

## Financing of wasteland afforestation in India

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### Abstract

*India has vast tracts of wastelands, which have been lying barren for ages. Most such lands are physically suitable for growing trees and thus could be put to socially productive uses. However, although usually economically viable, afforestation requires massive initial investment, generally beyond the means of the landowners. Also, government budgetary allocations do not cover current needs. In this situation, institutional credit is required. The National Bank for Agriculture and Rural Development (NABARD) of India has recognized this need and has devised a number of different schemes to provide refinance facilities to individuals and organisations. Although the number of forestry schemes refinanced by NABARD has increased rapidly in the past, they currently constitute only about 1% of the total number of loans sanctioned, and only about 2% of NABARD's cumulative loan disbursement to date. In fact, since 1992, the share of afforestation schemes has declined. A number of factors have been identified as major constraints, including time-consuming and complicated procedures for accessing land; restrictions on harvesting and selling trees; delays in sanctioning and disbursement of bank credit; non-remunerative prices for tree products; and flawed public policies and programmes. This article argues that unless these constraints are overcome, NABARD will not be able to play an effective role in speeding up development programmes in the forestry sector. It further argues that most of the current constraints on institutional credit for wasteland afforestation can be removed or relaxed. Practical strategies are suggested to mobilize more funds and channel more institutional credit for wasteland afforestation in India.*

*Keywords:* Afforestation; Institutional financing; Credit disbursement to forestry sector; National Bank for Agriculture and Rural Development; Refinancing; Tree growers; Wasteland.

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### 1. Introduction

India has vast tracts of wastelands. These are normally defined as degraded lands which, at reasonable cost and effort, can be brought under vegetative cover. The definition was first mooted by the National Wastelands Development Board of India and became widely popular later.<sup>1</sup> Wastelands can result either from intrinsic attributes — such as location, environment, chemical and physical properties of the soil — or from man-made circumstances such as lack of proper management. Casual estimates as to the extent of wastelands in India vary from 75 to 200 million ha (Government of India, 1976; Vohra, 1985; World Bank,

1988, Chambers et al., 1989). A recent survey by the National Bureau of Soil Survey and Land Use Planning revealed that 66% of India's geographic area (around 192 m ha) is at varying stages of degradation (quoted in Haque, 1997).

There are no reliable estimates of the extent of wastelands in India that could be rehabilitated through economically viable afforestation projects. Chambers et al. (1989) estimate the total wasteland area to be nearly 84 m ha, comprising 35 m ha of private cultivated lands (field bunds and boundaries) and 49 m ha of government-owned degraded lands, including village commons. All of this land is available for rehabilitation through afforestation. The reason for accepting Chambers' estimate is that it presents a break-up of the wasteland area by type of ownership, which other estimates do not. The authors believe that most of the wastelands in India could be reclaimed through tree plantation. The private share of wastelands is small in India; this is substantiated by the fact that 64.5% of privately owned land holdings in India range between 1 ha to 10 ha (Central Statistical Organisation, 1998). Government-owned wastelands vary in size from a few hectares, such as village

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<sup>1</sup> For comprehensive definition of 'wasteland' in India, see Gautam and Narayan (1988).

commons, to millions of hectares, e.g., degraded forest lands. Forests constitute around 19.27% (63.34 m ha) of India's total geographic area.

Afforestation is considered to be an economically viable and ecologically sound use of wastelands. However, afforestation on a large scale requires huge investment (Kapoor, 1992; World Bank, 1993; Balooni, 1998), beyond the means of most owners of degraded lands and other potential tree growers in India. The Government's budgetary allocations for afforestation are inadequate vis-à-vis the requirement (Jhala and Pinto, 1988; Vohra, 1989; Kapoor, 1992; Kadekodi, 1995; Balooni, 1998). In recent five year plans (7<sup>th</sup> Plan: 1985–1990, 8<sup>th</sup> Plan: 1992–1997, and 9<sup>th</sup> Plan: 1997–2002) (ICFRE, 2000), forestry sector expenditure constituted only around 1% of total public sector outlay of the Government of India. A sudden increase in government investment in the forestry sector in the near future is not likely, as the Government of India now gives high priority to economic development and is facing a financial crunch. Thus there is a need for institutional credit to facilitate investment in afforestation activities. The National Bank for Agriculture and Rural Development of India (NABARD) has recognized this need and has designed a number of different schemes to provide refinance to individuals and organisations.

This article first examines the rationale for public investment in afforestation of wastelands in India, then discusses the role of NABARD and other institutions in financing such programmes, identifies various constraints, and finally suggests some ways forward and outlines options and alternatives to overcome existing barriers. Conclusions and future implications are presented in the last section.

## 2. The rationale for public investment in afforestation of wastelands

At the outset, two questions need to be addressed: are afforestation projects financially feasible? and are afforestation projects bankable in India? According to a review of 21 studies (Balooni, 2003) on the economics of afforestation over the last two decades in India (e.g., Babu et al., 1984; Singh, 1988; Sharma, 1995; Pande et al., 1999; Rana et al., 2000), wasteland afforestation projects in India are financially feasible even without counting non-market benefits. The review further found that the internal rate of return from afforestation projects in India was higher than the prevailing interest rate on long-term loans for forestry projects. This means that afforestation projects should be bankable.

In addition, at the macro-economic level, afforestation projects provide a number of forward and backward linkages with other subsectors of the Indian economy; Kadekodi and Ravindranath (1997) have estimated these linkages to be 1.13 and 0.6088, respectively. New afforestation projects will further enhance such linkages. For example, a recent

sput in poplar plantations in the state of Haryana in northern India has led to the emergence of a veneer industry in the region based on poplar. Afforestation activities generate substantial employment opportunities, as wages to labourers constitute 70–80% of the expenditure incurred on plantations. The Government of India is encouraging afforestation programmes as a means to generate employment in rural areas, with 20% of rural development funds currently earmarked for afforestation. Numerous other similar examples highlight the importance of tree plantation and its contribution to the Indian economy. This indicates a need to enhance the level of investment in afforestation programmes.

