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An international journal
of forestry and forest
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GREEN JOBS



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Green jobs

In 2009 the world confronts financial and economic crisis. What does it mean for the forest sector, and what can the sector do to respond?

The United Nations Secretary-General, in his report to the Conference on the World Financial and Economic Crisis and Its Impact on Development in June 2009, estimated that global per capita income could drop by 3.7 percent in 2009. Rising unemployment could push hundreds of millions of people into poverty, especially in developing countries.

The crisis has already had dire effects on the forest sector globally, including depressed demand for forest products, industry slowdowns and closures. Reduced investments and budget cutbacks could make it increasingly difficult to obtain financing for forest conservation and management. There is a risk that the crisis could distract attention and funding away from crucial global problems of climate change and environmental degradation.

The resolution adopted by the UN General Assembly at the June conference recognizes that “the response to the crisis presents an opportunity to promote green economy initiatives ... [which] should address sustainable development and environmental challenges and opportunities, including climate change mitigation and adaptation, financing and technology transfer to developing countries and sustainable forest management”.

As part of World Forest Week (16 to 20 March 2009; see page 56), FAO held a special event on “Impacts of Global Economic Turbulence on the Forest Sector”, which explored the opportunities to invest in forest-based job creation. The first five articles in this issue of *Unasylva* are adapted from presentations at that event.

The overview article, by C.T.S. Nair and R. Rutt, asserts that targeted public investment in forestry could generate about 10 million new jobs around the world, and examines the investment costs required.

T. Presas briefly outlines the challenges and opportunities posed by the crisis from the industry point of view. She notes that the recession is likely to alter the structure and business models of the global forest products industry – and that industry should be preparing for these changes now.

A graph-filled article by R. Taylor illustrates concisely how the crisis has hit the wood industry in North America. Taylor traces how the collapse of the housing market was paralleled by a collapse in construction and in wood products markets. He then describes options for industry, forest owners and governments to help the forest sector gain strength from the crisis.

In the United States, early in 2009 the American Recovery and Reinvestment Act authorized US\$1.15 billion for stimulus projects in forestry. A.R. Kimbell and H. Brown describe how

the United States Forest Service is investing these funds in programmes to restore forests and protect them from fire and other threats, to improve recreational facilities and to provide jobs for youth.

In South America, forest industry is an important contributor to gross domestic product (GDP) in several highly forested countries. I. Tomaselli examines the potential for developing forestry’s role in economic renewal in the region, focusing on the contribution of forest plantations to employment.

Turning to Asia and the Pacific, J.R. Matta examines the variety of jobs that could be created in India by increasing the allotment of funds to forestry under the National Rural Employment Guarantee Act, which guarantees 100 days of employment to India’s rural population. Such investment would also help to meet national afforestation goals.

J.L. Atienza, Jr briefly describes the Upland Development Program in the Philippines, introduced in 2009 to cushion the impact of the global financial crisis, mitigate hunger and enhance adaptation to climate change. The programme will create thousands of jobs in restoring forests and watersheds, and is also linked to programmes providing support for small-scale forest enterprise.

In China, the global financial crisis has already put the brakes on the forestry sector’s extremely rapid growth of recent years. Decreased demand for forest products has resulted in industry slowdowns and closures, with small and medium-sized wood-processing enterprises hit hardest. Q. Ma, J. Liu and W. Du analyse the policy adopted by the government to stimulate investment in the forest sector, expand domestic demand and create a favourable environment for enterprise.

The crisis has also taken a heavy toll in Africa, with reduced demand from importing countries forcing companies to close concessions and lay off workers. Such crises accentuate the dependence of rural communities on non-wood forest products (NWFPs) for self-employment, income and sustenance. J.C. Tieguhong *et al.* describe the development of a legal framework for commercial use of NWFPs in Central Africa, to safeguard people’s rights of access and to avoid possible negative impacts from intensified use of the forest.

Finally, R.N. Heath and S. Chipeta outline crisis response measures proposed in South Africa, including accelerated implementation of labour-intensive programmes in rehabilitating degraded woodlands, controlling invasive species and managing fire. The authors stress that measures to safeguard domestic industries and jobs must not unintentionally jeopardize growth in other countries and in the world economy.

Whether sooner or later, this crisis will pass. But the messages of this *Unasylva* issue will remain pertinent. With strategic investment, forestry can contribute much to employment, to livelihood support, to environmental renewal and to climate change mitigation and adaptation.

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

C.T.S. Nair and R. Rutt

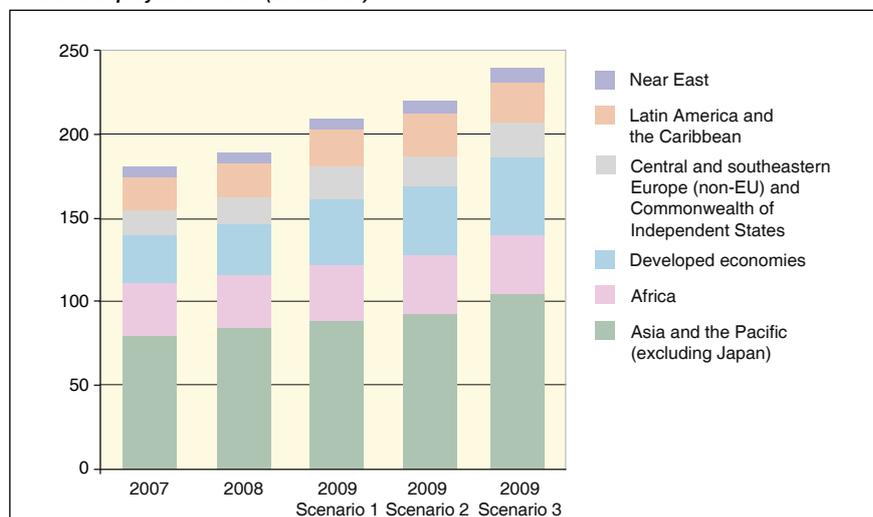
Targeted public investment in forestry could generate about 10 million new jobs around the world.

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

1
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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This article was developed from a background paper prepared for the special event "Impacts of Global Economic Turbulence on the Forest Sector" at the nineteenth session of the FAO Committee on Forestry, Rome, 20 March 2009.

