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FOREST BASED INDUSTRY AND FOREST
LAND MANAGEMENT IN INDIA

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FOREST BASED INDUSTRY AND FOREST LAND MANAGEMENT IN INDIA

Tirath Gupta

Land degradation in India has been gradually approaching a crisis level. An estimated 130 million hectares or nearly 40 per cent of potentially productive land is either non-productive or has been producing substantially below its potential. In spite of repeated emphasis on wasteland development and formation of apex level organizations for that purpose { the National Land Use and Wasteland Development Council (NLUWDC) with the Prime Minister as Chairman, the National Land Use and Conservation Board (NLUCB), and the National Wastelands Development Board (NWDB) } the deterioration process has not been arrested, and some of the land could reach a stage of no return in the foreseeable future.

Against the officially recorded forest area of over 75 million hectares or 23 per cent of the country's land mass and the target of enhancing the forest cover to 33 per cent, only 64 million hectares or 19.5 per cent could be called forest area in the early 1980s and at least 28 million hectares or 44 per cent of that could be described as waste or wasted forest land [GOI, 1986a, 1987b].

Scientific management of this resource is required to protect it, to involve a large majority of the people in sustainable developmental processes, to reduce the incidence of droughts and floods, etc. Such goals can be achieved through a judicious choice amongst cost-effective, and technically, socially, administratively and managerially feasible policy alternatives.

Though objective efforts to assess the policy alternatives have not been made, it has been agreed that afforestation would be the most prominent means of wasteland development.

But, targets of wasteland afforestation through government sponsored programmes have not been met. More importantly, serious doubts have been expressed regarding the sustainability and even social relevance of trees planted with the social forestry projects. It could, thus, be visualized that

- land could not have been a severe constraint for significantly enhanced outputs of timber, fuelwood/pulpwood, bamboo, etc; and
- forestry has ceased to be a matter of conserving an inheritance, and policies and strategies to create new assets have to be identified and adopted.

Conflicts in management and use of forest and non-forest common property land can be resolved through pragmatic policies aimed at meeting the demand (but not necessarily need) preferences of the local people (1/), regional specialization in economic activities as opposed to self-sufficiency or survival at the local level, serving the cause of industrial growth and development, etc. The task is not easy, but it has also not received the desired effort.

The emphasis of policy with regard to land has been on ownership and control rather than on its appropriate management. During the 1970s, the National Commission on Agriculture (NCA) emphasized the role of production oriented forest management. Forest Development Corporations (FDCs) were formed to introduce the even

1. A distinction between need and demand would be necessary to check the growth of non-market forces for the private benefits of those not living close to forests.

change. But, the FDCs have been i) able to utilize only a small portion of the financial resources earmarked for them, ii) doing precious little to enhance the productivity of degraded natural forests as they have been mostly concentrating on clear felling and raising long duration crops of single species, and iii) slow in introducing the modern management culture to the forestry system (2/).

Policy regarding the role of wood-based industries in forest wasteland development has been a matter of controversy between the Ministry of Industries and the Ministry of Environment and Forests (MEF) of the Government of India (GOI). The Ministry of Industries has reasoned that forest land not managed by the forest organizations should be leased for commercial plantations whereas the MEF has been against such a step. The issue rested with the Prime Minister for quite some time. The Forest (Conservation) Act, 1980 has now been amended to enable the state forest departments (FDs) to assign by way of lease forest land to industrial and other non-government organizations with the GOI's prior approval [GOI, 1980, 1988b].

Discussions with some forest officers and others, however, indicated that the recent amendments to the Forest (Conservation) Act could be against such lease of forest land as i) the state governments would not be able to act on their own, and ii) the MEF can say no within the ambit of the 1988 policy which states that forest based industrial units should preferably raise the

2. A comprehensive review of the philosophy and practices of the FDCs appears to be overdue.

needed raw material by establishing direct relationship with the farmers and by providing them support services : credit, technical advice, harvesting, transport, etc [GOI, 1988a]. Another set of thoughts on this issue was that it has reached a stage where it may be socially infeasible to actually lease the land as it would be construed as yielding to the industrial houses.

