

Creating forestry jobs to boost the economy and build a green future

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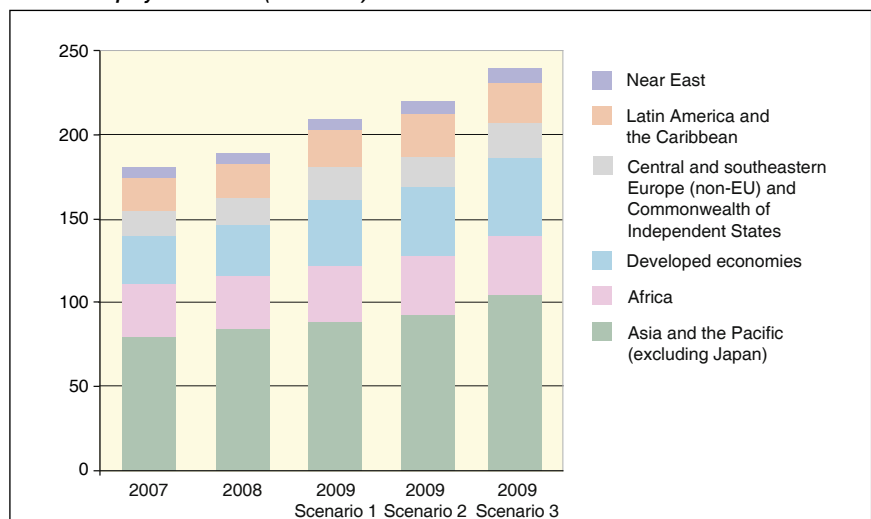
Targeted public investment in forestry could generate about 10 million new jobs around the world.

Starting from early 2008, the world has been witnessing one of the worst economic crises since the Great Depression of the 1930s. Losses in financial markets worth trillions of United States dollars have spread through economies worldwide, leading to reductions in production, employment, incomes and consumer demand. Growth rates of all economies have been revised downwards (UN, 2009). Although as of summer 2009 the decline has slowed and some of the emerging economies are showing signs of recovery thanks to measures adopted

by governments and central banks, there are considerable uncertainties about sustained recovery. Under the most optimistic scenario an upturn in many countries may start in 2010 or 2011, but the possibility of further economic decline and a prolonged, anaemic recovery cannot be completely ruled out.

Major consequences of the economic decline include factory closures on an unprecedented scale, consequent job cuts and a rapid increase in unemployment (Figure 1). Global unemployment, estimated at about 180 million in 2007, is

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World unemployment trends (in millions)



Scenario 1 was generated using the historical relationship between economic growth and vulnerable employment at the country level between 1991 and 2008, together with the International Monetary Fund (IMF) gross domestic product (GDP) growth projections for 2009.

Scenario 2 was generated based on the relationship between economic growth and vulnerable employment during the worst observed economic downturn in each country, applied to the 2009 IMF GDP growth projections.

Scenario 3 was generated by taking the worst observed year-on-year increase in each country's vulnerable employment rate and assuming the same increase would occur simultaneously in all economies in 2009.

Source: ILO, 2009.

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projected to increase to nearly 210 million in 2009, or even as high as 239 million in the worst-case scenario (ILO, 2009). Job losses among migrant workers from developing countries, who are particularly vulnerable, lead to reverse migration to their home countries (often to rural areas), reduced remittances, loss of livelihood and increasing poverty and food insecurity. At the national level, an exodus of unemployed urban workers back to their villages is aggravating rural unemployment and underemployment in many countries.

In the forest sector, the economic downturn presents particular challenges (FAO, 2009). The slump in the construction sector, especially in many developed countries (for example in the United States of America, where annual housing starts declined by about 80 percent between January 2006 and January 2009), led to a drastic reduction in demand for wood products. Production, trade and employment have been scaled down in response to the low demand. Since the construction sector is a major employer

With declining demand for wood and wood products, there is a danger that governments, industries and smallholders could reduce investments in sustainable forest management, putting future wood supplies and environmental services at risk (log barge, Indonesia)

(including for migrant workers), its decline has contributed substantially to increased unemployment. Growing rural unemployment could increase pressure on forests and woodlands, leading to deforestation and degradation. Declining demand for wood and wood products could also reduce investments in sustainable forest management by governments, industries and smallholders, adversely affecting future wood supplies and environmental services.