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-

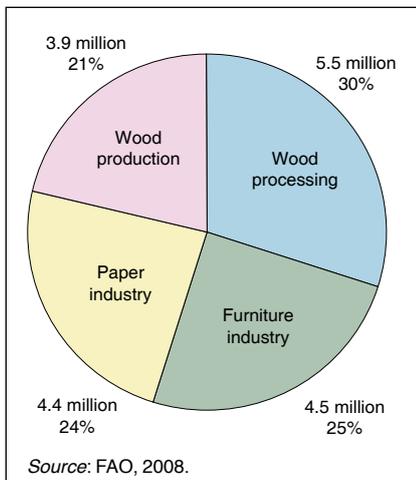
tation. Carbon sequestration by newly planted trees on farms and in forests would help to compensate the emissions from deforestation and degradation. Providing employment in forestry activities would have the double advantage of:

- 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-



2
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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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

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)

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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Financial meltdown and the future of the forest products industry

T. Presas

Some observations on the challenges and opportunities presented by the financial crisis – an industry viewpoint.

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From a presentation to the special event “Impacts of Global Economic Turbulence on the Forest Sector” at the nineteenth session of the FAO Committee on Forestry, Rome, 20 March 2009.

The perfect storm seems to be upon the world. The forest industries are not sheltered from it; they are only too aware of it. But the current recession creates opportunities as well as threats for the forest product industries.

In 2008, the World Bank forecasted that by 2030, global gross domestic product (GDP) could more than double to US\$73 trillion, largely as a result of economic growth in developing nations. Such economic growth would have translated into extra demand for forest products. But given the current situation, that growth will most probably be delayed.

The effects are already evident. From October 2008 to March 2009, demand for wood and paper products declined profoundly. New housing starts and home repairs have dropped. Paper markets are suffering from a drop in advertising and the reduced production of many newspapers and magazines. With trade slowed, less packaging is needed.

Curtailement in the forest products sector is evident around the world, especially in rural areas, where the sector is often one of the only employers.

Cutbacks in manufacturing of all kinds of products across all sectors could mean the return of workers to rural areas. In some parts of the world the result could be increased attention to sustainable forest management, particularly by small forest owners. In other parts of the world, however, reverse migration could result in increased smallholder agriculture on forest land.

A time for change

As dramatic as the current situation may sound, this is also the moment for industry

With curtailment in the forest products sector evident around the world, now is a time for industry to focus on efficiency, for better positioning when the crisis ends (wood industry workers, Egypt, Bolivia, Gabon)

to restructure, focusing on efficiency across all aspects of operations – from raw material mobilization to product design to production – and ensuring the right products for the market. The crisis will be over one day, and when that happens, the most efficient players will still be in the game.

Temporary unemployment is an occasion for governments to work with industry to invest in training and education to prepare the workforce for the future. The industry needs skilled people and knowledgeable employees.

One forecast that is not likely to prove wrong is the projected increase of the Earth’s population by 1 billion every 15 years. Population growth has typically been one of the primary drivers of demand for forest products. Although that link is likely to be less linear than it has been in the past, with economic recovery a rapid expansion of demand for forest products can be expected in the future, particularly for tissue, packaging and solid wood.

Challenge of competition for land

As food demand grows, more land is being turned over to agriculture. This trend is intensified by the increasing demand for agricultural land to produce energy crops (such as corn or sugar cane for ethanol, or soybean for biodiesel), often driven by government

policies to increase the supply of renewable energy to mitigate climate change and ensure energy supplies.

Competition between food demand and energy demand puts increasing pressure on land use. In many regions forest land is also suitable for agriculture or energy crops. In New Zealand, for example, expansion of agriculture has resulted in a net decrease in forest cover over the past three years, reversing the previously established trend of steady increase in forest land.

Competition for land may provide strong incentives to increase productivity on the existing land base. The comparative advantage in wood production is already shifting back to regions where land is abundant or relatively unattractive for other uses, such as large South American countries (e.g. Chile) and northern boreal forest regions.

Opportunities in bioenergy

Climate change and energy security priorities will continue to drive innovation in the forest products sector as industries seek to increase the use of bioenergy in production processes and to find other ways of reducing energy consumption and CO₂ emissions. Governments around the world are putting incentives in place to expand bioenergy production, exploring ways to make better use of forest waste, to mobilize more wood in a sustainable way and in some cases to develop direct forest-to-fuel bioenergy products (whether through fuelwood or biomass plantations or through biorefineries to create ethanol from cellulose). The promise of cellulosic ethanol with its high fuel efficiency has yet to be realized in a commercial setting, but governments and industry will continue to invest in the development of the needed technology.

This is a huge opportunity for the forest products sector, provided there is enough access to raw material for different uses – and provided the sector is able to drive the process and not leave it to the energy or chemical companies. The sector is in a good position to take the lead, having knowledge of the material, the infrastructure to move around large volumes of wood, a tradition of sourcing from a multitude of small suppliers

and an existing use of biomass-based energy as some of the sector's major assets.

Climate change concerns

Actions to minimize the effects of climate change are being implemented in an uneven way around the world. Companies operating in countries with strong climate change policies (e.g. in the European Union) are subject to extra taxation and thus disadvantaged from a cost perspective. There is also a risk that some countries or regions may attempt to counterbalance this disadvantage with protectionist trade measures.

It is imperative that the successor to the Kyoto Protocol be transparent and equitable at the global level to ensure that companies operating in each of the major trading areas are subject to the same rules.

There is a risk that the current economic situation could slow down the pace of efforts to regulate climate change. Public priority has shifted to the economy, and short-term risks to economic well-being and employment may not be tolerated. A global climate change agreement rests on financing, as does reversing deforestation and forest degradation. Under today's conditions, the billions of dollars needed for these are competing with national recovery plans.

Growing public consciousness of climate change could have a positive impact on demand for forest products, as their low lifetime carbon footprint relative to alternative materials becomes more widely recognized. Public recognition is needed of the fact that harvesting trees does not add to CO₂ emissions – that the carbon remains stored in harvested wood products. Increasingly, sustainable forest management certification is seen by buyers as a minimum requirement to ensure that products have been produced sustainably. Forest land may become more valued for its environmental services such as biodiversity and carbon storage, and as a source of renewable fuel.

New impetus for sustainability

The global recession might provide an opportunity to reinforce the concept of sustainability in the economy. World leaders have a

challenging time ahead. They must develop policies that not only create jobs and stimulate economic growth, but also reduce carbon emissions and achieve energy independence. In many countries, the huge plans announced to address the economic situation will provide the forest sector with great opportunities. The Republic of Korea has announced a Green New Deal plan to invest US\$38 billion over the next four years to create almost 1 million jobs. Japan has plans to expand its green business sector to US\$1 trillion by 2020, creating 800 000 new jobs. China has allocated around a third of its US\$580 billion recovery plan to green measures. The Canadian Government is investing US\$170 million to build up green innovation and green products. Apart from the Canadian example not all of these investments are in forests, but many can be.