I. The Objectives

With this background, the main objectives of this study were

- to assess the reasoning for and against involving wood-based industries in the task of developing common property non-forest and forest wasteland, and
- to suggest a few measures to minimize the short term conflicts, if any, between the industries and the rural people.

These should be helpful in separating sentiments and logic which, in turn, should facilitate objective resource management decisions within the scope of the new policy and the Acts.

A brief account of the role of other non-governmental agencies was also considered useful.

II. Role of Non-governmental and Non-Industrial Organizations in Afforestation/Reforestation

It has long since been recognized that non-governmental organizations can enhance the tree cover on forest and non-forest common property land resources (CPLRs). That has been further emphasized since 1985 when the target of afforesting five million hectares of wasteland annually was announced. We may discuss a few examples of the perceived role.

1. Decentralized nurseries, particularly by small and marginal farmers, have been encouraged since 1986-87. It has been proposed that free distribution of seedlings by the FDs and other government agencies should be stopped, but the FDs must assure the farmers of technical assistance and purchase of surplus stock of their seedlings, if any. Some FDs have initiated action on these lines.

2. Government owned forest and non-forest wastelands have been leased to registered tree growers' cooperative societies. Lease rental has been Re. 1 per hectare per annum. The lessee organizations hold absolute rights over 80 per cent of the produce including the freedom to sell it. The remaining 20 per cent of the produce has to be handed over to the concerned government on payment which, in turn, may use that portion to meet the requirements (not necessarily demand) of the weaker sections of the local communities. Organizations such as the NWDB, National Dairy Development Board (NDDB), and departments of forests and rural development have been promoting the activity.

3. Tree pattas have been granted to individual families for rehabilitating the degraded forest land in many states of the Indian Union since late 1970s or early 1980s. The patta holders have full rights over the usufruct of the land. The lease rental has been either negligible or none at all. There have, however, been problems of identifying the intended beneficiaries and of providing the required administrative and legal help to them. Financial feasibility of heavy investments in small plots of land

has also been doubtful. There could also be the risk of arousing the hopes of the rural poor that they would become land owners.

4. Some voluntary organizations have been concerned with wasteland development. The extent and effectiveness of their involvement has, however, been limited by their scale of operations, variations in their administrative and managerial capacities, etc.

These examples show an acceptance of the role of private agencies/individuals in rehabilitating wasteland for their private benefits. But, the efforts have not met with the desired success due to i) lack of coordination amongst multiple agencies; ii) administrative mechanisms whereby funds have been channelled through multiplicity of programmes/projects such as NREP, RLEGP, and social forestry; and iii) lower utilization of even limited financial resources allocated on the basis of population whereby administrative units with higher population density but little wasteland for afforestation received larger shares while those with low population but larger chunks of wasteland received less.

The National Bank for Agricultural and Rural Development (NABARD) has formulated guidelines and model projects for providing financial assistance to i) individual farmers for nurseries; ii) wasteland for raising tree crops; iii) cooperatives or private organization for raising trees to supply the produce to the user industrial units, and iv) public or private sector companies for plantations on marginal, degraded or wastelands to meet their raw material needs. The contribution of institutional finance has,

however, been negligible except in cases tied up with industrial units or where arable lands was brought under tree crops like eucalyptus and casurina [Srivastava, 1988]. Institutional finance for wasteland development by the wood-based industries has been dormant due to the delay in a national policy on lease of the land.

III. Forest Based Industries and Forest Development

It has long since been agreed that the forests should meet the community's basic requirements for maintenance of environmental quality, regulation of water flows, soil conservation, etc., and the demand for industrial raw materials. It has also been accepted that though the vast expanse of forests, long gestation period of most tree species, synergy effects of the quality and extent of vegetation, etc. were some of the important reasons for enhancing the area classified as forests from less than 40 million hectares in 1947 to over 75 million hectares in 1987 [GOI, 1987b], the interests of the governments/FDs and of the forest based industries cannot be totally divergent. In fact, the relationships between them were amicable till the recent past. That may be seen from a historical account of the arrangements for the supply of forest produce to the paper industry.

