

# The Forest Resource Environment and Forest Based Industries

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1. In these days of automation, there is nothing automatic about satisfying the growing needs and wants of the increasing population. In fact this can hardly be done without giving our natural resources some pretty rough treatment as has happened since independence to many of our natural resources with particular reference to the forest resource. Yet in a democratic society where people have a role in the management of the country, there is plenty of opportunity to use rationally, build up, and distribute equitably in terms of public benefit those things which people call their natural resources. This is, in fact, the basic principle of conservation of natural resources,

2. Rational use of natural resources will seek to avoid waste; waste can occur both in production and consumption. Forests become houses, doors, windows, fuel, plywood, paper, pencils and matches in the process of meeting the needs of the growing population. Whether left in their natural state or helped by good management forests usually renew themselves. They persist through the ages even though they suffer from human encroachment and other abuses. Left to itself, the forest renewal process is often extremely slow. The practice of forestry accelerates the renewal process and the production of species most needed by the population. Forests are renewable and maintainable,

3. Industry in general and forest based industry in particular recognises fully the tremendous responsibility and importance of the national natural resources to the future safety and prosperity of the country and to the future supply of industrial raw materials. Likewise it recognizes the vital importance of the conservation of the forest resources through long range planning, sound development and utilization, and that nonuse may be the very antithesis of true conservation. Industry believes that ineffective and ill advised

conservation and use practices where they exist, as they concern a natural resource, must be replaced by modern and scientific measures of real and lasting benefit.

4. Natural resources are for the benefit of society, and any control of such natural resource places upon the "owner" an obligation to use them beneficially and with minimum waste. What is waste in either production or consumption may vary under different conditions where the factors of production are out of balance or adequate physical distribution is impossible, but deliberate waste for purpose of profit is never justified. In general the substitution of replaceable for irreplaceable and plentiful for scarce natural resource, where the former will serve adequately, is sound practice and should be encouraged. The productive powers of natural resource, capital and human strength and talent are subject to maintenance and increase through positive direction. Above all orderly programmes of conserving natural resource demands forecasting and planning.

5. Because the demand for the products of the forests is predicted to increase in the next two decades, the programme ahead for conservation, reforestation becomes a matter of concern to everyone. Protection and management of existing natural forests, reforestation of denuded land area with high potential productivity, afforestation of large tracts of waste land with man made plantations of suitable species of timber, progressive control of waste in utilization and research and straight thinking on ways and means to accomplish this purpose—these are the directions in which effort must be stepped up and maintained.

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6. It may be said of the forest, that its productivity in use depends considerably upon the way its benefits are reaped by man and that a continued flow of these benefits demands skilful, scientific management on the part of the nation. The two policy measures taken by the Government recently by constituting a ministry of Environment and Forests and setting of a national Wasteland Development Board are indeed significant and would have far reaching impact on the management of the Forest Resource and its renewal.

7. If the tree is treated as a living organism with understanding of its vital functions it will be a constant source of profit and pleasure to mankind for all time to come. As it emerges from the ground the young seedling is as tender as a blade of grass. The tree gradually becomes taller, broader and in course of time it reaches maturity. The complicated mechanism of growth functions with the precision of a machine and its many vital processes are well coordinated. Old age comes to the tree as to all living organisms and the span of life is specific for each species. Old trees are like old people—the infirmities of old age are upon them; the annual shoots are not so vigorous as they were, the rate of growth of the tree decreases, dead branches appear in increasing number, the wounds do not heal so easily as before, the leaves become smaller and the tree finds more and more difficult to provide water for its vital functions. When the tree finally dies its death almost always can be traced to some external cause. The natural forest resource is a renewable one and with proper management techniques can be made to remain young and vigorous while continuously providing the wood raw material for the forest based industries, both mechanical wood industries and those based on reworked wood fibre, so essential for the quality of life of any nation.

8. Silviculture is the art and science of establishing and tending forests to get the finest timber stands and to protect the environment. It is analogous to the planting, weeding and the other culture necessary to grow healthy and abundant food crops. A basic objective in forest management is to predetermine a rate of cutting or resource exploitation that can be maintained at approximately the same rate, in perpetuity, through growth replacement of

the volume harvested each year. Control over the rate of cutting, for this objective, is sustained yield management and forms the keystone of planned forest resource management. Planned silvicultural management of the national forest resource is essential to meet the wood requirement of the forest based industries, fuelwood needs of the people, to provide employment to the people in forest areas, and to harvest efficiently the wood crop that is continuously being produced in natural forest lands. However in view of the unfortunate over exploitation of the forest resource in the last thirty years or so, at a rate much higher than permitted under the sustained yield concept of forest management, it is imperative that the annual cut in the next 20 years or so should be at a level much less than permitted so that the growing stock can be conserved and its quality improved and the environment given a chance to improve and recover from the damage in the past.

