

# Rebuilding rural India: potential for further investments in forestry and green jobs

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*A moderate increase in funds allocated to forestry under India's National Rural Employment Guarantee Act could revitalize the rural economy and the environment.*

**G**reen jobs are receiving unprecedented attention as signs of a more sustainable economy and a society that conserves the environment for present and future generations (ILO, 2008). The current economic crisis presents unique opportunities for moving towards a greener future by giving a major thrust to the forest sector that will generate employment, create real and durable assets and help rebuild rural India. Unemployment has been a serious problem in India since well before the current crisis, and it is a major cause of political and social unrest. Creating employment could also help resolve societal conflicts.

India is the fourth largest economy in the world by gross domestic product (GDP, measured on a purchasing power parity basis) and has achieved an average annual growth rate of 7.5 percent in GDP in the current decade. However, despite this extraordinary growth, the overall unemployment rate in the formal sector increased from 6.1 percent in 1994 to 8.3 percent in 2005 (Ministry of Finance, 2009). Although job opportunities increased, the labour force grew faster, at a rate of 2.8 percent between 2000 and 2005, leaving about 35 million unemployed as of 2005. The informal sector, lacking social security coverage, constitutes 93 percent of the country's workforce (EPWRF, 2009). The situation is particularly grim in rural areas where 74 percent of India's unemployed population is located. With traditional farming becoming economically less viable, and the recent economic downturn rendering several thousand workers jobless, the condition of rural people has become even worse.

Most of the growth in non-agricultural employment has been in the informal sector and in low-productivity self-employment activities such as petty trade, hotel management and construction. The share of the manufacturing sector has increased only marginally (NSSO, 2008). Many people are unable to find regular employment and must resort to self-employment, which is often precarious and therefore likely to be distress driven (Centre for Science and Environment, 2008). As the current trend of more women seeking jobs continues, the number of unemployed will increase further. To meet the growing demand for additional jobs, the growth in non-agricultural employment would need to accelerate to around 6 percent.

This article analyses the benefits that India could obtain by investing about US\$4 billion in forestry, in terms of employment as well as other social, economic and environmental benefits.

## **IMPACTS OF THE CURRENT ECONOMIC CRISIS**

The economic downturn that began to affect advanced economies in mid-2007 has exacerbated the unemployment situation in India through pernicious feedback loops (Mohan, 2008). The total net capital inflows to India, for example, fell from US\$17.3 billion in the period April to June 2007 to US\$13.2 billion in the same months of 2008. The investment demand has decelerated and the index of industrial production has shown negative growth. The software industry was severely affected, and exports declined as a result. The crisis has particularly slowed down the services sector, India's

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prime growth engine in recent years (Subbarao, 2009). It has also had negative consequences for construction, transport and communication, trade and the hotel and restaurant sector, significantly moderating GDP growth (Mohan, 2008). According to the Indian Labour Ministry, the total employment in eight key sectors of the economy fell from 16.2 million to 15.7 million between September and December 2008. Some trade unions put the number of jobs lost at 2 million. The average earnings of Indians also declined by 3.5 percent during the last quarter of 2008 (*Indian Express*, 2009).

The economic crisis has also led to substantial reverse migration. From the city of Surat alone, for example, it is said that 200 000 to 400 000 workers in the diamond industry have returned to their villages (EPWRF, 2009). Similarly, half of Bangalore's migrant construction workers (about 500 000) left the city in search of employment elsewhere. The job losses were primarily among contractors and low-paid workers in the informal sector. The return of thousands of unemployed workers has had a negative impact on the quality of life in rural areas that were already under severe economic stress. This situation calls for a serious rethinking of rural development priorities and an immediate effort to promote employment opportunities across the country.

### Forest plantations in India

**The area under forest plantations in India is about 32.57 million hectares, which accounts for 17 percent of the global forest plantation area and is the second largest in the world after China. India has the largest share of teak and rosewood plantations in the world. Industrial plantations account for 37 percent of total plantations and play a major part in supplying raw material to wood-based industries (National Forest Commission, 2006).**

### CURRENT FORESTRY SITUATION IN INDIA

#### Resource challenges

India has a forest area of 67.7 million hectares, or 22.8 percent of the country's land area (FAO, 2006). Forestry is the second largest land use after agriculture and accounts for about 1.5 percent of the nation's GDP (World Bank, 2006). A fourth of India's population, or roughly 250 million people, depend on forests either wholly or partially for their livelihoods; of these, residents of the forest fringes, which make up the majority, are among the poorest and most vulnerable groups.