Around 1910, seven units produced 25,000 tonnes of paper per annum. The first paper mill which used bamboo as a raw material was commissioned in 1918, and all the paper mills set up during the next 40 years were bamboo-based. That was, in fact, encouraged through policy interventions : the import duties on some types of paper levied in 1925, the Bamboo Paper Industry (Protection) Act passed in 1932.

The FDs/State governments and the pulp and paper making companies have been negotiating long term agreements which specified the royalty rates (not price) per tonne of bamboo and mixed woods. There have also been cases where lessees extracted the materials on the undertaking that they would pay the royalty fixed by the governments, but the rates were not fixed for many years [Sagreiya, 1971, pp.537-38]. Moreover, during the early stages of the paper industry, only a few of the agreements provided for periodic upward revisions in the royalty rates. Where revisions in the royalty rates were possible, the extent of the stipulated increases were nominal and even these marginal revisions were not always implemented.

The state governments also offered to the paper companies up to 50 per cent concessions on the stipulated royalty rates during the first 5 to 10 years of their operations and more importantly, rights to use other natural resources such as land and water without paying the full normal fees and without consideration of deterioration in the environmental quality. These were besides other fiscal concessions.

The reasoning was that growth of wood-based industries would i) generate productive employment for the local people to keep them away from destructive practices vis-a-vis the forests, and ii) broaden the tax base for additional revenue to the state exchequer which could be used to enhance the productivity of the forest areas. Industry was, thus, visualized to be a partner in forest development.

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The system continues but it has faced problems since 1972 when the NCA observed that

- there have been a lot of subsidised supplies of timber and other forest materials to the rural population resulting in an attitude that forest produce could be given without assessing the financial aspects of its production; and
- in the name of encouraging industrial development, forest materials have been leased out to industries for very long periods at nominal or heavily subsidised royalty rates [GOI, 1972, p.65].

These thoughts had their origin in the diminishing forest cover and declining productivity of the forest areas. That, in turn, was due to a number of reasons of which the most important appeared to be unprecedented increase in population, lack of management of natural resource systems, decline in morale of the forestry system, and one-way changes in socio-political dynamics.

It is an irony, to say the least, that the first of the NCA's observations summarized here has been forgotten. More importantly, the relations between the industries and the forestry system have continuously been strained due to, besides others, quoting the NCA out of context and from interpretations of the term subsidy to suit specific interest groups [Gupta, 1988a].

An ensuing and relevant suggestion has, however, been that industrial raw materials be raised through plantations and the user organizations should pay for their entire cost of production including a normal/reasonable profit for the FDs/FDCs [GOI, 1972, 1976].

This suggestion has not been acceptable to the industrialists. Their reasoning has been that, if they could have the land on

lease, they can produce the required raw materials at substantially lower costs compared with the costs at the hands of the forestry systems (3/). This may also be considered as the beginning of the industry's demand for long term lease of barren but potentially productive government owned land.

There has been a wide support for the industries' viewpoint. Long term lease of forest land was recommended to the GOI as early as the 1970s [Seth, 1982b, p.58]. Some professionals also visualized the industry's desire to raise plantations as an opportunity for them to concentrate on meeting more pressing demands on the natural forests, and suggested that the industry must produce bamboo and pulpwood to meet at least 25 per cent of the requirements; and the forestry and the industrial systems must work together to improve the planning practices through systematically formulated projects, to enhance the financial resources for forestry development, to undertake research and development, to check rapidly rising costs of transporting the woody materials from long distances/interior forests [Biswas, 1982a; Dhanuka, 1973; IPMA, No date; Seth, 1982a].

The Development Council for Pulp and Paper and Allied Industries (DCPPI) comprising the government officers, industry representatives, and professionals suggested that the strategy to meet pulpwood and bamboo requirements should consist of i) long term lease of land to industry for plantations of fast

3. For a review of the administrative, managerial, and financial problems associated with industry specific plantations raised by the forestry system; and methodological issues in pricing the produce equal to or greater than the production cost see [Gupta, 1988a, pp.93-114].

growing tree species, and ii) rejuvenation of natural bamboo areas leased to the industry. The first of these was, once again, considered necessary as conventional management could not regenerate wasted forest land, and the government alone could possibly not manage the investment requirements of a time-bound programme to that effect [DCPPI, 1983a, p.5 and 1983b, p.23].