The authors believe that, in coming years, afforestation of wastelands is going to emerge as a big enterprise in India to meet rising demand for raw materials of the rapidly growing wood-based industries. An important factor in this regard is that the supply of wood from government-owned forests has been declining in recent years as a result of conservation oriented strategies adopted by the Government. The new Indian Forest Policy (1988) stipulates, *inter alia*, that the wood-based industry needs to collaborate with farmers to encourage the latter to grow trees on their private lands or to establish their own captive plantations. In the past, the wood-based industry in India received raw wood at subsidized prices from government owned forests. Currently, the Government is promoting farm forestry and community forestry programmes on both private and community lands, to meet wood and fuelwood needs in rural areas.

## 3. The role of NABARD in refinancing of wasteland afforestation projects

NABARD is a statutory organization at the national level created in 1982 through an act of parliament. It performs developmental and supervisory functions in the field of rural credit. Since its inception, NABARD has emphasized the need for increasing the productivity of the forest sector. In fact, during its first year of operation (1982–1983), NABARD considered refinancing farm forestry development schemes for private lands and the planting of trees on degraded lands belonging to the Government and leased to farmers, either individually or in groups (NABARD, 1983).

NABARD provides refinancing assistance to financial institutions, such as scheduled commercial banks, state co-operative banks, state land development banks, and regional rural banks with respect to loans advanced to individuals or groups for undertaking afforestation of private wastelands. NABARD also provides funds, on a selective basis, for capacity building of NGOs (NABARD, 2000). In its first years of operation, NABARD placed more emphasis on refinancing afforestation of private wastelands undertaken by individual landowners than on supporting corporations or other organisations. However, after the promulgation of

the National Forest Policy of 1988, its priority has shifted to forest-based industries, corporations and organisations, such as state forest development corporations and NGOs undertaking wasteland development at the grassroots level.

In order to boost the development of afforestation programmes in the country, NABARD identified six main thrust areas, including the development of wastelands (Sharma, 1993). Many innovative schemes for the refinancing of plantation programmes have been sanctioned by NABARD. One of them is the Margin Money assistance scheme, an investment promotion scheme sponsored by the Department of Land Resources of the Ministry of Rural Development. The main objective of this scheme is to encourage the flow of low-cost institutional funds to socially beneficial afforestation and wasteland development projects in non-forest areas. The Ministry of Environment and Forests is responsible for the rehabilitation of degraded forest areas, mainly through government grants. Under this scheme, promotional grants or subsidies to individuals/groups is limited to Indian Rupees (INR) 2.5 m<sup>2</sup> (or 25% of the project cost, whichever is less) subject to the condition that the promoters' contribution to the project shall not be less than 25% (Government of India, 2002a).

Similar schemes subsidizing the forestry sector are also promoted in other countries. For example, in Kenya, the government-owned Agricultural Finance Corporation provides loans to individuals and cooperatives for growing fuelwood. In Brazil, the National Petroleum Council finances the Small and Medium Property Reforestation programme (Joshi, 1998). In Colombia, the Government promotes reforestation through low interest (subsidized) loans from the Inter-American Development Bank (IDB), the German Reconstruction Credit Institution (KfW) and the World Bank (Gaviria, 1997); also, the Fondo Forestal provides low-interest guaranteed loans through private commercial banks for tree planting and other forestry activities (Joshi, 1998). Costa Rica's Forestry Act 4465 of 1969 provides that state-owned commercial banks should allocate 3% of their total loan portfolio to funding for forestry (Morell, 1997).

NABARD is somewhat similar to BANRURAL (National Bank for Rural Credit) of Mexico, the largest agricultural bank in Mexico, a government owned bank, with an extensive presence in the country through its regional offices. The financing of forestry sector schemes in Mexico is also handled through the Bank of Mexico, a trustee for agricultural funds, and by FICART (Trust Fund for Credit in Rainfed and Irrigated Area) and FODEF (Trust Fund for Forestry Development). Disbursement of funds from World Bank forestry development loans are routed through these trust funds and banks to private and commercial banks for on-lending to the ultimate beneficiaries (*ejidos*, public land;

*comunidades*, communities) and small producers (Weaver, 1996).

Of late, NABARD has also been involved in implementing externally aided, innovative poverty-alleviation projects through the development of common property resources with local people's participation (NABARD, 1999). For example, it is implementing a rubber development project with financial assistance of Special Drawing Rights (SDR) of 14.59 m (as of 21 April 2003, SDR 1 = US\$ 1.34687) provided by the World Bank. The money is routed through the Government of India and NABARD and is used for loans to rubber growers to create on-farm and off-farm employment (NABARD, 2000).

In the following, the role of NABARD in refinancing forestry sector schemes is examined.