9. A watershed, catchment or a drainage basin is an area of land from which a stream gets its water supply: it may be small in area or as large as a state or even larger. It is more than a combination of hills and valleys and streams, forests, grasslands, farm crops and the soil beneath; well managed forests in a watershed are central to the maintainance of ecological and environmental balance in a watershed. There is an interrelation among all things, animate and inanimate, in a watershed that bears heavily on the yield of water from the land. The forests play a crucial role in this inter relationship. The canopy of leaves and branches breaks the impact of rain falling on earth; even in a heavy downpour rain water drips from the tree tops and rain does not hit the earth as a deluge from the sky washing away the irreplaceable soil. The layer of ground humus and litter acts as a sponge cushion to absorb the water and reduce surface runoff. Much more significant than its springlike absorption of water, however, is the action of the litter and humus in keeping the soil mellow, porous and more permeable and in preventing the sealing up of the seepage channels into the substratum where the great supply of earth water is stored. The action is effective and continuous regardless of the intensity or duration of precipitation period. Proper management of a watershed or catchment in relation to the forest resource component would not only ensure the supply of wood to forest based industries but would also

ensure that the significant role of the forest component of the water shed is not only ensured but is enhanced and maintained in perpetuity.

10. Management of the natural forest resource on the sustained yield basis is the key to environmental protection and meeting the needs of the people and essential industries in terms of wood raw material. Leaving the forest resource in its natural state, except in special cases such as Himalayan forests for any length of time would only deprive the people of the output of the forest, so essential for economic growth and progress, without any way in changing the environment to our advantage. The basic policy approach to the renewal of the depleted forest resource would, therefore, lie in effective managerial intervention based on sound well tried silvicultural principles and not in mere withdrawal from the forest or total ban on cutting trees as being advocated by some people. Forest is a living community of trees; through its own internal activity and working it is continually adjusting itself. Within the forest community plants and animals live, grow old and die; sometimes they help their own kind to inherit their places, more often they hinder them from doing so; always, however they alter the environment and through that alteration change the forest itself.

11. Forestry is the management and handling of forest lands to satisfy the needs of man; just as farming is the management of farm lands to meet the food needs of the growing population. In forestry there is an emphatic need to consider the next crop. After protecting the environment it is the primary duty of a forester to devise methods for harvesting the forests in such a manner that a new crop would be assured for the people. Foresters must be forward looking. A single tree crop may require a generation to grow to maturity. But the single crop is not the only concern; there must be an assured provision for a continuous succession of them. Furthermore Man cannot wait a life time between two harvests. Therefore forests must be so managed and things so arranged that some trees can be cut each year or every few years. That requires foresight and planning and proper and meaningful forest regulations. The basic rule of forest management and regulation is to protect and improve the environment and to cut each year a volume of wood no greater than the volume that grew during the year. But to have sustained yield of wood from our forests

would require more than the formulation of working plans. It will depend on how well we are able to manage and work with Nature and get her to work with us. Wherever and whenever such a degree of cooperation can be attained, communities of men and communities of trees will live in harmony. This has not been so, sadly, in the recent past in spite of the working plans.

12. The crux of the country's forest resource problem is the continued shrinkage and deterioration of the growing stock. Sadly it is a measure of the rate at which the Nation has been overdrawing the forest bank account in the last thirty years. Because continued forest depletion is so crucial, a balance between growth and drain is often represented as the only solution to the problem. But balance by itself is not an adequate goal to aim at as balance in its strict sense takes care of only the quantity aspect while ignoring the quality component of the wood annual yield from the forest. Would we be happy with a near balance between cubic meters grown and removed in terms of trees of 20 centimeters or more in diameter—obviously not. Should the Nation be satisfied with a balance based on poles and saplings? A crop of wood cannot be grown in a single year like a crop of wheat. Tomorrow's wood supply is in the trees growing in the forest today and it will take decades of good forestry management, going far beyond the content of management in the past, to develop a well balanced growing stock that would not only meet the future wood needs but would also secure the environment and thus add significantly to the quality of life.