In 1984, a Working Group of the GOI consisting of forest officers, administrators, and bankers suggested that i) man-made plantations of pulpwood tree species should be raised by the FDCs, the paper industry, and the farmers; ii) a national policy should be formulated to facilitate lease of land to industry; and iii) areas placed under industrial plantations should be exempt from provisions of the land ceiling acts [GOI, 1984, p.22].

Along with such recommendations of the working group, many policy makers acknowledged that the acts to impose ceilings on individual/family owned or cultivated land aimed at promoting agricultural development through protecting the tenants, and encouraging efficient management of and adequate investments in the land resource; but they did not consider issues in land management from the point of view of industrial development [DCPPI, 1983b, p.23; IPMA, 1982, p.17].

Such thinking and the working group's recommendations could have been the basis for the Central Ministry of Agriculture and Forests' 1984 directive to the state governments that degraded forest land not likely to be intensively managed by the FDs/FDCs

in the near future could be leased to wood-based industrial units but the legal ownership of the land must not change.

This must have been widely appreciated. In 1986, the Prime Minister suggested leasing out a small proportion of wastelands to industries as that was expected to not only prevent further denudation of forests and ensure new ground cover for wastelands, but to also integrate the needs of the industry and the local people for woody raw-materials, fuel and fodder [GOI, 1986a]. Following this, the NLUWDC even recommended that the forest based industries be given incentives to raise captive plantations on wastelands [GOI, 1986a].

In spite of such thoughts and recommendations, a clear policy statement did not emerge till the end of 1988. The ceilings on land holdings and the Forest (Conservation) Act of 1980 nourished a fail-safe approach. At the same time, the need for and the importance of raising industry oriented plantations (by FDs/FDCs or by industrial houses) was not denied (4/). Forest land was leased to at least one public sector paper making company. More importantly, a few state governments formed joint sector companies to meet the objectives without violating the Acts.

There can be many variants of the joint sector model [Seth, 1982b, pp.58-59], but the Karnataka Pulpwoods Limited (KPL)

4. Most people seem to recognize that imports of timber, wood chips, ready pulp, etc. cannot substitute for enhanced production at home; and such imports may not be sustainable.

appeared to offer a good example (5/). The KPL was formed in 1985. In accordance with the Karnataka Government policies of 1978 and 1982, it had 49 per cent equity participation by M/S. Harihar Polyfibres (HPF) and 51 per cent by the Karnataka Forest Development Corporation (KFDC). In line with the other terms of agreement between the parties:

- a majority of the members of the KPL's Board of Directors belonged to the KFDC;
- The Company's Chairman-cum-Managing Director has been a government nominee;
- a Joint Managing Director appointed by the HPF has been responsible for day-to-day working of the Company;
- some 30,000 hectares of degraded 'C' and 'D' category wasteland (out of the lot turned over by the State Revenue Department to the FD) and government forest land has been leased to the KPL for 40 years;
- the KPL has to pay lease rental in kind equivalent to 12.5 per cent of marketable produce at each crop rotation;
- the remaining 87.5 per cent of the produce at each harvest has to be offered for sale to the HPF at a price equal to or more than the cost of production and after assessing the market forces at that time;
- the government's commitments for pulpwood supplies to the HPF would be reduced to the extent the latter would avail of the material from the KPL;
- choice of tree species to be planted by the KPL had to be approved by the Karnataka FD;
- some 5 per cent of the plantations raised by the KPL had to consist of fuel and fodder tree species; and
- the local people did not have to pay for bark, lops and tops, etc. taken by them as headloads.