### 3.1. NABARD refinancing of forestry schemes

From 1983 to 1992, the number of forestry schemes, including wasteland afforestation, re-financed by NABARD grew at a compound annual rate of 21.66% (Table 1). This compares well with the overall average growth rate of 4.09% for all categories of schemes refinanced by NABARD during the same time period. However, the proportion of forestry sector schemes is only 0.61% of the total number of schemes sanctioned by NABARD over the period; the highest yearly percentage being 1.22% in 1986–1987. At the national level, NABARD's cumulative disbursement

Table 1. Forestry schemes refinanced by NABARD from 1982 to 1993<sup>ab</sup>

Year	Number of schemes		Disbursement (INR million)	
	Forestry	Total including forestry	Forestry	Total including forestry
1982–1983 <sup>c</sup>	5	24,410	98.8	34,921.2
1983–1984	15	4,866	45.8	8,841.1
1984–1985	22	5,446	23.5	10,512
1985–1986	49	7,835	96.6	11,916.5
1986–1987	123	10,068	91.8	13,342
1987–1988	73	9,995	191.3	14,819.1
1988–1989 <sup>d</sup>	48	7,037	110.5	12,701.5
1989–1990	64	9,211	171.1	17,021.3
1990–1991	62	10,650	290.5	19,021.7
1991–1992	72	6,706	224	20,543.6
Total	583	96,219	1,343.9	163,640
Annual compound growth rate (1983 to 1992)	21.66	4.09	21.95	11.11

<sup>a</sup> Source: Annual Reports of NABARD for respective years.

<sup>b</sup> All the figures refer to NABARD's schematic lending.

<sup>c</sup> Figures for 1982–1983 are cumulative up to the year including sanctions by ARDC (Agricultural Refinance and Development Corporation, see footnote 3).

<sup>d</sup> For the year 1988–1989, the figures relate to 9 months period (July–March).

<sup>2</sup> Equivalent to US\$ 52,085, at the exchange rate of INR 48 to 1 US\$ (in 2002).

of funds<sup>3</sup> under schematic lending<sup>4</sup> to the forestry sector at the end of March 1992 amounted to INR 1,343.9 m, which is 0.82% of the total cumulative disbursement of INR 163,640 m under all categories. Though the annual compound growth rates of forestry schemes (21.66%) and of disbursement (21.95%) in various years have been higher than those of all the schemes taken together, the share of forestry schemes in the total schemes refinanced by NABARD is still less than 2%. In view of the fact that the entire amount of funds disbursed to the forestry sector does not go to afforestation of wastelands, NABARD's contribution to this important activity in India has been paltry. This is also reflected in the Government of India's contribution to afforestation of wastelands in the 7<sup>th</sup> Five Year Plan (1985–1990), which was INR 24,266.3 m (ICFRE, 2000). As against this, the disbursements by NABARD to the forestry sector during the same period of time amounted to only INR 661.3 m, or 2.73% (Table 1).

Moreover, in recent years, the total amount disbursed by financial institutions to wasteland schemes has declined considerably: from INR 290.5 m in 1990–1991, it declined to INR 90 m in 1998–1999 (Table 1). Whereas the share of the forestry sector in the total disbursement by NABARD was 1.53% in 1990–1991, it was only 0.2% in 1998–1999. Under Government of India's investment promotion scheme (1992–1996), only four projects were sanctioned.

The main reason for the decline in demand and/or disbursement of credit for forestry schemes seems to be the dilution the Government's focus on farm forestry after 1991, as observed by the Planning Commission of India (Government of India, 2002b). Currently, the emphasis is more on joint forest management (JFM) programmes,<sup>5</sup> which are difficult to implement with institutional credit (see below, Section 5.3). Macro level indicators also show a decline in investments in the forestry sector. For example, in the 8<sup>th</sup> Five Year Plan (1992–1997), the proportion of forestry sector to total public sector expenditure was 1.13%, but this declined to 0.84% in the 9<sup>th</sup> Five Year Plan (1997–2002).

### 3.2. NABARD's refinance of forestry schemes by agency

Of all the financial institutions serviced by NABARD until March 1992, scheduled commercial banks held the largest

<sup>3</sup> This includes disbursement by the erstwhile Agricultural Refinance and Development Corporation, forerunner of NABARD, established in 1982.

<sup>4</sup> NABARD has stipulated certain guidelines for preparing applications by banks for loans refinanced by them. The loan applications are verified by NABARD officials for financial viability and other aspects. Such loans with project duration of more than three years refinanced by NABARD come under the category of schematic lending. The appraisal of such projects is done by NABARD according to determined parameters.

<sup>5</sup> Joint forest management is a participatory approach to rehabilitate degraded forests in India, wherein state forest departments and non-governmental organisations are working along with people at the grassroots level for the protection and management of forests. In the past, state forest departments were responsible for forest management.

**Table 2. Forestry schemes refinanced by NABARD in India from 1982 to 1993 by agency<sup>a, b</sup>**

Agency	Number of schemes		Disbursement (INR million)	
	Forestry	% of forestry to total	Forestry	% of forestry to total
State Land Development Banks	146 (25.04) <sup>c</sup>	0.46	84.4 (6.28)	0.15
Scheduled Commercial Banks	412 (70.67)	0.73	1,252.5 (93.20)	1.58
State Cooperative Banks	6 (1.03)	0.21	28 (0.01)	0.04
Regional Rural Banks	19 (3.26)	0.40	42 (0.01)	0.02
Total	583	0.61	1,343.9	0.82

<sup>a</sup> Source: Annual Reports of NABARD for respective years.

<sup>b</sup> The figures are inclusive of the cumulative sanctions of ARDC (Agricultural Refinance and Development Corporation, see footnote 3) till 1982 and refer to schematic lending.

<sup>c</sup> Figures in parentheses represent percentages of respective column totals.

share of forestry schemes sanctioned (70.67%) and funds disbursed (93.2%) (including the share of the ARDC<sup>6</sup>) (Table 2). State land development banks ranked second, with total forestry schemes sanctioned being 25.04% and credit disbursed 6.28%. State cooperative banks and regional rural banks played a lesser role. To involve them more effectively, a specific yearly target amount for financing afforestation programmes should be assigned to each. There are 32,232 rural and semi-urban branches of scheduled commercial banks and 196 regional rural banks with 14,539 branches in India (NABARD, 1993). Besides, there are 97,122 cooperative credit societies, including state cooperative banks (Central Statistical Organisation, 1998). With such a widespread network of banks and with the adoption of the 'Service Area Approach',<sup>7</sup> banks could and should play an important role in the development of forestry by financing afforestation programmes with funds provided by NABARD.