Investments, environmental values, public behaviour, new business opportunities – all these will help society survive today's perfect storm. The forest industries are in a better position than most. The sector already focuses on the sustainability dimension and on enabling climate change mitigation. The economics of sustainability as a key asset of the sector must be proved at a large scale as reliance on renewable energy increases and carbon neutrality becomes more imperative.

It is likely that the global recession will alter the structure of the global forest products industry and bring about different business models. Now is the time to prepare for these changes and to undertake the reforms that are needed, at both the business and policy levels.

Crisis in the wood products industry and markets: perspectives from North America

R. Taylor

The collapse of the housing market and the economy has hit the North American forestry sector hard, but industry, forest owners and governments have options for helping the sector gain strength from the crisis.

The recent collapse of the housing and wood products markets in the United States of America was the outcome of years of easy credit (subprime mortgages), lack of lending discipline (greed), underqualification of home buyers for loans and overbuilding of homes, all of which led to a credit crunch (Figure 1). The net result was a collapse of finance and the economy in the United States, which eventually transformed into a global collapse.

Consequences for the forest and wood products sector in North America have included industry cutbacks, unemployment, drops in production, trade slowdowns and loss of consumer confidence. This article traces the impacts (summarized in the Box) and identifies some initiatives and opportunities for enabling the sector to survive the crisis and emerge stronger.

Evolution of a crisis



Collapse in the United States housing market and construction sector has led to decreased production, cutbacks and unemployment in the wood products industry (homebuilders, Seattle, Washington, United States)

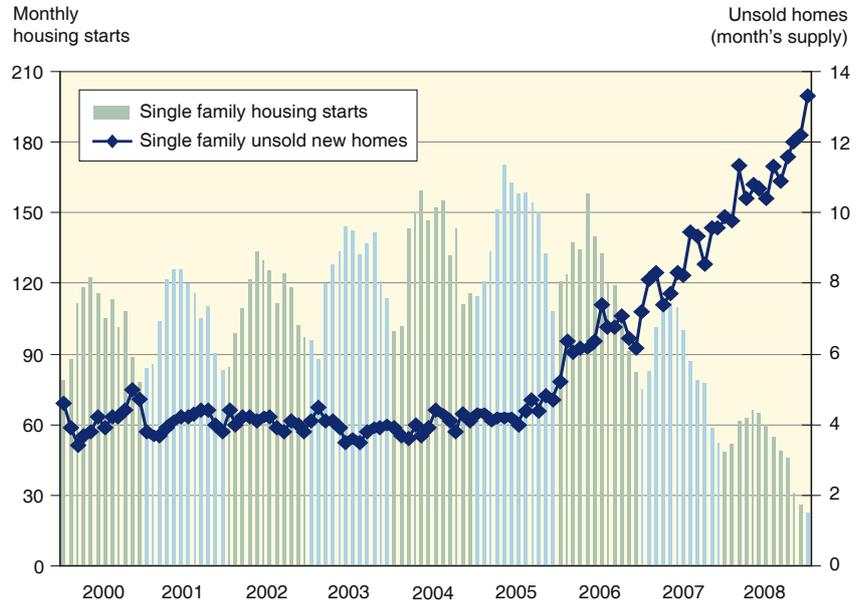


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This article was developed from a presentation at the special event "Impacts of Global Economic Turbulence on the Forest Sector" at the nineteenth session of the FAO Committee on Forestry, Rome, 20 March 2009.

1
Collapse of the housing market

**After overbuilding,
housing starts collapsed**

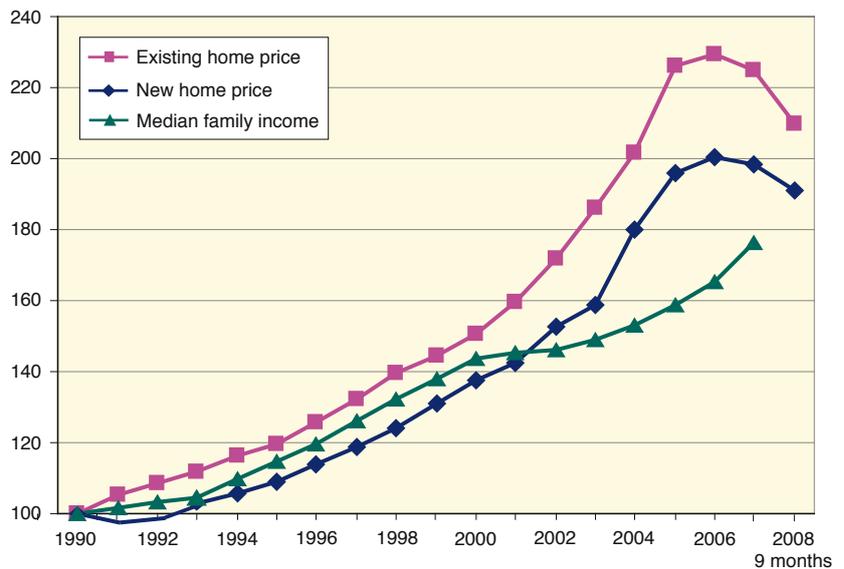


Source: United States Census Bureau, 2009.

Subprime mortgages created too many unqualified buyers.

**Home prices became too
high relative to owners'
ability to pay**

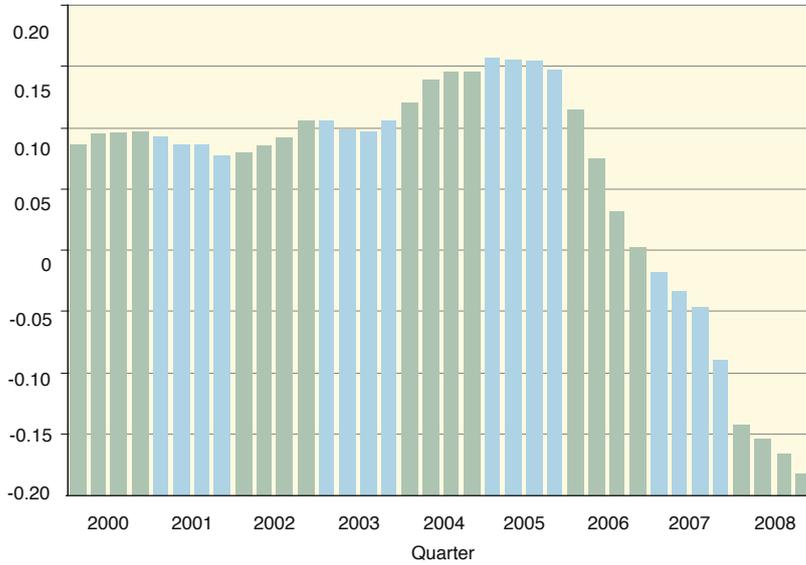
Income and price set to
index of 100 in 1990



Source: National Association of Home Builders, 2009a; National Association of Realtors, 2009.