5. This is not the only example. The Government of West Bengal and the Titaghur Paper Mills, the Bengal Paper Mills, and the India Paper Pulp Company had formed a Bamboo and Timber Farming Corporation to cover 24,000 hectares with loans from the World Bank and other financial institutions. The Corporation was expected to meet the paper mills' current and future raw material requirements [Dhanuka, 1982, p.111]. Further details on this and other such ventures were, however, not available to us.

Between 1985 and 1988, the KPL had planned around 5,200 hectares with fast growing species like casurina, eucalyptus and acacias as permitted by the FD. The NABARD had sanctioned a loan to the tune of 80 per cent of the project costs to be availed from commercial banks at 12.5 per cent interest compounded six monthly. The KPL and the State Government appeared to be satisfied with the arrangements.

Organized environmental groups have, however, voiced concerns. Their arguments were that i) commercialisation of the CPLRs would be against the interests of the local poor, and ii) the laws and directives of the Union Ministry of Environment and Forests had been contravened [Kurian, 1988; Bhattacharjea, 1988]. These arguments ignored the facts that :

- the local people derived very little benefits from the wastelands;
- the state government/FD had expressed inability to find the financial resources required to regenerate the land;
- the state government in 1978 had taken a policy decision to lease degraded forest land to forest-based industries, and at least one public sector company, the Mysore Paper Mills, had been given a lease of 30,000 hectares of degraded forests and other 'C' and 'D' category lands around 1980; and
- the policy had been revised in 1982 whereby industrial plantations could be raised as joint ventures.

Some state governments also thought of another variant of joint sector plantations whereby i) the concerned industrial units and the state governments were expected to invest 80 and 20 per cent, respectively, in the activities; ii) the plantations were proposed to be raised and managed by the FDs/FDCs; and iii) the industrial units could have assured supply of 80 per cent of the

produce at prices to be based on cost of production and the market forces at the time of harvesting [Mathur, 1982, pp.49-50].

Such proposals have not been acceptable to the industrial units as i) they could not play any role in managing the activity in spite of their perceptions of inefficiencies in governmental organizations; and ii) they could not even estimate the price at which the fruits of their investment could be available to them.

Yet another proposal by a state government in 1983 was that the paper making units could enhance the supply of bamboo for their own use through improved management of natural bamboo forests earmarked to them. The main points of the proposal were that :

- the forest land earmarked to the companies would not be leased to them but they could improve its management by gap filling, water conservation, bunding, mounding, fertilizer application, fencing, etc;
- the scheme would initially be for four years but it could be modified and extended by another similar period (not periods);
- the industrial units could seek institutional finance for the proposed improvements; and
- the industrial units should pay for the increased bamboo outputs at the royalty rate in practice from time to time, but a rebate @ one-third to one-fourth of the developmental costs subject to a maximum of Rs.20 per tonne of the bamboo royalty paid during the previous year would be allowed;
- the industrial units would hand over 20 per cent of the additional annual output to the FD who, in turn, would make it available to the general public or to the local people;
- only those major companies which agreed to pay the revised royalty rates on bamboo and mixed woods with effect from 1980-81, when they were proposed, could avail of this scheme.

A number of issues arose from such proposals. First, could the banking institutions provide finance to the industrial houses for

better management of forest land without their holding the leases for such land ? The answer was in the negative unless special arrangements between the parties were facilitated.

Second, could the industrial units be expected to undertake a land based activity if the prices of its outputs were to be revised by the land owner from time to time ? The answer was, once again, negative particularly due to lack of mutual faith between the parties.

Third, could the industrial units be expected to agree to pay the royalty rates proposed by the state government starting from 1980-81 while the matter was pending in the State High Court and negotiations continued for an out-of-court settlement ? The answer had to be negative.