### 3.3. NABARD credit disbursements by region

The area served by NABARD is divided into six regions (Table 3). Of these, the Central Region had the largest share of both forestry schemes sanctioned (35.42%) and disbursement of funds (34.33%) (Table 3). The Southern

<sup>6</sup> See footnote 3.

<sup>7</sup> The Service Area Approach is an effort towards decentralization of credit planning for the rural sector in India. Under this approach, the entire responsibility of assessing and meeting the credit needs of all the approximately 600,000 villages in India has been assigned to the branches of commercial banks and cooperative banks (a cluster of 15–20 villages being served by one branch).

**Table 3. Extent of wastelands and NABARD's refinance to forestry schemes in India from 1987 to 1992 by region<sup>a, b</sup>**

Region	Degraded forest and non-forest land <sup>c</sup> (Million ha)	Number of schemes		Disbursement (INR million)	
		Forestry	% of forestry to total	Forestry	% of forestry to total
Northern	27.17	38	0.71	176.8	1.30
North-Eastern	7.45	4	0.82	1.2	0.06
Eastern	14.66	26	1.04	11.3	0.11
Central	28.2	113	2.32	339	1.69
Western	22.24	29	0.20	228.4	1.70
Southern	26.26	109	0.69	230.7	0.92
Total	125.98 <sup>d</sup>	319	0.73	987.4	1.17

<sup>a</sup> Source: Annual Reports of NABARD for respective years.

<sup>b</sup> All the figures refer to NABARD's schematic lending.

<sup>c</sup> Source: Society for Promotion of Wastelands Development, New Delhi.

<sup>d</sup> The total figure for column 2 excludes degraded forest area and non-forest degraded area in the Union Territories.

Region ranked second with schemes sanctioned being 34.17% and disbursement of funds being 23.36%. Comparing forestry financing schemes with total degraded land area (Table 3), it appears that, by and large, NABARD's allocation of forestry schemes is positively correlated with the extent of total degraded lands in the specific region. However, comparing NABARD's disbursement of credit for forestry schemes by region with the availability of degraded land, we find that the former is not commensurate with the latter except in the Central Region, which has the highest disbursement of credit and the largest proportion of degraded land in the country. Overall, forestry schemes sanctioned (0.20% to 2.32%) and disbursement of credit for forestry schemes (0.06% to 1.70%) during the period 1987–1992, are at an abysmally low level compared to total number of schemes refinanced and total disbursements made by NABARD.

#### 4. Constraints on institutional financing of wasteland afforestation programmes

This section discusses some major constraints on institutional financing of wasteland afforestation programmes in India, based on a literature survey and the authors' observations.

##### 4.1. Problems of access to degraded lands for tree plantation

The information needed for assessing the potential of non-forest and cultivated lands (such as ownership; extent and type of degradation; present and future uses) has never been collected on a systematic basis for India as a whole (Romm, 1981a, 1981b). This lack of ground-level data has dampened progress in the formulation and implementation of bankable plantation programmes. However, recently, initiatives have been taken to improve the availability of grassroots level data for this purpose. Many NGOs and

tree growers' cooperative societies in India are currently providing institutional finance for afforestation of wastelands. However, most of them face problems of access to degraded forest lands for afforestation programmes due to a variety of procedural and legal complications. For example, the Foundation for Ecological Security (FES)<sup>8</sup> based in Anand, an organisation involved in forming tree growers cooperative societies at the village level, has been experiencing difficulties in accessing degraded village commons. This is related to the fact that, in all the six Indian states where FES is active, village common lands are *de jure* owned by the respective state revenue department (Balooni and Ballabh, 2000).<sup>9</sup> This has resulted in an average time lag of 309 days between the registration of a cooperative and its obtaining a lease to village common lands from the state government (NTGCF, 1996). Similarly, village institutions involved in joint forest management (JFM) programmes for degraded forest areas also face bureaucratic hassles in land access (Raju, 1997). In view of the cumbersome procedures regulating land access, it is not surprising that financial institutions hesitate to come forward to provide credit. These complications need to be resolved.

Another constraint on afforestation through bank credit is the lack of compact blocks of wastelands (Sreenivasan, 1992). In India, most of land holdings are highly fragmented and scattered. Farmers have to offer their land

<sup>8</sup> Until February 2001, known as the National Tree Growers' Cooperative Federation Limited (NTGCF).

<sup>9</sup> In India, most of the non-forest lands, excluding private lands, are *de jure* owned by the revenue departments of state governments and to a smaller extent by other government departments. Lands owned by the revenue departments are referred to as 'revenue' lands and those owned by other government departments as 'government' lands. However, in most of the cases, local people *de facto* communally use such lands, hence known as village common lands. Forest lands, excluding private forests/plantations, are owned and managed by the forest departments of state governments. Now, a significant proportion of forest lands — mostly in the vicinity of villages — are managed by forest departments in cooperation with local people under the joint forest management (JFM) programmes currently underway.

as collateral to financial institutions in order to be eligible for credit towards tree planting or any other land development activities, as they do not have any other assets. Thus, the scattered nature of landholdings of prospective borrowers makes it difficult for financial institutions both to verify the extent and quality of the land being offered as security, and later to monitor the use of the credit granted. Integrated private wasteland development along the lines of integrated farming systems could be one solution to overcoming this problem. For example, Indian Farmers Fertiliser Cooperative Limited (IFFCO) under its ongoing Indian farm forestry development cooperative project (IFFDC) in fourteen states of India helps farmers to rehabilitate their private wastelands through integrated farming systems. This is done by organising farmers into primary farm forestry cooperative societies (PFFCS) and by providing financial, technical, marketing, and extension support to the members of PFFCS. This is done with the objective of promoting farm forestry on wastelands for maximum economic gains to the members of PFFCS (IFFCO, 2000). This successful example points to a solution to the problem of scattered private landholdings. It also demonstrates that such problems can be overcome with people's participation, and with the involvement of non-governmental organisations and village level institutions. However, the NGO concerned needs to have the orientation, expertise, and patience required for winning the trust of people and involving them in every stage of the project.