13. A tree is both a production unit and the product—both the "factory" and the output. No one should ever be allowed to forget this basic fact. This is a basic characteristic of one way flexibility in production. A tree can be left to grow, but once it is harvested the "factory" is also destroyed and it can take a lifetime or at least a long time to build it back to a basic level of efficiency. Thus there is great flexibility in terms of when to harvest but little flexibility in terms of building up inventories. Time is crucial. It takes at least a human generation to produce a crop of sawlogs or plylogs on even the most productive land. Delay in making a policy commitment will only compound the supply problem as we approach the Twenty First Century. The decision to set up a National Wasteland Board to take up large scale tree plantation on the basis of a planned annual target is, therefore, not

only appropriate but timely, coming on the heels of the decision to have a ministry of Environment and Forests. These two decisions would determine in a very fundamental sense the environment in which our children would live, play grow and earn their living. Truly two momentous steps forward have been taken for the benefit of the nation.

14. Forests represent the largest, most complex and most self prepetuating of all ecosystems. The experience of other countries shows that forestry can give higher returns per hectare of land, provided while protecting the environment, intensive forest management practices based on proven silvicultural principles are adopted extensively in the natural forests and simultaneously large scale man made planatations are raised on wastelands to meet the additional needs of forest based industries and fuelwood needs of the population.

15. Intensive forestry management requires a long term commitment to undertake enhanced expenditure per hectare in basic inputs of technology, manpower, machines and more efficient harvesting protecting and improving the environment, for improving the quality of the growing stock and for meeting the increased demand for wood raw material from the essential forest based industries in the coming decades, a positive approach to higher meaningful investment in the forestry sector is inescapable and essential. The forest resource in the country has suffered in the past from over exploitation under valuation of the forest produce and highly inadequate investment. It is necessary to reverse the past trend without any further loss of time.

16. Immediate additional investment in the creation of large scale man made plantations of fast growing species of wood for meeting the future needs of the forest based industries which manufacture essential consumer products like paper and paperboard reconstituted wood panels like particle board and medium density fibre-board is essential to reduce the unbearable pressure on our natural forest resource. The products of these industries are essential for the growth and development of the Nation in the educational, cultural oommunication housing and building construction sectors of the economy. The creation of such industry linked man made plantations which can be exploited on a 7-20 years rotation would go a long way in providing the necessary breathing time to the forest resource and the administration to decide and introduce intensive management practices in the forest. In fact

it would be a good idea if these man made plantations are raised in active financial and managerial cooperation between the National Wasteland Development Board and the forest based industries, existing or planned in each State. The produce of these man made plantations should not be under priced and no one should be allowed to use these plantations. to subsidize the industries drawing their raw material from these plantations. The man made plantations must make a 12 per cent. return on invested capital. However financial capital must be made available to these man made plantations at a nominal rate of interst in view of the relatively long time frame required to generate financial returns. As far as possible these industry linked plantations should be raised close to the existing factories so that the cost of transport is kept as low as possible as transport cost forms a significant componant of delivered cost of wood raw material to the forest based industry today. This would also enable the industry to pay a higher unit price for the produce of the plantation and wood also mean saving in oil consumption on transport and expenditure on construction of additional roads. It would also be necessary to take some fundamental decisions on the legal tenure of waste lands used for such cooperative man made plantations-

17. With the industry coming as an active partner in the venture it would also become possible to integrate the development of the forest resource with the planning and development of forest based industries in future and this would bring in the much needed coordination in this area of the economy which has been so sadly lacking since independence. In the long run it is essential that the concept of close meaningful integration between the forest and forest based industries should become a cornerstone of our planning in the country, and a decision to invest in any forest based industry, either in the private sector or the public sector should not be taken or approved unless a corresponding decision to set up a industry linked planations for supplying the necessary wood raw material is taken in advance; this is the only way to ensure adequate returns on investment in forest based industries and linked man made planations and also to ensure surplus production of the products of forest based industries like paper board and mechanical wood industries. This kind of basic conceptual advance in formulation of long term planning policies in certain basic areas of our economy