Such conservative approaches on the part of some state governments/FDs, received further support from a 1987 directive of the GOI's Ministry of Forests and Environment whereby proposals for industrial plantations on either lease of land or on joint sector basis were to be treated as non-forest use of forest land under the Forest (Conservation) Act of 1980, and even the cases cleared earlier were expected to be cancelled [GOI, 1987a]. The reasoning in support of the order has been that :

- the tree species of interest to industries could adversely affect the country's flora;
- the poor people who derived their livelihood from collecting non-wood products from natural forests could be adversely affected;
- industrial units would not be able to use the latest technology required to develop the wasteland [Anon, 1987c];

- plantation techniques available with the industry could not be superior to those with the foresters [Bachkheti, 1982, p.29];
- even if tree species were prescribed by the FDs, the natural forests would turn into orchards whereas conservation oriented forest management practices may be desirable for environmental reasons;
- the industrial organizations would face the constraints of the forestry system as forests are burdened with customary rights and concessions for the local people [Bachkheti, 1982, p.29];
- the local people would not be involved in industrial plantations except as labourers [Bachkheti, 1982, p.29];
- the industry may meet its demand for cellulosic materials by agreements with the farmers; etc.

These arguments could, however, not stand the test of logic. Though a policy negating this set of reasoning has been announced, yet the issues may be discussed to facilitate objective implementation of the new policy.

1. The main issue has been to rehabilitate the waste or wasted lands, and there could rarely be a situation of adverse impact on the flora which do not exist. For the same reason, availability of non-wood products of tree origin could not be substantially reduced by industrial plantations on wastelands.

2. Industrial organizations could possibly not lag behind the forestry system in respect of technological competence. The industries have, in fact, mobilized and utilized financial and manpower resources more effectively due to decentralised decision making and direct accountability of the functionaries.

3. Pieces of forest land leased to the industry may look like orchards in spite of ensuring a mix of tree species prescribed by the FDs. But, that should be preferred over lack of vegetation

or even over 10 to 20 per cent crown cover. In fact, such plantations above a critical minimum may be the best insurance against further depletion of the remaining forest wealth (6/).

+Moreover, the philosophy of conserving the natural flora can be better practised through sustained efforts to raise woody materials and by resisting less challenging temptations. Recently, for instance, it was suggested that degraded forest land considered suitable for tea, coffee and rubber plantations be used for those purposes. A joint meeting of the Ministers of Finance, Commerce, Environment and Forests, and representatives of the Tea Board, the Coffee Board, and the Forest Research Institute also decided that the FDs should urgently identify the suitable land [Anon, 1987b] (7/).

More recently, the Orissa Industrial Development Corporation (OID) was given possession of 1,200 hectares of forest land in the drought prone tribal area of Kalahandi District at a rental of Rs.200 per hectare for tea cultivation in collaboration with private agencies. An additional 2,800 hectares could be given for that purpose. Ostensibly, this did not contravene the Forest (Conservation) Act of 1980 and the 1987 directive of the GOI's Ministry of Environment and Forests as the area had not been surveyed and could, therefore, be "treated" as revenue land [Anon, 1988]. The main issue, however, is that social, economic

6. Some forest officers have also reasoned that the current problems would not have been felt if the FDCs could produce even 50 per cent of what was planned.

7. The extent to which the task has been completed and the organizations to take up the plantations were also not known.

and environmental impacts of bamboo and pulpwood plantations on degraded forest and non-forest land can be substantially more desirable than those of tea/coffee/rubber/oil palm plantations on better quality forest land.

4. The forestry system has undoubtedly been constrained by the rights and concessions enjoyed by the local people. Contrary to the thinking that the nistar rights be gradually reduced [Sagreiya, 1971; GOI, 1972; GOI, 1976], the size and extent of such privileges have grown due to their unconscious and/or conscious tolerance by those concerned. But, the cult of propping-up the poor has to have its limits as poverty is not distributable. More importantly, genuine interests of the local people can be better protected by practising the accepted principles of natural resource management and polity.

Changes in resource management decisions can possibly not bring equal benefits to all concerned, and some changes may even be detrimental to short term interests of some people. An accepted principle of welfare economics, however, is that the gainers from an activity must compensate the losers. Since the plantations on wasteland would benefit the wood-based industries and the nation as a whole, ways and means to compensate the losers must and can be found with the help of economic logic and an assessment of situation-specific socio-ecological variables (Section IV).

5. The local people need not necessarily be involved merely as wage earners. They can organize tree growers' cooperatives and get wasteland on lease. That need not conflict with industrial

plantations. At the same time, the prospect of enhanced employment through industry oriented plantations should be welcome. Generating gainful employment has been an important component of the accepted developmental strategies.