Moreover, most of the government-owned, degraded 'revenue' and 'forest' lands (see footnote 9) are located in remote rural areas, far away from commercial banks and regional banks. This makes it difficult for bank personnel to visit for monitoring purposes.

#### 4.2. Lack of information on availability of credit for tree plantation

Most of the tree growers in India are poor, small-scale operators, unorganised and illiterate. They do not have access to information regarding credit possibilities for tree plantations provided under various government schemes. This is the main reason why the Margin Money assistance scheme, designed by the Government of India in collaboration with NABARD, did not achieve its targets. Despite being designed specifically to assist farmers in obtaining credit for tree plantation on degraded lands, levels of disbursement by NABARD remained low (see Section 3 above), reflecting the lack of success of the scheme. The following example from the village of Sharda, Panchmahals District (Gujarat), illustrates the problem of lack of information (Balooni, 1998).

Around 45% of the total geographic area of the village of Sharda (around 174 ha) is categorized as various types of wasteland. Very few trees have been planted by the 108 households in this village. Large-scale deforestation in the

recent past has given the once well forested village a desert like appearance. Villagers must now buy wood from nearby markets to meet their requirements. There is an immediate need for raising trees on both private land and village commons. Interviews with village households revealed that all of them were interested in growing trees on their degraded private lands. However, although they were receiving credit from financial institutions for their agricultural operations, none of them were aware of any credit schemes available for afforestation purposes.

If, during the past two decades, India has been able to plant trees on large tracts of wastelands (around 27.62 m ha from 1980 to 1999), through the intermediary of various social programmes such as farm forestry and community forestry projects (ICFRE, 2000), this has been achieved due to widespread dissemination of information among farmers about fast growing species like *Eucalyptus sp.*, *Poplar sp.* and *Acacia sp.* and techniques of cultivating them. A combination of dissemination of information on availability of institutional credit and active collaboration between state forest departments and NGOs can help speed up the pace of afforestation. These measures will also help NABARD, and the financial institutions that it refines, increase the flow of funds to afforestation programmes.

#### 4.3. Lack of requisite expertise in forestry and procedural delays

The lack of adequate expertise in forestry and infrastructure on the part of financial institutions hinders banks from taking up afforestation projects. At the same time, the interest of potential beneficiaries is dampened by the long time-lag between the date of application for a loan and its final sanction. Another reason that the institutional credit through NABARD is not used is the cumbersome procedure for getting loans approved, and, yet another fact, that the land to be mortgaged may not be free from encumbrances. There is thus a big gap between demand and supply. In many cases, this is filled by private lenders. Balaji (1997) found, for example, that in many villages in the state of Tamilnadu, informal financial institutions, such as money lenders, provided funding to farmers involved in tree cultivation.

Another aspect that needs improvement is the structure of interest rates relating to forestry projects. Rates currently charged by NABARD are the same for all categories of tree growers and forestry projects. There is a need for loan rates to be differentiated for small, medium and large cultivators, as well as according to the potential of their land (Kant and Saxena, 1993; Pethiya, 1993; Balooni, 1998). Financial institutions should also endeavour to rationalise credit delivery and recovery systems for afforestation of wastelands, particularly in view of the fact that trees mature slowly, and investors consequently have to wait for many years to realize the returns on their capital. According to Joshi (1997), farmers seldom utilize problem soils, such

as saline soils, for tree planting due to the long gestation period (a minimum of 7 to 10 years). This is too long for poor farmers. An important opportunity is thus lost. It is usually profitable to grow trees on such problem soils, especially fast growing species like *Acacia nilotica*, *Prosopis juliflora*, *Casuarina equisetifolia*, and various *Eucalyptus* species, which give good returns with low initial cost. Hence, some institutional arrangements need to be made to provide adequate earning opportunities to tree growers during the gestation period.

#### 4.4. Institutional, organisational and legal constraints

A number of concrete steps could be taken by Indian state governments to benefit tree growers. Such steps include modifying legal provisions to allow growers to freely harvest trees grown on their own land. In many states, forest department regulations effectively discourage farm forestry by imposing restrictions on felling, transportation and sale of timber standing on private lands. For example, 26 tree species, including teak, are declared as “protected” in the state of Gujarat (PRADAN, 1990). This means that farmers must secure permission from the State Revenue Department for harvesting these tree species, even on their own lands. Obtaining the requisite permission could take as long as one year, even two (NTGCF, 1998).

The Andhra Pradesh Forest Produce Transit Rules of 1970 regulate the transit of forest produce into, from or within any area in the state. Similarly, according to Balaji (1997), “at policy level [in the state of Tamilnadu] the cultivation of trees is inhibited by a number of archaic acts and rules that restrict felling and transport of timber.” These restrictions erode the value of produce for the farmers and dissuade them from planting, and dampens the interest of tree growers in approaching commercial banks for credit.