**Housing prices dropped;
rate of price changes
peaked much earlier than
housing starts**

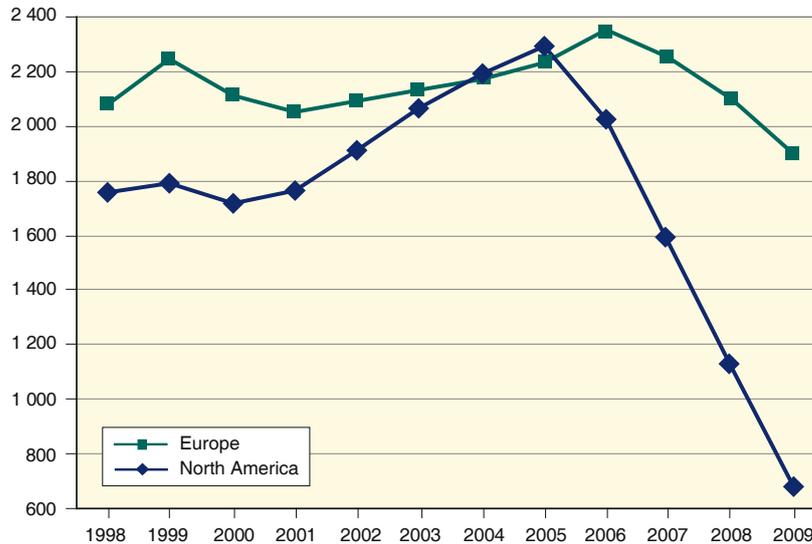
Case Shiller Home Price Index (existing homes)
(% change, year over year)



Source: Standard & Poor's Financial Services, 2009.

**Housing starts in North
America plunge; Europe
also in trouble**

Total housing starts
(1 000 units)



Source: Canada Mortgage and Housing Corporation, 2009; Euroconstruct, 2009; National Association of Home Builders, 2009a.

CRISIS IMPACTS

Housing and the economy

The collapse of the United States housing market has had the following impacts.

- **Deteriorating economy.** Gross domestic product (GDP) dropped 3.8 percent in the fourth quarter of 2008, reaching its lowest level since 1982. Housing directly contributed -0.85 percent to GDP in that quarter.
- **Declining house prices.** Existing homes for sale had a median sale price of US\$170 300, a 14.8 percent decline from January 2008, and the lowest since March 2003.
- **Improving housing affordability index.** For first-time buyers, affordability has improved substantially. As housing prices fall, mortgage rates remain at near all-time lows, and the United States Government's stimulus package features a first-time home buyer tax credit. Nationwide housing affordability surged at year-end 2008 to its highest level in at least five years (National Association of Home Builders, 2009a).

Wood products industry

In the United States, production cut-backs and consumption declines have been significant in nearly every segment of the wood products industry through mid-2009 (Figure 2):

- softwood timber demand is down 50 percent since 2005;
- hardwood timber is down more than 35 percent;
- structural panels are down 37 percent since 2005;
- engineered wood products are down 30 percent.

In Canada, the forest, paper and packaging industries are seeing extremely

poor financial results from the recession (Table). The Conference Board of Canada (2009) predicts that the forest products industry in Canada will lose another US\$675 million to US\$1 billion dollars in 2009.

Canadian exports are down dramatically, as the United States is its major trading partner in forest products.

Labour market: workers hit hard

In the United States, from January 2006 to February 2009, job losses in wood products manufacturing totalled 126 000 – or 22 percent of the total industry employment (United States Bureau of Labor Statistics, 2009). The job market for non-farm workers continued to worsen after the United States economy lost 651 000 jobs in February 2009 alone. More than 600 000 workers filed claims for jobless benefits in February 2009, the worst performance since 1982. The unemployment rate jumped to a 25-year high of 8.1 percent and could be headed to 10 percent before a correction occurs (Figure 3).

In the state of Arkansas, employment in the timber industry has fallen to 32 000 in 2008 as compared with 44 000 ten years ago, a decline of 25 percent. In Montana, there were 2 726 production workers employed at sawmills in the fourth quarter of 2008, down 20 percent from 2005, and wages were down 17 percent over the same period.

In Canada, forest industry in the province of British Columbia has had some 20 000 layoffs since its peak in 2004, losing 20 percent of its total employees.

Consumers and builders

The biggest drop in wealth on record has shaken Americans as home and stock values plunge, raising the risk that spend-

ing will again tumble after stabilizing in the first months of 2009.

In March 2009, consumer confidence among United States consumers was near a 28-year low, reflecting mounting job losses and a deepening recession. Builder confidence in the market for newly built single-family homes remained just above its all-time low as economic woes continued to take their toll on potential buyers (National Association of Home Builders, 2009b). The index held steady at a reading of 9 in March, marking the fifth consecutive month of single-digit readings; the low was 8.5 in December 2008.

ISSUES, OPTIONS AND OPPORTUNITIES

It is clear that the United States economy, housing sector and forest industry are in trouble. The situation is bad, and it will probably get worse. However, a number of circumstances and initiatives could create opportunities in the forest and wood products sector.

Short-term options for industry

Options for industry are limited in the short term. The inevitable choice is to reduce timber harvests and let the wood grow. This is a time for cutting output, shutting down excess capacity, cutting costs, conserving cash, reducing lead times and shrinking inventory.

New export markets could be explored, such as the European Union, Brazil, China, India, the Russian Federation and Near Eastern countries. However, as they are also in a downturn, the key to success will be to take advantage of favourable currency exchange rates and shipping rates where possible.

The time is right for diversifying into new products. The recession provides an opportunity to explore options for wood-based biofuels, other "green" products, niche or specialty products and non-housing wood products.