are now imperative and can be ignored only at our peril

18. While by and large the forest based industries are in the private sector the forest resource and its management is in the Government or Public sector and the interface between the two has never been healthy and purposeful. No doubt a significant public sector has emerged in the paper industry in the last decade but even here the relationship with the forest resource which determines the success or failure of the massive investments made in the public sector leaves much to be desired. As the forest resource has in fact failed to meet the raw material needs of these units and the future supplies are highly uncertain, the situation is bound to lead to an unmanageable crisis if some basic decisions of the type indicated in the previous paragraphs, are avoided or are not taken expeditiously. To drive home the gravity of the situation it is pertinent to mention that the Government has invested about Rs. 800 crores in the paper industry in Assam, Nagaland and Kerala. To protect this massive public sector investment and also to place the paper industry in the private sector on a sound economic footing the raising of industry linked man made plantations in cooperation between the industry and the National Wasteland Development Board should be taken up without delay. Managerial and technical skills of a high order would have to ensure if the cost of the produce from these man made plantations is not to be "loaded" due to the high cost of built in inefficiencies of the organizational set up of these plantations; this is a vital aspect and fundamental to the success of the concept of industry linked plantations.

19. In view of the rising populations and decreasing forest area and massive depletion of growing stock the per capita availability of groundwood can be made to remain constant, at best; in fact it is likely to decrease at least in the next 30 years at least. After another 50 years, if all goes well with the new approach to forestry it may become possible to increase the per capita availability in the middle of the next century. Within this decreasing per capita availability of groundwood the fuel wood component is significantly large and serious efforts would be needed to meet the rising demand and to reduce dependency on wood as a cooking fuel on a long term basis. Herein also the concept of village

linked man made plantations can play a significant role in meeting the fuelwood needs of the rural population who have no alternate fuel to change to. In so far as the fuelwood demands of the urban areas are concerned, it is felt that man made plantations under the National Wasteland Development Board can play a pivotal role in this area; significant quantities can also come from industry linked plantations also. Fuelwood generation and supply to the rural and semi urban areas is basic problem of forestry sector and would need focussed attention from the planners and the Central and the State Governments.

20. Deducting fuelwood requirement from the per capita availability of roundwood, the balance is, more or less a measure of industrial wood availability per capita and this is going to decrease in the short run. This per capita industrial wood availability is ultimately translated into wood based panels such as plywood particle board, fibreboard, medium density fibre board and above all sawn timber to be used in doors and window frames, in bullock carts, house hold tools and agricultural implements and a host of other uses in furniture and building industry. While in absolute terms sawn timber would still remain the largest component of the forest produce, the reconstituted wood panels like particle board, medium density fibre board and to some extent plywood would tend to replace and substitute sawn timber to a significant extent. While plywood and sawn timber require prime quality logs from the forest management wastes and wood residues from other forest based industries like plywood and sawn timber. The wood produced from the forests in the coming decades would get converted more and more into reconstituted wood panels as has happened in the developed countries of the world since the end of the Second World War. The output of wood from man made plantations in the next twenty years is therefore going to be even of greater importance for the development of reconstituted wood panels which can replace sawn wood in many of its uses. It would, therefore be in the interest of forestry to encourage this trend with the help of taxation measures so that the price of these reconstituted wood panels become more and more favourable to the consumer in relation to sawn timber. This approach to substitution of sawn timber in many of its uses would be in line with the output capacity of the intensively managed and man made forests of the future.

21. The future forest policy of the Nation should, therefore, take into account the points made in the foregoing paras and adopt the dual approach based on higher investment forestry management of natural forests and creation of large planned man made forests to meet the needs of the Industry on wastelands. Forests if managed in this manner, would come to make a much greater contribution to the GNP in the future than has been the case in the past. This approach would also renew, regenerate and protect the forest resource and there by make a significant contribution to the protection and improvement of the environment, which has become, and rightly so, the primary aim and purpose of forest management now. There is no contradiction in aiming to raise the income from the forest resource and the protection of the forest resource and the environment as both these can be achieved only by the basic commitment to put in higher investment in

forestry; the two goals are in fact complimentary to each other. The forest resource can renew itself only through a planned, meaningful intervention of man armed with new breakthroughs in tree genetics and improved scientific management practices and not by being left to themselves and nature. The second alternative is a council of despair and an abdication of responsibility to the people of the country. The well thought out planned approach to agriculture in the last 30 years based on science, technology, extension services, and better management and increased financial inputs has paid rich dividends to the nation; the same basic approach with suitable modifications can be and should be applied to the forestry sector. There is no doubt that the economic benefits to the nation would be even more abundant than agriculture as the renewal of the forest resource is integral to the protection of environment which is essential for continued progress in the agriculture sector.