Thanks to afforestation and reforestation efforts, India is one of the only countries in South Asia to have maintained its forest cover in recent years. Yet the country's forests are under tremendous pressure. About 41 percent of the forest is degraded to some extent. About 78 percent of the forest area is subject to heavy grazing, and 50 percent is exposed to wildfires. Shifting cultivation threatens another 10 million hectares (National Forest Commission, 2006). The loss of forests leads to irreversible erosion, reduced soil fertility, diminished water catchment function, downstream flooding, diminished biodiversity and additional rural poverty.

Non-wood forest products (NWFPs) are an important source of livelihoods for millions of forest-dependent people and account for 75 percent of total forest export revenue. Yet as their economic potential has improved, they have become overexploited.

The nation also faces significant deficits in terms of meeting its growing fodder, fuel and timber needs. Forests provide grazing for over 50 percent of India's 500 million livestock, and 175 to 200 million tonnes of green fodder are collected annually. About 75 percent of all forest production in India is fuelwood, mostly collected from natural forests. Forestry is the largest employer in the Indian energy sector, with about 11 mil-

### Forestry imports

**India's forest product imports accounted for US\$1.6 billion in 2001, as compared with exports of US\$94 million. India is the third largest importer of tropical logs, mostly from Malaysia and Indonesia but with increasing supplies from Africa. In 2000–2001, the import value of pulp and paper alone was US\$800 million, and it is projected to reach US\$3.2 billion by 2011 (National Forest Commission, 2006).**

lion people engaged in fuelwood trade (both formally and informally) worth over US\$17 billion. But in 2006, harvested fuelwood exceeded the amount that could sustainably be removed from forests by 139 million metric tonnes (National Forest Commission, 2006).

Almost 33 million hectares of forest plantations were established from 1951 to 1999 (see Box left). Yet wood-based industries are plagued by severe shortage of raw material to meet steeply rising demand. India is a net importer of forest products (see Box above). The deficit in timber supply, which was estimated to be about 39 million cubic metres in 2006, is also partially met from unrecorded removals from natural and planted forests.

#### Forest policy initiatives

The Ministry of Environment and Forests has set a goal of enhancing forest and tree cover to 33 percent of the nation's geographical area. The government spends roughly 4 percent of the national GDP (in nominal terms) towards this end, through the flagship National Afforestation Programme (US\$250 million invested during the tenth Five Year Plan, 2002–2007) and other national initiatives such as the Grants-in-Aid for Greening India scheme and the recently launched Gram Van Yojana to support tree planting on community and non-forest public lands. State governments have also



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**The National Rural Employment Guarantee Act promotes water conservation activities such as the construction of percolation ponds and water harvest channels in forest fringes to recharge groundwater and help local agriculture**

taken up afforestation, reforestation and biodiversity conservation projects.

Participatory forest management is implemented on a large scale through Joint Forest Management, which involves villagers collaborating with government forest departments in forest protection and restoration, in exchange for a share of the products such as NWFPs and small timber. By February 2007, 100 000 local village institutions were managing 22 million hectares of forests.

#### **A KEY RURAL EMPLOYMENT INITIATIVE**

The National Rural Employment Guarantee Act (NREGA) of 2005 legally guarantees 100 days of employment to India's rural population – the first nationwide employment scheme of this kind. The act is significant in three ways: it aims at eradicating acute poverty in villages by ensuring that the poorest of the poor are given sufficient employment; it aids in empowering local governments, as the act's implementation is vested with them; and it supports activities that create productive assets that could potentially make villages self-sustaining. During 2006–2007, more than 100 000 villages implemented the scheme, each spend-

ing on average US\$20 000. Since April 2008, NREGA has been extended to all 596 districts in the country (Ministry of Finance, 2009) and around US\$6 billion is expected to be spent on it annually. As of April 2009, about 45 million workers, half of them women, were provided employment under the act (Ministry of Rural Development, 2009).