In response to the economic crisis, a number of governments have initiated economic stimulus packages to bail out financial institutions and to stimulate production and consumption. By early 2009, the total value of the various stimulus packages amounted to over US\$3 trillion (Gallagher, 2009). Employment generation through public works is an important thrust of many of the stimulus packages. An increase in jobs is expected to enhance income, increase consumption and thus stimulate production and further employment, helping to break the downward spiral.

The strategies of a number of countries emphasize movement towards a green future, with the aim of stimulating sectors that will create real assets, improve energy efficiency, increase the use of renewable resources and combat climate

change. Forestry could have a positive role in the economic stabilization efforts, particularly through job creation and the rebuilding of the natural capital base.

FORESTRY IN THE ECONOMIC STIMULUS PACKAGE

Employment generation

Job creation remains the foremost concern for most countries as economies contract and joblessness increases. As the credit squeeze reduces fund availability, much of the focus will be on job creation in sectors with high labour-capital ratios. Forestry's potential for employment generation stems from several factors:

- **Low capital requirements.** With the exception of some forest industries such as pulp and paper and panel products, forestry is labour intensive with relatively low capital investment. Labour and land are the key inputs in the production of wood and non-wood forest products, and environmental services and investments in upstream (primary) forestry activities are able to generate more jobs than most other sectors. An annual outlay of US\$1 million in forest management (including agroforestry) could generate from 500 to 1 000 jobs in many developing countries,



and 20 to 100 in most developed and middle-income countries.

- **Multiplier effect.** Since a major share of a worker's income goes to the purchase of goods and services, mainly at the local level, every one job created in forestry generates an additional 1.5 to 2.5 jobs in the economy.
- **Flexibility and adaptability in diverse situations.** The variety of the tasks required and the levels of technology available offer various employment options. For example, planting could be undertaken as an extremely labour-intensive operation if there are no labour constraints, or it could be partially mechanized depending on the relative costs of labour and other inputs.

There is a long history of job generation through public investments in forestry (see Box). Although the current situation differs from past economic downturns, a number of countries have included job creation in forestry as an integral part of their economic recovery plans – for example Canada, Chile, China (see article by Ma, Liu and Du in this issue), India (see article by Matta), the Republic of Korea and the United States (see article by Kimbell and Brown).

Rebuilding natural assets

Even before the economic crisis, increased reliance on industrial and services sectors for income and employment had to some extent reduced investments in primary sectors, including forestry. Within forestry, wood processing and logging have received the most investments in view of their high returns and short payback periods, while management of forests has received much less attention; this is particularly true for tropical forests and especially where more profitable land-use options are available. An economic boom in the past few years had increased the demand for wood and wood products, resulting in the expansion of wood processing (and to some

Public investments for employment generation in forestry

Employment generation through forestry activities has played an important role in addressing recession in several instances.

The Civilian Conservation Corps (CCC), established in the United States of America in 1933, was one of the most popular programmes of the New Deal providing relief and recovery from the Great Depression. The CCC reforested timberlands, fought forest fires, built public roads and maintained public parks. The assets built during that time have provided a solid base for nature conservation and management in the United States. Several other countries (for example New Zealand) took up reforestation and afforestation work as a strategy for addressing the high level of unemployment during the same period.

Most of the forests in Japan were established as part of the reconstruction programme after the Second World War. During the war these forests were logged heavily. The post-war investments in plantations helped to improve the country's forest cover and at the same time provided substantial employment to local communities.

In India, forestry employment is one focus of the National Rural Employment Guarantee Act (see article by Matta in this issue), launched in 2005. The act guarantees 100 days of employment for all unemployed adult members of a family. Afforestation and drought proofing are integral components. During the period 2006 to 2008, this legislation provided 2.3 billion person-days of work to rural households in a variety of rural asset creating activities, at a cost of US\$6 billion. Recognizing its positive impact, the government has increased the outlay for 2009–2010 to about US\$8 billion.

extent illegal logging), yet there was no concomitant increase in investments in forest management, especially in developing countries.

As industry contracts and demand for wood remains subdued, increased investment in rebuilding the forest asset base starts to make better sense. While forest owners (governments, private owners, enterprises and communities) are likely to scale down their investments in response to declining wood demand, it becomes critical to enhance investments in forest management, especially to ensure that the future supply of products and services is sustained.