Industries would do well to reposition themselves in the supply chain,

Net earnings of forest, paper and packaging industries

| Year | Western Canada | | Eastern Canada | | Canada | |
|------|-----------------|----------------|-----------------|----------------|-----------------|----------------|
| | (million Can\$) | (million US\$) | (million Can\$) | (million US\$) | (million Can\$) | (million US\$) |
| 2007 | -386 | -350 | -106 | -95 | -492 | -445 |
| 2008 | -641 | -580 | -954 | -870 | -1 595 | -1 450 |

Source: PricewaterhouseCoopers, 2009.



BIGWOOD.ORG/1479027/S. KATOVICH. UNITED STATES FOREST SERVICE

Options for industry are limited in the short term – the inevitable choice is to reduce timber harvests and let the wood grow (Pinus strobus forest, United States)

shortening their distance from the end of the chain. They would be advised to strengthen their relationships with core customers.

In brief, industries can take advantage of the slowdown to re-engineer their markets, their products, their business and their staffing.

Forest owner options

Forest owners could take the opportunity to invest in long-term productivity and sustainability of forest lands. As asset prices reach bottom, some good values are expected in the acquisition of forest land. Now would be a good time to invest in silviculture and forest rehabilitation.

Companies must correctly position themselves to take advantage of new markets, for example in biofuels, green building and climate change mitigation. Forest certification is a form of long-term market positioning. Forest owners could take advantage of growing opportunities in carbon trading.

Forest owners should be selective in their acquisitions or investments, and time them carefully.

In these uncertain times, it is important to guard against illegal logging in poor business cycles, as there will be more temptation to engage in illicit trade.

Government initiatives

Canada. The Bank of Canada (Canada's central bank) has cut its interest rate to 0.5 percent, the lowest in history. This is down 4 percent since December 2007. The Job Opportunities Program, a US\$24 million initiative funded by the Government of Canada and the Province of British Columbia, will help to support British Columbia's forest workers and their families to reduce the impact of current layoffs.

The Federal Home Renovation Program provides a tax credit of 10 percent on approved projects.

Changes to British Columbia's build-

ing code, which previously limited the construction of residential wood structures to four storeys, will now permit them to rise to six storeys, encouraging more wood consumption.

The 2009–2010 budget of the Province of New Brunswick, published in March 2009, proposes silviculture projects in addition to tax cuts, investment credits and energy rebates (Province of New Brunswick, 2009).

The Canadian Government is funding silviculture and research and development programmes and wood products market development initiatives. And further initiatives are expected.

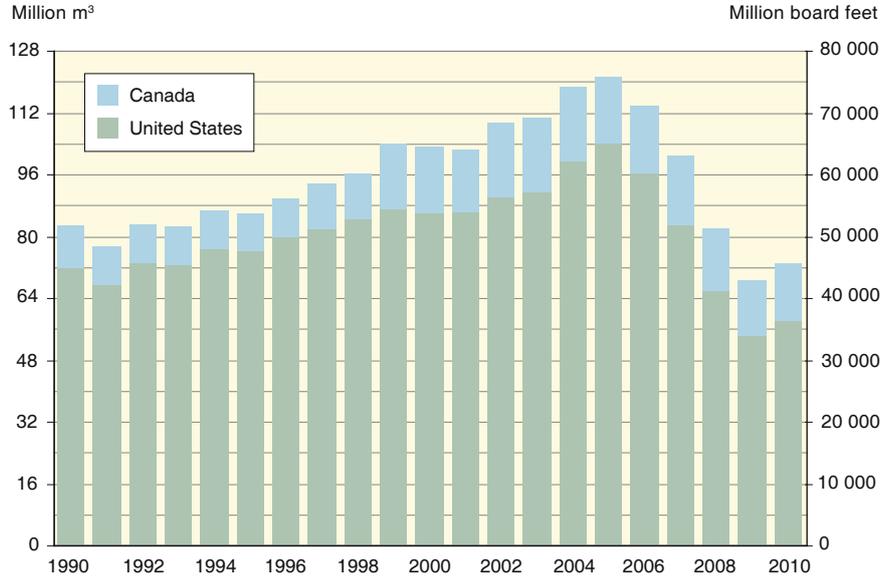
British Columbia's building code has limited the construction of residential wood structures to four storeys but will now permit them to rise to six storeys, encouraging more wood consumption (wood construction, Vancouver, British Columbia, Canada)



G. DUBREIL

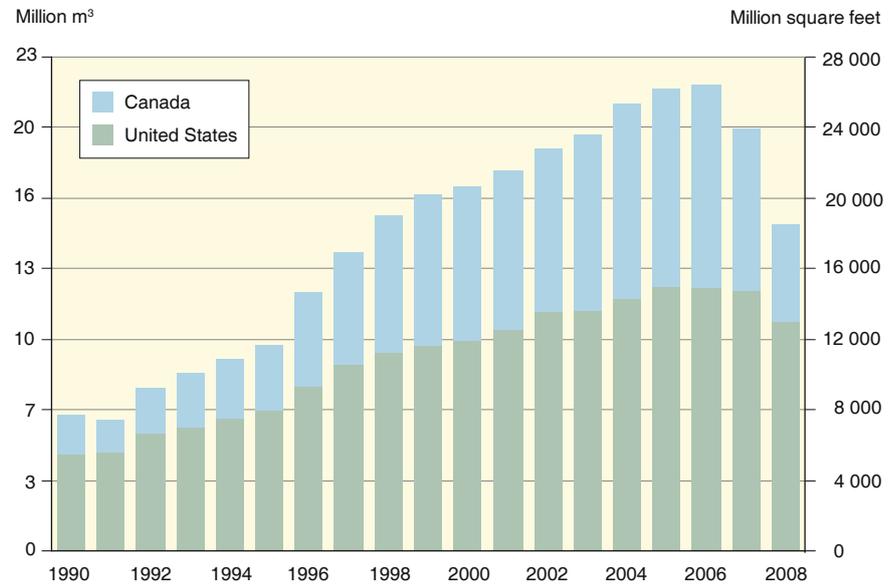
2
Impact of drop in housing demand on wood products sector

Sawnwood consumption collapses by 50 percent in the United States; eroding in Canada