According to Guha (1994), even the proposed new forest act, which is to be called the ‘Conservation of Forests and Natural Ecosystems Act’ and is to replace the Indian Forest Act of 1927, stipulates unnecessary and irksome interference by the state in the affairs of private tree growers. It is claimed that the new act will facilitate tree farming, but at the same time it places numerous hurdles in the path of farmers who might actually want to plant trees on their lands. The act would require every tree grower to be registered with the local state forest department, and to inform the forest department whenever trees, planted and nurtured by him/her, are to be felled or sold. This would be a great deterrent to farmers. This draft act, which has generated a lot of debate, is still to be presented to the Indian Parliament. In the meantime, the old Indian Forest Act of 1927 with subsequent amendments continues to be in operation (Kulkarni, 2000).

Following is part of a recent notification by the Ministry of Environment and Forests (Government of India, 2001a): “Trees: There shall be no felling of trees whether on Forest, Government, Revenue or private lands within the Eco-

*Sensitive Zone, without the prior permission of the State Government in case of forest land, and the respective District Collector in case of Government, Revenue and private land, as per procedure which shall be prescribed by the State Government, provided that the District Collector shall not delegate this power to any subordinate officer below the rank of Sub-Divisional Officer.”*

There are many other constraints which impede the afforestation of wastelands and which need to be removed. For example, one important hurdle in attracting private investment for tree plantations is the current policy of the Government of India that forest lands may not be leased to private entrepreneurs for raising plantations to meet their need for raw materials. Also, the preference of some of the state governments for community forestry schemes over farm forestry schemes reduces the number of financially viable farm forestry schemes being referred to NABARD.

In the context described above, there is a clear need for the Government and financial institutions to encourage NGOs and tree growers’ cooperative societies through financial, technical, and legal initiatives.

#### 4.5. Non-remunerative prices and lack of marketing facilities

Poor infrastructure and the lackadaisical approach to marketing of farm forestry products followed in the past has led to a situation where tree growers receive non-remunerative prices for their products. This has dampened the interest of both present and potential tree growers in planting trees and approaching financial institutions for loans, despite many loan facilities for tree plantation being available (Chambers et al., 1989; Saxena, 1992; Singh, 1993). This situation has remained more or less unchanged for decades. In many places, especially where transport and communication facilities are lacking, middlemen and local entrepreneurs often cheat village tree growers by paying them very low prices. This can be attributed to the lack of knowledge of prevailing market prices on the part of the growers and their inability to travel to distant markets. This problem is further aggravated by the monopsonistic market situation, described by Balaji (1997) as “the problem of myopic suppliers and gigantic buyers”, which weakens the bargaining power of the individual tree growers.

There is a need for intervention by the state governments to provide adequate information about markets and prices to growers, and to regulate, if necessary, the purchase of harvested produce at remunerative prices. The role of prices in promoting tree planting is illustrated by the following example showing the rise and fall of farm forestry on private lands, promoted by various agencies of the Government of India in the late 1970s and early 1980s. During this period, fast growing *Eucalyptus* trees were planted on private lands on a large scale in many parts of India as this was highly profitable at the then prevailing prices.

**Table 4. NABARD's refinance allocation to forestry schemes and actual disbursement of credit in Gujarat State during 1991–1992 and 1992–1993 (INR million)**

Financial institution		Refinance allocation by NABARD		Disbursement	
		Forestry	Total including forestry	Forestry	Total including forestry
Scheduled	1991–1992	11.80	521.34	8.64	518.12
Commercial Banks <sup>a</sup>	1992–1993	11.05	599.66	5.29	522.77
Regional Rural Banks <sup>b</sup>	1991–1992		81.53		77.55
	1992–1993		96.91		95.85
State Land Development Bank <sup>c</sup>	1991–1992	15	295		321.46
	1992–1993	20	550		525.02
State Cooperative Bank <sup>d</sup>	1991–1992		101.02		88.85
	1992–1993		100		124.55

Source: NABARD, Regional Office, Ahmedabad.

<sup>a</sup> Includes 19 Scheduled Commercial Banks.

<sup>b</sup> Includes nine Regional Rural Banks.

<sup>c</sup> Gujarat State Cooperative Agriculture and Rural Development Bank Ltd.

<sup>d</sup> Gujarat State Cooperative Bank.

However, later on, overproduction set in and the consequent crash of prices caused interest to wither (Deweese and Saxena, 1997). The Government did not intervene to stabilise market prices for *Eucalyptus* wood.

#### 4.6. A case study: Tree plantation scheme, Bhal region, Gujarat

To complement some of the arguments presented in the preceding sections, a case study was undertaken to find out the constraints in financing afforestation programmes through institutional credit at the grassroots level. This case study evaluates the performance of three representative Gujarat banks in financing afforestation of wastelands, namely: the regional office of NABARD in Ahmedabad; the zonal office of the State Bank of India (SBI) in Ahmedabad; and the Agricultural Banking Division of the Mehmedabad Branch of SBI. These institutions disbursed credit to beneficiaries at the grassroots level on the basis of refinanced credit sanctioned by the regional office of NABARD.

In Section 3 above it was argued that financial institutions in India had disbursed a rather small quantum of credit for afforestation programmes. The case study on institutional financing revealed that the same scenario prevailed in the state of Gujarat, despite the fact that the state was a pioneer in India in designing and implementing social forestry programmes. The pattern of allocation of refinance for forestry schemes by the Regional Office of NABARD, Ahmedabad and disbursement of credit by these financial institutions for the years, 1991–1992 and 1992–1993 is presented in Table 4. The table reveals that among all the financial institutions offered refinance by NABARD, only a few scheduled commercial banks had disbursed credit for forestry schemes, amounting to only 1.67% of the total credit disbursed by them during 1991–1993. Even after the

sanction of credit, many schemes were abandoned. During 1989–1992, six major wasteland development schemes in Gujarat were sanctioned for refinance by NABARD, but by March 1992, loans had been disbursed to only three of them. According to the officials of NABARD, one of the reasons behind the failure of three plantation schemes to take off was the long gestation period. Besides, the risk and uncertainty associated with income from plantations on degraded lands further discouraged farmers.