Since the main thrust of NREGA is enhancing the natural resource base in rural areas, it is regarded as the world's largest ecological restoration programme (Centre for Science and Environment, 2008). Many villages have already benefited from its support to water conservation programmes – critical in rainfed areas of India, which sustain 40 percent of the nation's population. A good water harvesting structure can aid in growing a supplementary crop, and 1 hectare of irrigation can create additional employment for 2.5 persons.

However, a major challenge currently facing NREGA is the insufficient attention given to the sustainability of the employment opportunities generated. In view of the target-based approach, implementation of the act emphasizes easily executable works such as road building (Centre for Science and Environment, 2008).

#### **POTENTIAL FOR CREATING JOBS IN FORESTRY**

Currently, activities related to tree plantation and drought proofing account for around 8 percent of NREGA funding, but

forestry could be included more fully to help trigger real economic growth. Indeed, the National Forest Commission has recommended a substantial increase in the allocation of funds to forestry and watershed operations, to reach 20 percent of Rural Development Programme funding.

Even a moderate increase in NREGA funds allocated to forestry could easily generate about US\$4 billion in five years. Based on the employment already generated by NREGA, it can be estimated that an investment of this size could create about 1 533 million person-days of employment. If a job is expected to provide 150 to 200 days of employment in a year (since year-round employment is not anticipated in forestry and other rural sectors), this investment could create 8 million to 10 million jobs. And besides NREGA, there are also other regular forestry programmes with a strong focus on employment generation.

Forest activities can be taken up on three types of land as follows.

#### **On areas currently classified as forests**

These forests are typically meant to meet the national conservation objectives and livelihood needs of forest-fringe communities through Joint Forest Management. Natural forests are also important for the continued provision of environmental goods and services.

- **Forest restoration.** Degraded forests need to be substantially restored to improve their productivity. Mainte-



### Forestry as a community enterprise

With just 20 hectares under production, a community could remove up to 5 m<sup>3</sup> per year of sawlogs from a high-quality Sal (*Shorea robusta*) forest and earn annual gross revenues of US\$15 000 (based on an average market price of US\$150 per cubic metre). This would represent an additional income of US\$150 a year if shared among 100 households (World Bank, 2006).

nance operations such as weeding, thinning and tending and regeneration activities such as land preparation, nursery production and planting also employ a large number of people. The areas under Joint Forest Management could particularly benefit from enhanced investments to improve productivity and management. The income from community-managed forests could rise from an estimated US\$222 million in 2004 to approximately US\$2 billion per annum in 2020 (see Box above).

- **Enhanced forest protection and management.** Measures to protect and maintain the existing forest

*Restoration activities such as land preparation, nursery production and planting employ a large number of people – degraded forest in Tamil Nadu in 1997 (left, background) and view of the same forest in 2004 after restoration*



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cover – e.g. fire protection, forest boundary consolidation and creation of infrastructure such as watchtowers – are essential. Systematic forest monitoring and database management are also needed to improve forest planning and management.

- **Biodiversity conservation.** Protected areas and other ecologically sensitive locations need to be systematically managed with additional investments to improve habitat for wildlife, to establish wildlife corridors where necessary and to provide appropriate compensation for damage caused by wildlife to humans and agricultural crops.
- **Watershed rehabilitation.** Forests form critical catchments to many important water systems and as such are of immense value to drought-prone India. In addition, the runoff from forested highlands generates hydropower. Watershed rehabilitation activities such as contour trenching, gully plugging, check dam construction and planting with suitable species are labour intensive.

#### On other public and community lands

Areas in this category include public lands, mangroves and wetlands along the coast, barren areas often classified as wastelands, areas along roads, highways and canal banks, and other institutional areas such as school and office campuses. About 12 million hectares of land in

this category can be made available for tree planting.

- **Biological barriers against natural calamities.** Coastal shelterbelts can mitigate against natural disasters such as tsunamis, which have devastated several areas in India. Biological barriers are also a means of adapting to the adverse effects of global warming. Mangroves and coastal wetlands need enrichment.
- **Urban forestry.** India is urbanizing fast, and urban forests could offer a host of environmental services to city dwellers such as social, aesthetic and microclimate benefits, in addition to mitigating urban pollution.
- **Tree planting on roadsides and other vacant areas.** Increased tree cover on common areas could enhance tree cover for carbon sequestration, promote a conservation ethic among the public and augment local wood, fuel and fodder supplies.