Climate change mitigation and adaptation

Employment generation through upstream forestry activities – afforestation, reforestation, improved management of natural forests, conservation, watershed protection, agroforestry, urban forestry, etc. – directly contributes to climate change mitigation and adap-

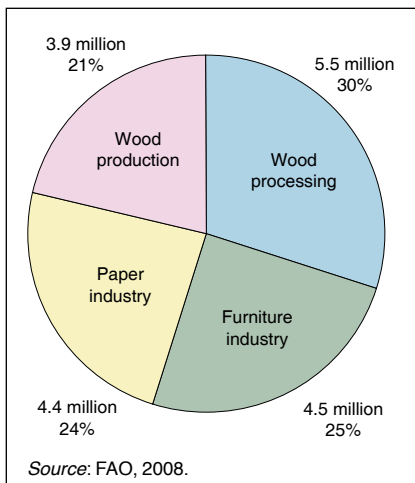
tation. Carbon sequestration by newly planted trees on farms and in forests would help to compensate the emissions from deforestation and degradation. Providing employment in forestry activities would have the double advantage of:

- slowing down deforestation and degradation that would have taken place in the absence of employment;
- augmenting carbon sequestration through increased tree planting and improved management of forests.

Better fuel management would reduce the frequency and intensity of forest fires and consequent carbon emissions. Rebuilding the natural resource base is a major step in moving towards a "green economy".

MORE JOBS IN FORESTRY

Currently the total employment in the formal forestry sector (the officially reported figures for wood production, wood processing, the pulp and paper industry and furniture production) is estimated at about 18.2 million (full-



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Employment in the formal forestry sector

time equivalent) (Figure 2). Although a significant share of the jobs in forestry, especially in developing countries, is in the informal sector, no reliable estimates are available on the extent of such employment. The International Labour Organization (ILO, 2001) has “guess-estimated” that about 63 percent of total forestry employment is in the “invisible sector”, including woodfuel production, for which disaggregated data on formal and informal production are not available, as well as the numerous forestry enterprises in the informal arena. On this basis, total employment in the forest sector could be as high as about 49 million (FAO, 2008).

No disaggregated data on employment in forest management are available. Of the estimated 3.9 million jobs in wood production, most are in logging, i.e. production of industrial roundwood and fuelwood removal, through formal arrangements. Probably not more than one-fourth to one-half of production jobs involve planting and management of forests and woodlands.

Although this employment estimate is not precise, it does indicate the low level of effort given to managing forests sustainably, suggesting substantial scope to scale up activities. Depending on the

specific conditions at the national and local levels, a wide array of job creation projects and programmes could help alleviate the current unemployment problem and at the same time improve the management of land and forest resources, including the creation of new assets (Table). Because most of these activities are seasonal and undertaken over short periods, full-time employment requires a combination of activities. Landowners often have a diverse array of income sources, and forestry could augment income from other sources, especially when these are affected by the economic downturn. For some rural households, even a few days of forestry work could help to increase income and alleviate poverty.

Afforestation and reforestation

Afforestation and reforestation, including reclamation of degraded or desertified lands, offer the greatest scope for job creation, particularly where rural unemployment or underemployment is high and vast tracts of degraded land are available. Land preparation, production of planting material and planting and maintenance, adapted to the spe-

cific local conditions, knowledge and skills, could be important sources of employment. Most countries have substantial experience in afforestation and reforestation and could scale up these activities. Annual plantation establishment (excluding assisted regeneration in semi-natural forests) is about 2.5 million hectares (FAO, 2006). Taking into account the availability of suitable land and the institutional capacity, the rate of establishment of productive and protective plantations could be doubled or tripled annually.

Maintenance and improvement of existing planted forests

The total extent of planted forests in 2006 was estimated as 271 million hectares (more or less equally divided between plantations and semi-natural forests established through assisted natural regeneration). In many countries vast tracts of planted forests have not been maintained properly and investment in their maintenance has been declining. Even routine maintenance operations – weeding, cleaning, thinning and pruning – are often neglected, with negative consequences for productivity. Although

Potential new jobs in sustainable management of forests and level of investment required (annual targets for an initial five-year period)