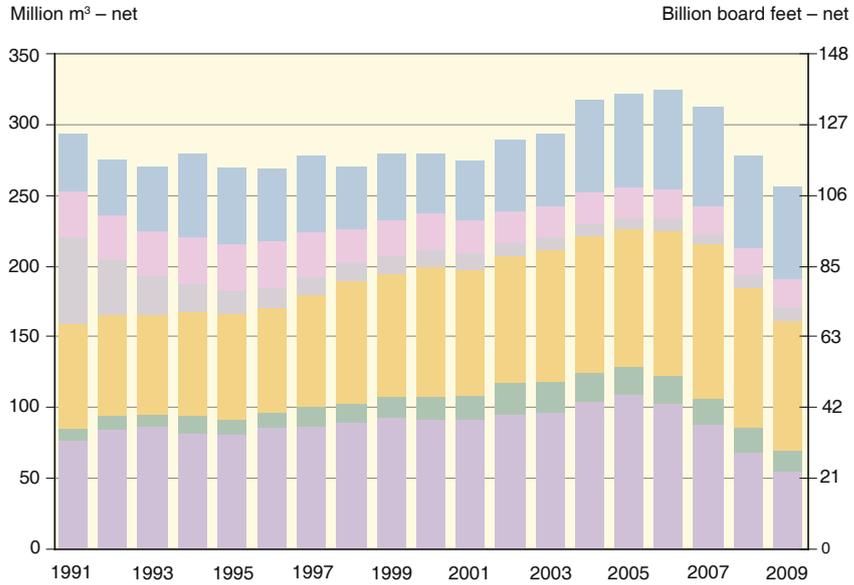
Source: Council of Forest Industries, 2009; Western Wood Products Association, 2009. Forecast for 2009 and 2010, International Wood Markets Group, 2009.

Oriented strand board (OSB) production down, especially in Canada



Source: International Wood Markets Group, 2009.

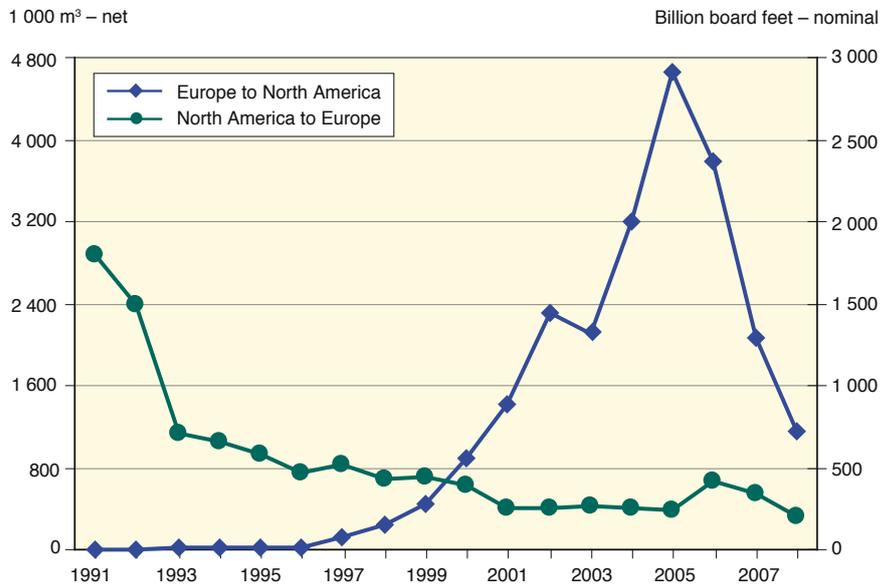
Global sawnwood consumption down and expected to fall further in 2009



Source: International Wood Markets Group, 2009; FAO, 2009.

Early reports indicate a bigger decline for Europe in 2009 than shown.

More slowdowns in sawn softwood exports between North America and Europe

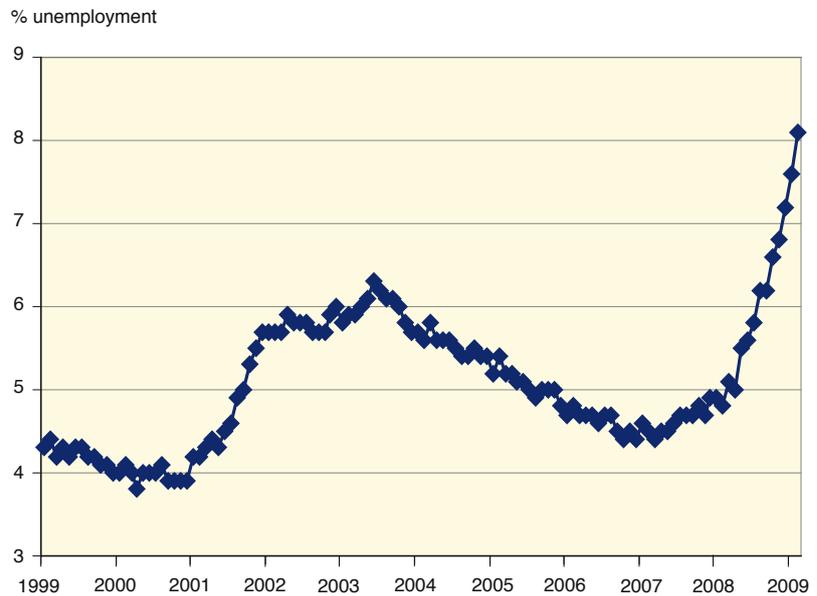


Source: USDA Foreign Agricultural Service, 2009; International Wood Markets Group, 2009.

Weak demand and low prices are problematic for exporters.

3 Impact on the labour market

Soaring unemployment in the United States: heading for 10 percent



Source: United States Bureau of Labor Statistics, 2009.

United States. The President's US\$275 billion Homeowner Affordability and Stability Plan aims to support between 7 million and 9 million existing homeowners who might otherwise be at risk of foreclosure. Slowing the rate of foreclosures is intended to stabilize housing prices, which in turn should benefit all homeowners, encourage qualified buyers to enter the market and give homebuilders enough confidence to buy upward. The plan has three main components:

- supporting homeowners who are current with their payments but cannot refinance;
- supporting "at-risk" homeowners who are current on their payments but are at imminent risk of default;
- boosting credit availability for all mortgages by allocating an additional US\$200 billion.

The Troubled Asset Relief Program is a bail-out programme through which the

government agreed to buy mortgages and other assets from financial institutions. It has encouraged banks to lend among themselves again, but it has done little to unfreeze consumer credit markets or to resolve how to renegotiate the estimated US\$2 trillion of toxic mortgages that need to be discounted or written off.