Following is an example of a tree planting scheme that did not take off. This was a major project involving the cultivation of *Salvadora persica* on private marginal lands in 275 villages in the Bhal Region of Gujarat. Despite approved refinance of INR 46.27 m by NABARD, the project was abandoned. The scheme was sponsored by a Mumbai based company, engaged in extraction of lauric and myristic fatty acids from the seeds of *Salvadora* for use in the pharmaceutical and chemical industries. *Salvadora* is considered suitable for arid and semi-arid soils and is also drought resistant and salt tolerant. Farmers of the region were expected to raise these trees in collaboration with the company. It is important to note here that the farmers to be involved in this project would not be wage labourers but owners of *Salvadora* plantations on their own lands. The scheme was to be financed by a consortium of nine scheduled commercial banks and was approved in 1991. According to NABARD officials, farmers did not show any interest in raising *Salvadora* trees, as they were not convinced of the projected benefits. It should be stated here that the company did not make any serious effort to educate and involve potential tree growers in the project. Nevertheless, this case highlights the need for financial institutions to streamline their extension services in cooperation with government agencies to increase the disbursement of institutional credit for forestry schemes.

Discussions with the officials of the Mehmedabad Branch of the Agricultural Banking Division of the State Bank of India revealed that the lack of expertise on the part of bank officials was one of the major constraints on the financing of forestry schemes. Such failures and constraints in delivering credit by financial institutions at the grassroots level are also reported in Latin American countries. For example, Weaver (1996) found that in Mexico, rural poor and indigenous people could not make proper use of credit for productive purposes due to their lack of requisite knowledge about banking, and the banks being urban based and urban biased.

To sum up, most of the constraints hampering the progress of disbursement of credit for wasteland development through afforestation may be traced to the state governments and their forest departments. The Government of India has stipulated an enhanced role for NABARD in refinancing development programmes for wastelands. But it is quite evident from our study that its own rigid policies and procedures have thwarted such programmes and are likely to jeopardize various wasteland afforestation schemes in future unless some radical steps are taken by the Government to simplify its rules and regulations and make them tree-grower friendly. If the aforesaid constraints are not overcome, NABARD will not be successful in achieving its mandated targets.

## 5. Some ways forward

Many of the constraints on institutional credit for wasteland afforestation discussed above could be removed/relaxed and existing financial institutions could play a more important role in future. New strategies, formulated by the Government of India and financial institutions, are briefly discussed in the following paragraphs.

### 5.1. *Involvement of NGOs in imparting training*

In view of the constraints in delivering credit at the grassroots level in the last two decades despite a large network of banks, NABARD has recently sought the involvement of selected NGOs to train its officials in forestry and related activities to enhance their capacity to process forestry loan applications. One such NGO is MYRADA, a reputed organization, specializing in creating self-help groups among small farmers to save money and help one another by advancing loans out of their own savings, supplemented by microcredit from participating banks. MYRADA has trained hundreds of NABARD officers in the use of its people-centered and self-reliant model (Uvin et al., 2000). NABARD is currently training officials of other banks in promoting micro-finance through self-help groups and NGOs. The success of NABARD's initiative is borne out by the fact that, with the involvement of 1,200 NGOs, 458,663 self-help groups in India are now linked to different banks, and, as of 31 March 2002, cumulative bank

loans disbursed to self-help groups stood at INR 10,058.10 m (US\$ 210 m).<sup>10</sup> It would be too early to hypothesize whether micro-finance will increase the pace and level of afforestation, but the micro-finance approach definitely seems to have overcome some of the constraints on delivery of institutional credit to forestry. Similar developments have taken place in Costa Rica and Bangladesh.

Costa Rica had also failed to deliver credit under its reforestation loan mechanism. This, it seemed, was mainly due to the scheme being difficult to implement and unpopular with farmers due to strict banking regulations (Morell, 1997). Also, a large proportion of the intended beneficiaries were either not entitled to credit under the legal framework (due to lack of title deeds) or did not want to use their land as collateral in case of failure of the forestry operations (Morell, 1997). The risk of failure was later overcome by the use of an innovative concessional micro-finance programme, supported by Finnish International Development Agency (FINNIDA): the Regional Forestry Programme for Central America (PROCAFOR). This scheme provides group-based loans for forestry related activities to individual farmers, not eligible for credit from traditional loan agencies (Joshi, 1998). PROCAFOR projects are also underway in other Central American countries, such as Nicaragua, Honduras and Guatemala, in collaboration with forestry departments and target groups, communities and grassroot organizations (Mejia and Benitez, 1997). Similarly, the Grameen Bank of Bangladesh is promoting community and private forestry through a concessional micro-finance programme.

### 5.2. *Linking private companies, banks and tree growers*

A number of wood-based industries in India, such as ITC-Bhadrachalam Paperboards Ltd. and Kityply Industries, are filling their needs for wood raw materials through collaborating with farmers, who are provided technical, financial and managerial support to grow trees on their private lands. Such link-ups with wood-based industries assures farmers of a ready-made market. In view of the conservation-oriented forest policies of the Government of India, this type of strategy promises to become a future trend. Financial institutions may well become partners in this type of collaboration to direct credit to farmers for afforestation. A successful example is the collaboration between NABARD and the Western India Match Company, which should be replicated. On its part, the Government of India needs to expedite the proposal of granting long-term leases over degraded forest lands to wood-based industries for growing captive plantations. Currently this proposal is being resisted on ecological and equity grounds, since much of such lands are community commons. Should this type of private-public partnership take off however, this could generate

<sup>10</sup> For further details, see <http://www.nabard.org/roles/mcid/introduction.htm>.

an increased flow of institutional credit for further afforestation activities.

