumulative process, an autonomous capital formation. Through the use of wood products in industry labour intensity and employment are increased, but are still less than the average in conventional agriculture. But importance of forests and tree-growth to maintain the fertility of agricultural land, as a protector of agricultural crop against high winds, floods



etc., and as a source of fodder for the cattle so vital for agricultural production can not be exaggerated. Further agriculturists' need for various forest products for making various tools and equipments are essential for agricultural production. Thus it can be easily stated that a proper understanding of the situation will make one conclude that Forestry and Tree Planting are not in conflict with agricultural development, on the contrary to these are hand-maid of agriculture. Although shrinkage of forest area and reduction of tree population might give scope for extension of agriculture in certain areas but ultimately will adversely effect yield in agricultural crop. A judicious limit has, therefore, to be fixed so that forestry helps the intensive agricultural development to the maximum economic return.

The case for forestry as a land use may also be difficult to solve for social and political reasons. It is certain that a transformation of the naked or jungle covered hills of Chittagong Hill Tracts to planted forests would be an economic advantage. But it involves a conflict with the tribal traditions of shifting agriculture. So it needs great care and foresight for implementation by educating the people the benefit they will derive out of this vis-a-vis their present way of life.

The basic East Pakistan forest policy problem: How to attain a "proper" distribution of forest land in equilibrium with the country's need for agricultural and forest products, cannot be solved by arbitrarily selecting a figure, say 10, 20, or 30%, as the target forest area. The problem is mainly an economic one, and from the point of view of the economy of a would-be welfare state forestry will be superior land use beyond its present borders. It will be wise to increase a wide-spread tree-cropping, either integrated with



fruit-farming or as fuelwood village plantations, or cash crops even on land otherwise suited for agriculture. But the industrial products will carry the main importance in national economy. This implies that large blocks of publicly owned and managed forests in the traditional forest regions will have to play the major role. Concentrated areas allow rational planning, management, protection and marketing.

#### THE FORESTS AS SOURCES OF RAW MATERIAL :

With the last few paragraphs we have already reviewed part of our second aspect of forests, viz. its role as producer. And obviously the justification for a forest estate is that it produces something useful something which society is willing to pay a certain price for.

The raw material produced from forests is (1) industrial raw material, (2) fuel wood for consumption and (3) minor forest products, in which latter category is included such diverse items as bamboo and reeds, drugs and foodstuffs, stone and gravel. The recorded annual fellings in East Pakistan forests are approximately 30 mill cft. industrial wood and 30 Mill cft. fuelwood. Only a minor part of the removals are recorded, virtually only what is extracted from the state forests proper; the rest is guesswork. It is however necessary to point out that with independence the most undeveloped forest area of Indo-Pakistan came to East Pakistan. There were hardly any wood-based industry in this region. Round wood produced from the forests were mostly extracted from village grown trees and consumed locally. Naturally available species of wood like garjan, jam, jarul, chapalish civit etc. were not extracted either due to lack of extraction facilities or because these timbers could not compete with species like sal found from forests of North Bengal and Assam. Scarcity of better timbers and necessity of wood to maintain the infra



structure of the country as well as to help development compelled the authority to find better use of indigenous forest products. So after experiment species like garjan, civit are being used for constructional timber, railway sleepers and raw material for plywood and other wood-based industries. Such steps have helped development of extraction facilities and steady increase of production of wood from the forests of East Pakistan. Annual production of round wood and firewood in East Pakistan increased as can be seen from the following table :

	1948-49	1958-59	1967-68
Roundwood.	9 Mill cft.	12 Mill cft.	30 Mill cft.
Firewood.	13 Mill cft.	28 Mill cft.	30 Mill cft.

With the increase in production of timber and other forest products in East Pakistan, industries based on forest products developed steadily. While in pre-independence days there were hardly any industry based on forest products except few sawing units and two railway carriage and wagon repairs units, at present there are 3 paper mills, 18 match factories, 5 plywood factories, 5 boat building units, 5 wood treating plants, 1 furniture factory, 8 cabinet factories, 1 tannin extraction plant and more than hundred saw mill units in the province that depend on forest products as their raw material. In the country, Forest Industries with an estimated investment of Rs.1500 million directly employ about 5000 men and offers job opportunities to thousands of people through cottage industries, transportation of products and sale activities. In the forestry work besides the permanent employees of the Forest Organisations, thousands find employment through plantations and forest investment operations. Yet the level of consumption per capita is very low, approximately half the average of the Asia-Pacific region and a quarter of the world's average.



We are in the situation where there is a huge uncovered demand for wood products. The present forests and their management cannot meet requirements, even at prevailing high prices for the produce. A considerable substitution of wood with other products is one of the inevitable results : Cow dung is substituted for fuelwood, bamboo for construction timber, concrete and brick in urban housing, steel poles for wood poles etc. In addition a number of potential markets for wood are inadequately served. An important factor has to be kept in view that unlike highly industrialised economy, in an agricultural economy like that of Pakistan there should be minimum pressure on foreign exchange for import of forest products. Further the country with limited natural resources has to depend a lot on the development of forests and forest industries for its economic development. Forests being a renewable natural resource with proper development, mobilization of resource, utilization, investment and job opportunities will multiply.