The United States economic stimulus package includes expanded tax credits for energy-efficient home improvements. The idea is to put more money in consumers' pockets by providing financial incentives for homeowners to "go green". However, this part of the programme is not expected to have a great impact, since it is not yet a priority in the eyes of consumers.

Here, too, more initiatives are expected.

Government initiatives and forests

Forestry is especially well placed to contribute to economic renewal and could create many, many jobs. Unemployed workers

can be put to work to establish plantations or improve forests, increasing their value. Labour is the biggest cost component. Initiatives that involve improvements to forest land can range from silviculture to salvage to reclamation.

The United States industry can position itself to take advantage of the coming economic stimulus, including extension of unemployment benefits and green energy investments, by expanding investment in forests with worker programmes.

Funded programmes could grow the market by increasing wood consumption to displace competing materials.

The obvious short-term benefit is in putting people back to work. The obvious long-term benefits include raising the productivity of forest land, sequestering carbon, maintaining wildlife, clean air, clean water and other environmental benefits, while improving economic well being.

Non-farm payrolls in the United States plunge



Source: United States Bureau of Labor Statistics, 2009.

A fundamental question, however, is what is the real cost of government funded or make-work programmes for forestry. It is necessary to ascertain that the social benefits outweigh the net financial costs.

SUMMARY

The key to a stronger United States economy is strengthening of banking and credit markets, which will not occur until housing prices stabilize. A key question is whether the latest stimulus package (including the Homeowner Affordability and Stability Plan) will help bring about this stability. If it stabilizes prices at an artificial level, then the stability will probably not last. It is likely that the situation for United States housing and wood products will get worse before it gets better in 2010. It is still early in North America for a real plan. But in the meantime, the forest sector has a role:

- in making the most of the unemployed, through work programmes;
- in providing a solution for climate change and reducing greenhouse gas emissions;
- in opportunities for bioenergy. ♦



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Restoring hope: the United States Forest Service's economic recovery programme

A.R. Kimbell and H. Brown

To ease the burden of recession, the United States of America is investing in projects that restore and protect forests, improve recreational facilities and put young people to work.

In 2008, the United States of America plunged into what some have called its worst economic crisis since the 1930s (Elliott, 2008; Hilsenrath, Serena and Paletta, 2008). A financial crisis beginning in 2007 triggered a deepening recession in 2008–2009 as lenders lost confidence in borrowers' ability to repay. Major financial institutions tottered at the brink of ruin, and some entirely failed. With credit markets frozen, pillars of the United States economy such as the auto industry struggled to survive.

From January 2008 to January 2009, most economic indicators plummeted, from wholesale trade (down 15.4 percent), to new construction (down 9.1 percent), to new housing starts (down 56.3 percent), to retail trade and food services (down 9.7 percent) (United States Census Bureau, 2009). Stock markets plunged, losing up to 40 percent of their value; in early 2009, the Dow Jones industrial average reached its lowest level since 1997. From October 2008 to March 2009, the United States economy lost more than 3.7 million jobs (Bureau of Labor Statistics, 2009), raising the level of unemployment to 8.5 percent, the highest since 1983. Many people lost their homes; by December 2008, almost 12 percent of United States mortgages were delinquent or in foreclosure (OECD, 2009).

In February 2009, hope-inducing signs of recovery appeared. Manufacturers' shipments, inventories and orders, after six consecutive monthly declines, rose by 1.8 percent (United States Census Bureau, 2009); new housing starts climbed by 17.2 percent and new home sales by 8.2 percent. In March, how-

ever, housing starts fell again, as did new home sales; yet major banks such as Wells Fargo recorded profits for the first quarter of 2009. Nevertheless, even a recovering economy will continue to shed jobs until demand for labour catches up. Some economists foresee unemployment rates climbing into the double digits by 2010 (Clark, 2009).

What can the United States Forest Service do to help?

OPPORTUNITIES FOR STIMULUS PROJECTS

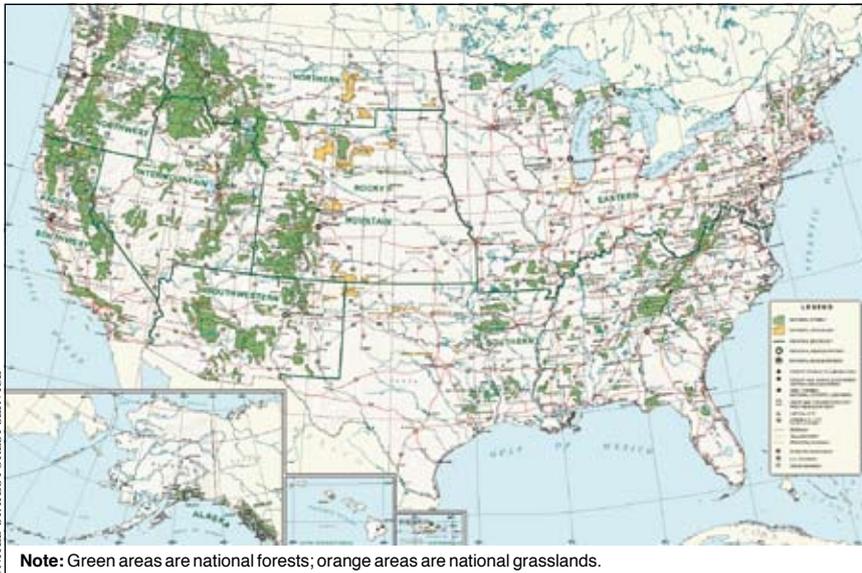
The mission of the United States Forest Service is to sustain the health, diversity and productivity of the nation's forests and grasslands to meet the needs of present and future generations. The agency fulfills its mission through public land management, conservation-related research and extension services for private forest landowners. All three areas hold promise for creating jobs and stimulating local economies.

The Forest Service manages a system of national forests and grasslands covering 77 million hectares, about 8 percent of the United States land area (Map). These public lands are spread across 43 of the nation's 56 states and territories, from Alaska to Puerto Rico. With almost 29 000 full-time employees, the Forest Service already provides some of the best, most dependable rural jobs in the United States. Many of the communities most affected by the economic downturn are located near national forests and grasslands, and agency employees are woven into the community fabric; they know local needs, and they have the local capacity to provide project planning,

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United States National Forest System

training, employment, equipment and logistical support.