6. Farmers can produce woody raw materials. Some wood-based industrial units have been encouraging the activity by supplying seedlings and other materials at cost, and guaranteed purchase of the outputs either at pre-determined prices or market price at the harvesting time. But, such measures must be complementary and not substitutes for intensive management of forest and non-forest wasteland. The step may not even be desirable in the long run if the process of converting prime farm land into irrigated plantations of fast growing tree species has to be arrested. Moreover, the 'net' incremental social gain from productive use of the CPLRs must be substantially higher than from shifting the use of cultivated land to produce woody materials.

6. Lobbying should be accepted as a bonafide activity in a democracy. There may also be a desire to placate the environmental lobby. But, that need not be done at the cost of a proactive measure to protect and enhance environmental quality. Industrial plantations on wasteland could be a means to cover nature's nakedness at an accelerated pace, to introduce the much needed change in the administrative and work culture of the forestry system, to control the pressures for placing unutilized forest land under the plough, and to ensure that the industries do not continue to use the forest wealth without the responsibility to replace it [Anon, 1987d].

IV. Towards a Synthesis

The preceding discussion must suffice to recognize that the nation has been faced with the problems of large blocks of degraded forest and non-forest land in the interior areas as well as in the vicinity of industrial units; scarcity of financial and managerial resources with the FDs and FDCs; and increasing gap between demand for and supply of timber, fuelwood, pulpwood, etc. At the same time, there are good prospects of complementarity between the forestry system and the wood-based industries, and between fuelwood and pulpwood production. Thus, the forest-based industries in general and the public and private sector paper and newsprint making units in particular must not merely be allowed but may also be induced to rehabilitate portions of currently barren but potentially productive land, and grow woody materials for their use.

An important consideration in moving towards that goal must be the protection of genuine interests of the rural poor. While situation specific arrangements may be necessary, a few thoughts may be discussed. One approach can be to spare the forest and non-forest land within a specified radius, say three kilometers, from rural habitats. This implies that the rural communities can and would appropriately manage the CPLRs in their vicinity.

Another, and perhaps better alternative can be to protect the interests of the local people by providing them with a share in the usufruct of the land. The quantum or the proportion of the produce to be so supplied can and must be determined in advance

by i) assigning weights to the communities' requirements, and ii) the quantities of the goods available from the land without the industrial plantation projects (8/).

It may even be thought that degraded forest land would be leased to the industrial houses if they agreed to rehabilitate the land close to rural habitats in some proportion, say up to 20 per cent, of the land leased to them. This would be in line with the accepted tenets of welfare economics and may be encouraged by complementary policy measures such as deduction of the related expenditure from taxable income of the industrial units. The local communities must, of course, be willing to manage the newly created asset.

It should also be feasible for the industries and the forestry system to harvest grasses from the regularly managed forest areas and to provide the material to the communities affected by land closure for a limited period, say 3-4 years. The short term costs can be more than recovered via tangible and intangible benefits from rehabilitating degraded land : reduced pressures on forests, reduced social pressures for regularizing further encroachments on forest land, reduced privatization of CPLRs by influential individuals, etc.

8. It has also been suggested that only those forest lands from which the governments' revenue has been less than Rs.500 per hectare per year should be leased to the industry [Somani, 1982a]. The intent of the thought appeared to be that management of forest land with adequate cover should not pass on to the industrial houses.

It may, thus, be agreed that the most sustainable and financially, socially, and administratively feasible solution would be to gradually internalise the supply of woody materials for wood-based industries. To start with, this may be attempted for the paper and newsprint industries such that

- all the existing units be given wasteland on lease to produce the raw materials for themselves;
- the on-going agreements for the supply of bamboo and pulpwood from natural forests be terminated to coincide with the expected maturity of the plantations;
- feasibility reports of the proposed units must account for investments in pulpwood/bamboo plantations; and
- letters of intent for new units be issued concurrently with lease of wasteland and commencement of the plantation activity by the promoters.

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