Activity	New jobs (million, full-time equivalent)	Annual target area (million ha)	Approximate annual outlay (billion US\$)
Afforestation, reforestation and desertification control	4–5	5	8
Improvement of productivity of existing planted forests	0.5–1.0	10	1
Watershed improvement	1–3	1	6
Indigenous forest management	1–2	4	5
Forest conservation	2–3	20	7
Agroforestry	0.5–0.75	2	1
Fire management	1.0–1.25	10	5
Urban and peri-urban forestry	0.1–0.5	0.1	2
Skill improvement of forestry and wood industry workers	0.05		1
Total	10.1–16.5		36

low productivity is often partly due to poor quality of planting stock, regular maintenance operations can improve productivity (or at least prevent further decline) and hold enormous potential for job creation. Increased productivity will also decrease the pressure to expand the plantation area to meet future growth in wood demand.

Watershed improvement

In view of the highly degraded condition of many watersheds and growing concern about declining supply and quality of water, watershed improvement will be a major area of job generation investment in most countries, using techniques appropriate to the specific ecological, social and economic conditions. In addition to afforestation, watershed improvement may involve construction of water and soil conservation structures such as check dams, contour trenches and terraces, which is highly labour intensive. Again, these activities will help improve the natural asset base while generating employment.

Management of natural forests

Natural forests are important for environmental services – e.g. watershed protection, conservation of biodiversity, carbon sequestration – and for wood production (especially in the tropics), although their role in the latter is declining in view of expanding wood supplies from planted forests. Investment in the management of natural forests, however, has been negligible. Vast tracts of logged-over secondary forests remain unmanaged and are becoming degraded, especially in the context of mounting human pressures. In many countries the condition of these forests and their environmental services could be improved through assisted regeneration and “close-to-nature” forest management based on better understanding of ecosystem processes. Sustainably managed secondary forests could also produce high-quality timber for niche markets. Here again there is scope for



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Afforestation and reforestation offer the greatest scope for job creation, particularly where rural unemployment is high and vast tracts of degraded land are available (watering nursery plants for desertification control, Senegal)

the use of traditional knowledge of local communities and the adoption of technologies appropriate to local conditions.

Forest conservation

Despite the increasing demand for environmental services, investment in forest conservation has been limited (see Box, page 8). Conservation activities that could be scaled up include demarcating boundaries of protected areas, maintaining paths and trails, developing recreation sites and establishing nature education and information centres. Employing local community members in such activities could ensure the effective protection of conservation areas. Considering that the world's protected areas extend over about 1.9 billion hectares, even a modest effort to improve accessible areas could provide employment to many thousands of people. As economies recover and income increases, the demand for recreation will increase and the investments in improving the infrastructure and other facilities will be quickly recouped.

Agroforestry

Tree growing has been an integral part of various farming systems providing a wide array of products, including non-wood

While demand for wood remains subdued, attention can be turned to maintenance and improvement of existing planted forests (weed control in a forest plantation, Chile)



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In view of growing concern about water quality and supply, watershed improvement will be a major area for investment in jobs (measuring soil erosion, Thailand)

forest products. In many countries farm-grown trees have become the most important source of wood supply. With secure tenure and expanding local demand, agroforestry can be expanded and existing practices improved. Although this may not generate full-time employment, it will help to reduce poverty of farm households.

Fire management

With the increased severity and frequency of forest fires, attributed partly to climate change but also to failure to implement appropriate fuel management practices, forest fires have become an important source of carbon emissions. Fuel management to reduce the incidence and severity of fires could also increase employment, including for local communities. Activities would depend on the local conditions, but many are labour intensive.

Urban and peri-urban green spaces

With growing urban populations, the demand for urban green space is increasing rapidly. Many city administrations are developing parks and other green spaces to improve the urban environment, yet these efforts could be expanded in many places. Job creation in plan-

ning, establishment and management of urban and peri-urban green spaces could not only provide an antidote to growing urban employment, but also improve urban living conditions.

Skill development of forest and forest industry workers

In many countries forestry and forest industry workers have little or no formal training and insufficient skill levels. The lull in demand for products could be an opportune time for upgrading skills and introducing new technologies. A systematic programme of skill development would require instructors, creating employment opportunities for

qualified hands who would otherwise remain unemployed and be at risk of losing their skills. It could also help save resources and enhance worker safety and eventually income.

Employment opportunities also exist in research and development, for example, in more energy- and material-efficient “green technologies” and organizational management, which may lead to improved forestry practices and competitive advantage. Investment in research and development could alter the nature of forestry jobs in the future.