#### On private lands

As economic efficiency and competitiveness become increasingly important, private-sector involvement in wood production is gaining prominence (Nair, 2008). Currently the private forest plantation area in India is just 6 million hectares. To meet the increasing demand for wood and wood products, farmers and private industries need to be engaged in tree growing through farm forestry, agroforestry and large-scale plantation



**Check dams and other water harvest structures to control erosion are labour intensive to construct**

forestry. Appropriate agroforestry models can enhance the nation's forest and tree cover by 5 percent (National Forest Commission, 2006). In southern China, farm forestry contributes as much as 40 percent of farm income (World Bank, 2006). The following areas require particular attention.

- **Wood-based industry.** Additional raw material needs of the pulp and paper sector alone, for example, require tree crops on 1.1 million hectares, which could provide employment to over 0.55 million families (Centre for Science and Environment, 2008).
- **NWFPs.** The domestic market value for forest products of medicinal value is about US\$1 billion, while the global export market value for the same is US\$62 billion. India's current share of the global market, however, is a meagre 0.5 percent, which indicates tremendous potential for the increased cultivation and sustainable production of NWF resources.
- **Bioenergy.** Commercial biomass-based energy is expected to have a significant role in meeting India's growing energy needs. The country has been hard hit in recent years by the increasing prices of fossil fuels, uncertainty in supplies and the envi-

ronmental hazards associated with their consumption. It is necessary to explore suitable species, areas and strategies for raising large-scale energy plantations.

#### **IMPLICATIONS OF THE INVESTMENTS**

The potential benefits of investing in forestry and progressing towards a green economy are manifold. Jobs can be provided for millions of unemployed rural people right at their doorstep. The enhanced resource base could also lead to new enterprises and infrastructure in wood product industries, biorefineries, aromatic oil extraction, etc. Income earned through more jobs could be expected to enhance consumption, which would stimulate production and further employment. The revitalization of villages would also alleviate pressures on cities for employment. Forestry jobs require less capital and other inputs than jobs in other sectors such as information technology. They vary widely in terms of the nature of operations and level of technology, and they are adaptable to local conditions and capacities.

Investing in green jobs would also help achieve the goal of bringing 33 percent of the country's area under green cover, while rendering environmental benefits. A "Green India" was one of the eight priorities identified by the National Action Plan on Climate Change announced by the Prime Minister in June 2008. Pre-

vention of deforestation and degradation and augmenting carbon sequestration will contribute to climate change mitigation efforts. Agroforestry, for example, has the potential to sequester up to 25 tonnes of carbon per hectare per year. Use of bioenergy will contribute to reduced greenhouse gas emissions while reducing India's dependence on imported oil. (Of India's total imports of US\$24.38 billion during September 2008, US\$9 billion were spent on crude oil.) Controlling wildfires would also help to reduce carbon emissions while conserving critical biodiversity.

More importantly, additional livelihood opportunities in forest-fringe villages will mitigate social unrest and civil agitation.

#### **CONCLUSIONS**

Despite the phenomenal economic growth the country has witnessed in recent years, chronic unemployment has become a pervasive feature of rural India. The current economic downturn has worsened the plight of rural people, aggravating loss of livelihoods, poverty and social disturbances. A movement towards a green future, predicated on enhancing the use of renewable resources and mitigating the adverse affects of climate change, could provide impetus to the forest sector, create real and durable assets and help rescue rural India from this crisis.

Complementarity between poverty reduction and meeting critical national

conservation goals makes forestry an excellent means for rural economic growth in India. Increased investment in forestry and its integration in programmes such as NREGA and other economic recovery packages could help revitalize the rural economy.

A moderate increase in NREGA funds allocated to forestry, as recommended by the National Forest Commission, could generate about US\$4 billion in five years. By investing this amount to improve degraded forests, promote agroforestry and enhance the green cover of the country, India could create 8 to 10 million jobs. Besides rendering significant social, economic and environmental benefits, this strategy could also provide better focus and direction to current employment programmes. The timing seems to be right to give forestry a prime place in India's pursuit of more equitable, inclusive and sustainable development. ♦



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