With rising national income and particularly as the rural areas adopt a monetary economy we may expect that only the demand for wood products to increase, but also to become more elastic. It is estimated that "reasonable" consumption level in South Asia would be 15 cft industrial wood and fuelwood per capita. For 80 mill people, the estimated population in East Pakistan in the early 80'es this means 1200 Mill cft or approximately 24 Mill tons. While it is quite relevant to project requirements in this way it may be less realistic to plan the output from East Pakistan forests to be increased sufficiently to cover the requirements.



The reason for the present low output, low not only relative to requirements, but also in relation to forest area and to the stock of mature trees, is twofold: Firstly the quality and value of the forest resources are relatively poor; the local forest type, are indigenous tropical, semi-evergreen hardwood forest, contains numerous species, several of which have little or no commercial value. Secondly the means of access to the largest forest resource, the Chittagong Hill Tracts, are still rather primitive and insufficient for a large scale exploitation.

The industrial utilization of the forest potential must therefore proceed along two-roads: One is the development of the existing resources through technological advances and by means of improved communications and improved marketing methods. The other approach is that of rationally planned artificially established and scientifically treated plantations.

The effect of an increased plantation programme will not become apparent for the first 20 or 30 years.

It will, however, in the long run be able to change the raw material situation basically. Using fast-growing species, it should be possible to increase the yield from state forests to 60-80 cft annually per acre or approximately 200 Mill cft per year without extending the forest area. In addition these forest will produce, not what is appearing more or less by chance or accident in the natural forest, but what is required by the industry. The major part of the fuel wood which will continue to be important for the rural population for some time to come, will have to be produced outside the regular forests, near the consumption units, and preferably on a private basis. This means that millions of trees must be added to the scenery of the East Pakistan countryside.



THE FORESTS AS PROTECTION:

While it is possible to arrive at some, although crud quantitative estimates of the benefits flowing from the forests as producers, the protective role does not lend itself to more than an approximate, qualitative evaluation. And it is, therefore, easy to underestimate the effect of forests on stream flow, siltation, erosion, gales etc.

The main protective function of the forest derives from its permanent and complete cover of the ground and the extensive root activity of the forest trees.

Particularly in the monsoon areas of South Asia with heavy rainfall concentrated in a few months soil erosion is a matter of grave concern. It is estimated that the annual loss of soil per sq. mile of the Ganges drainage area is 1000 tons. The maximum erosion and loss of soil will occur in the upper catchment areas, and erosion in the Chittagong Hill Tracts will have a much higher rate of erosion.

The results are not only rapid deterioration of soil fertility and a reduced food production potential, but serious effects on river flow because of silt deposits: Navigation is impeded and storage capacity in reservoirs is rapidly reduced.

With the removal of a permanent ground cover, the felling of the high forest, the ground water storage capacity of the catchment areas is being destroyed, and stream flow becomes irregular. This causes high peaks and floods in the rainy season and a general fall in the groundwater table. It has been demonstrated that this process can be reversed by reintroducing the forest in the catchment area.



To the parts played by forest vegetation in water conservation we can add the protection it may have against cyclones and wind damage in general and against some of the damaging effects of tidal floods in coastal belts. Forests in this region are now being created on a substantial scale under Coastal Afforestation Scheme.

THE CASE FOR FORESTRY AND HOW TO IMPLEMENT IT :

It has been attempted above to give some indications not only of the beneficial role of forests in general, but of the problems connected with the reconciliation of actual conditions with future requirements. There is huge gap between what is actually supplied from the forests, in material and non-material benefits, on one hand what is demanded from the forests on the other hand what could be supplied from them.

As we see it this gap can be filled, although not completely, by conscious efforts towards the proper management and expansion of our physical resources. Four avenues have to be followed in such efforts.

The first is the continued effort to implement the stated sound policy for land use and forest production. This is a public task carried out on government owned and government managed land.

The second is a greatly increased endeavour to create a huge number of small, consumption oriented forests and tree-growth explicitly intended for the production of fuelwood and other products required in rural economy.



The third is the expansion of forest industries and what may be called the industry's extrastructure: the linking of the industry with at one side the forests, at the other side the market.

Finally forest research will have to play a major part in the development process. Forests and forestry of to-morrow will be very different from to-day's, and will demand new methods, new techniques, new tools. They and the industries depending on them will have to be planned and managed rationally, intensively and economically, and a scientific foundation will become more and more essential. Along with the large scale extension work it will be necessary to educate people the need and importance of conservation of forests, planting of trees and give them technical know how to grow useful plants in the limited spare land available as well as how best to use the forest products, to help the economic development of the individuals as well as the nation.

Scientific and balanced development of forests and forest products of the region and their proper and scientific utilization can contribute to a great extent to the economic development of the country. Indirect contributions through forest influences in the protection of watershed and water regime, maintenance of proper climatic and topographical features and by promotion of tourism, recreational facilities and conservation of wild life are not insignificant.

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