### 5.3. Institutional credit for joint forest management

There is an almost negligible flow of institutional credit for implementing the ongoing joint forest management (JFM) programmes, a successful community forestry programme in India. Most of the JFM funding comes from government sources and donors, and it is mostly available only for a relatively short duration (three to five years) for a particular project area. In many cases, the discontinuity of the funding affects the sustainability of the village level institutions involved. If financial institutions could provide continued credit to village communities to sustain JFM programmes, this would play an important role in rejuvenating degraded forest lands. There are more than 15 m ha of such lands in India, and it has been found that JFM projects are financially viable and bankable (Haque et al., 1998; Balooni, 2003). To this effect, FAO and NABARD have undertaken a study in the state of Andhra Pradesh to assess the technical and financial feasibility of JFM projects under institutional credit. The study revealed that all projects were financially viable.

A serious limitation of such joint ventures, however, is the involvement of several stakeholders and the lack of effective coordination among them. This makes the task of replication of success stories daunting (Haque 1998). Thus, inter-institutional cooperation is a prerequisite for the success of this strategy. According to recent information, NABARD is already considering providing refinance to joint forest management programmes in two districts in Andhra Pradesh.<sup>11</sup>

### 5.4. Compensatory tree plantation

In the context of the global warming phenomenon and given the fact that trees can serve as carbon sinks, afforestation of wastelands has assumed increased importance and a renewed interest in tree plantations has been generated. Developing countries including India have an opportunity to undertake compensatory tree plantations to offset polluting countries and companies. This would draw more investments and hence an opportunity to utilise institutional credit.

### 5.5. New role for promotional agencies

The question may be asked as to whether a promotional organisation is required at the national level to operationalise strategies to enhance channeling of institutional credit for afforestation. The categorical answer is yes. India already has two such governmental agencies: the *National Wastelands Development Board* and the *National Afforestation*

and *Eco-development Board* to facilitate wasteland development through afforestation and other means. In fact, the Swedish International Development Cooperation Agency had suggested way back in 1988 the setting up of a separate apex agency that could be named the 'national forestry credit and development corporation', to ensure an adequate flow of credit for social/farm forestry in India (SIDA, 1988). Fortunately, the Government has recently proposed to set up a Green India Authority and a Green India Fund to afforest 43 m ha of degraded lands over a period of 10 years (Government of India, 2001b). It is hoped that the Green India Authority will bring together various government agencies, NABARD and other financial institutions to channel institutional credit to afforestation projects.

## 6. Conclusion and future implications

India has vast tracts of wastelands, which have been lying barren for ages. The major portion of these lands is physically suitable for growing trees, which is also economically viable but requires massive investment, beyond the means of most of the land owners. The budgetary resources of the Government of India are grossly inadequate to meet the requirement. Therefore, availability of external funds, preferably from institutional sources, is a prerequisite. In the coming years, NABARD and its associated financial institutions need to play an important role in financing afforestation schemes.

The performance of financial institutions, including NABARD, in disbursing credit for forestry schemes has so far been dismal. This raises doubts about their genuine interest in such activities. It is now widely agreed that neither subsidised credit nor directed credit are appropriate instruments for promoting tree plantations by private individuals, in India as well as in other countries (Haltia and Keipi, 1997). Besides, the lack of knowledge about banks and banking procedures among tree growers also prevents them from taking advantage of institutional credit. A possible solution to these linked problems could be the provision of extension education and training. The golden era of farm forestry plantations on private lands in India in the late 1970s and early 1980s, under the auspices of social forestry programmes, was the result of such a strategy. This strategy has also been successful in the case of JFM programmes that are currently underway in India to rehabilitate degraded forests. What is needed to make this strategy more effective is to assign an important role to financial institutions. Involvement of local people and NGOs is also necessary for the success of any massive programme for afforestation of India's wastelands.

Given the constraints in delivering institutional credit for afforestation in India and limited budgetary resources available from the Government for this activity, one is tempted to ask: what can be done to enhance the role of institutional credit in the afforestation of wastelands in

<sup>11</sup> For details, <http://www.ap.nic.in/apforest>.

India? or, what should be the strategies for enhancing the flow of institutional credit for afforestation as an alternative or supplement to Government of India's endeavours? A possible answer is that what is needed is a joint venture of the Government; financial institutions under the leadership of NABARD; national and international donors; private sector companies; NGOs; and grassroots organisations.

### Acknowledgements

This article a revised version of a paper presented at the "International Conference on Bringing Back the Forests: Policies and Practices for Degraded Lands and Forests" held in Kuala Lumpur, Malaysia, 7–10 October 2002, under the auspices of Asia Pacific Association of Forestry Research Institutions, Forest Research Institute Malaysia, Food and Agriculture Organization of the United Nations, and Forestry Research Support Programme for Asia and Pacific. The article is largely based on the research done by the first author for his Ph.D. thesis, 'Financing of Afforestation of Wastelands' submitted to the Department of Economics, Sardar Patel University, Vallabh Vidyanagar, India in 1997. The research work reported here was carried out under the auspices of the Reserve Bank of India (RBI) Endowment Unit at the Institute of Rural Management, Anand (IRMA), under the guidance of the second author, who was then RBI Chair Professor. The authors are thankful to IRMA for financial support and logistics provided for the study. They are also thankful to the Indian Institute of Management, Kozhikode for providing necessary support for preparation of this article. In developing the article, the authors have benefited from the comments of anonymous referees. The authors are grateful to all the reviewers for their valuable comments and suggestions.

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