OVERVIEW OF ANNUAL COSTS

Summing up, the annual outlay for rebuilding the forest asset base, focusing on the activities indicated above, would be approximately US\$36 billion, distributed among activities as shown in the Table on page 6. This could generate about 10 to 16 million jobs, largely depending on local conditions, especially costs of inputs. More jobs can be

Investment in protected area management

The annual expenditure on protected area management in the decade 2000–2010 is estimated as about US\$6.5 billion globally, and most of this is in developed countries. In many countries the expenditure on protected area management has declined. In eastern Africa the outlay on protected area management is less than US\$3 per hectare. According to one estimate of the financing needed for protected area management, US\$45 billion per year would be needed to secure an expanded network of terrestrial and marine protected areas. According to another estimate, protected area management in developing countries alone will require about US\$12 billion to \$13 billion per year over the next decade.

Source: IUCN, 2006.

Fuel management work helps reduce the incidence and severity of forest wildfire, thus lessening carbon emissions (prescribed fire to establish a control line off of a firebreak, United States)



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generated in developing countries where wages are relatively low.

Tomaselli (2006) estimated annual investments in the forest sector to be about US\$64 billion, of which about US\$46 billion go to downstream forest industry and trade, while US\$18 billion go to upstream forest management, establishment of plantations and harvesting – with logging often accounting for a major share of the upstream investment. No disaggregated information is available on the share invested in forest management, nor are there reliable estimates of the costs of sustainable forest management. Tomaselli estimated that sustainable forest management would require an investment of about US\$31 billion per year. Implementation of ini-

tiatives for reducing emissions from deforestation and forest degradation in developing countries (REDD) could be expected to more than double this figure (see Box below).

CONCLUSIONS

Rapidly escalating unemployment and its social and economic consequences are a major concern as countries grapple with the ongoing economic crisis. Sustainable forest management could become an integral component of employment generation efforts and offers some unique advantages in fulfilling a number of economic, social and environmental objectives.

Targeted public investments could generate about 10 million new jobs in afforestation, reforestation, management of natural forests, establishment and management of urban and peri-urban green spaces, improvement of watersheds, protection of forests from fire and building roads, trails and recreation sites.

Such investments could absorb unemployed or recently dismissed workers, increasing their income and consumption and contributing to arresting the downward economic spiral. Most of these jobs would be in rural areas, where they would help raise living standards.

More importantly, such investments could help rebuild natural assets that have been severely depleted in the past. Unemployment and lack of income have been major factors contributing to deforestation and forest degradation in most countries. Employment in sustainable forest management thus has a double benefit: while it builds the natural asset base, it also reduces the deforestation and degradation that often occur when other income-earning opportunities are absent. Based on the current costs of sustainable forest management activities, 10 million jobs could help to establish, restore or improve about 8 to 10 million hectares of forests and woodlands, reversing deforestation and degradation. Such employment would also strengthen the management of protected areas, improve watersheds, create new urban and peri-urban green spaces and reduce the incidence of fire.

The establishment of new forests and woodlands and improved management of existing forests would directly contribute to climate change mitigation and adaptation. Both the reduction in deforestation and the establishment of new planted forests and farm woodlots would improve carbon sequestration and storage. Improved fuel management could

Costs of reducing emissions from deforestation and forest degradation in developing countries (REDD)

The estimated costs of implementing REDD depend on the level of the emission reduction required and the unit cost of CO₂. The annual cost of a 50 percent reduction of emissions from deforestation could be about US\$17 billion to \$33 billion for the period 2005–2030. This estimate includes the up-front capacity-building costs, opportunity costs and protection costs. The profitability of alternative land uses will be a major factor determining the rent that will have to be paid to carbon credit suppliers under REDD.

Source: Eliash, 2008.

reduce the incidence and severity of forest fires, further helping to reduce carbon emissions.

Employment in forestry activities can provide a much-needed “quick-fix”. By rebuilding the natural resource base and enhancing the supply of goods and services, the initial investments will also pave the way for long-term employment. A number of countries have already included forestry as an important component of their current economic stimulus packages, with particular focus on job creation. Stepping up of such efforts by all countries could have positive economic, social and environmental impacts. New jobs will be tailored to the specific conditions in each country, to make the most of local resources and institutional capacities. ♦



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