Forest Service researchers work closely with national forest managers to plan fuels and forest health treatments for landscapes beleaguered by such growing threats as invasive species, pest and disease infestations and uncharacteristically severe wildfires, all exacerbated by climate change. Researchers also monitor project results and seek more efficient and cost-effective ways to convert removed biomass into energy, partly to offset fossil fuel use. Such research and monitoring needs and activities might translate into stimulus jobs.

Agency extension programmes might also contribute. From its inception in 1905, the Forest Service has worked closely with states and private forest landowners to improve forest health nationwide. About 57 percent of forest lands in the United States are privately owned, primarily by small non-industrial private landowners. The agency has provided them with financial support and technical assistance through the states, each of which is responsible for regulating commercial forestry and private forest use within its own borders. The Forest Service has also worked with

federal, state and local partners to forge a highly effective interagency system of wildland fire management. In addition, municipalities across the United States manage about 28 million hectares of urban forests. The Forest Service works with municipal governments nationwide to protect and restore neighbourhood trees and parks.

The opportunities to provide new jobs and stimulate the economy are vast. The National Forest System alone has a deficit in deferred capital maintenance of more than US\$5.1 billion for roads, bridges, trails, campgrounds and other facilities in need of repair (USFS, 2008). Although forests in the United States are generally on a path towards sustainability (USFS, 2004), many require treatment. A 2002 study, for example, found that about 159 million hectares nationwide were at moderate to high risk of especially severe wildfires (Schmidt *et al.*, 2002). By one estimate, treatment for the at-risk area of the National Forest System alone (about 29 million hectares) would cost US\$12.4 billion (USFS, 2000). As the Forest Service prepares to help the nation address the current recession, it can choose from a plethora of potential green investments.

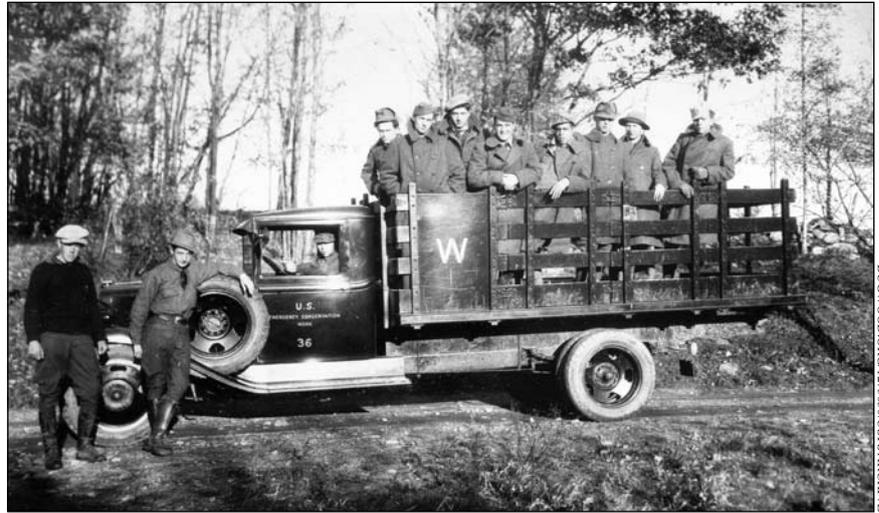
A LEGACY OF SOCIAL SERVICE: THE CIVILIAN CONSERVATION CORPS

The United States Forest Service has a long history of serving the nation by creating new jobs. In 1929, a financial crisis triggered a worldwide depression of staggering proportions, which lasted about ten years in the United States. At the height of the crisis, almost a quarter of the United States workforce was unemployed. In response, President Franklin D. Roosevelt established the Emergency Conservation Work Act, better known as the Civilian Conservation Corps (CCC). Its purpose was to provide jobs; stimulate spending; reverse deforestation, soil erosion and other forms of natural resource degradation; and build roads, trails, campgrounds and other infrastructure on public lands.

From 1933 to 1942, the United States Department of Labor enrolled millions of unemployed citizens for six-month terms of service in one of the most successful public works programmes in United States history. The Forest Service administered more than half of all CCC projects, thereby expanding the agency's mission focus to include social service on a national scale. Among other accomplishments, CCC planted more than 3 billion trees, built more than 97 000 miles (156 000 km) of road, erected more than 3 470 fire towers and devoted more than 4.2 million person-days to fighting wildfires and more than 7.1 million person-days to restoring watersheds and enhancing wildlife habitat (Civilian Conservation Corps Legacy, 2009).

CCC ended in 1942, but the Forest Service later reaffirmed its commitment to social service through a series of legacy programmes. The agency currently administers the Job Corps, a training programme for young people from disadvantaged backgrounds; the Youth Conservation Corps, a summer employment programme for teenagers; and the Senior Community Service Employment

The Civilian Conservation Corps (CCC) created jobs during the depression of the 1930s: a crew going to fight invasive gypsy moth, attacking oak forests in the northeastern United States



BLUWOOD/OKRA/127505/USFS ARCHIVE

Program, a volunteer programme for older citizens. All three programmes involve conservation-related training and work on or near national forests and grasslands. The agency's legacy of social service puts the Forest Service in an ideal position to respond to the current economic crisis.

AMERICAN RECOVERY AND REINVESTMENT ACT: FOREST SERVICE ROLE

In February 2009, the President of the United States signed the American Recovery and Reinvestment Act (ARRA) into law. The act authorized US\$787 billion in tax adjustments and stimulus spending, including US\$1.15 billion for projects administered by the Forest Service. The agency's efforts will, in time, put tens of thousands of unemployed Americans back to work. The overarching purpose mirrors that of the authorizing legislation: to create as many jobs as quickly as possible and get money flowing through the economy again.

Local managers from all three branches of the Forest Service (National Forest System; Research and Development; State and Private Forestry) have submitted more than 2 500 project proposals to the agency's economic recovery coordinators. The proposals are collectively worth about US\$4 billion in stimulus

spending, almost four times more than the US\$1.15 billion in stimulus funding available to the agency. The national coordinators have prioritized the proposals according to criteria ranging from project readiness, to biophysical measures, to local unemployment levels.

It was essential to move quickly. The faster unemployed citizens could go back to work, the greater the economic stimulus would be. However, stimulus spending was designed to balance urgency against the need for accountability and cost-effectiveness. Accordingly, the focus has been on projects that are "shovel ready" – ready to start without the need for more planning and consultation. Work on approved projects has begun quickly and will usually be completed within two to three years.

The new stimulus jobs are in the private sector. Although they are not designed to be permanent, they might open doors to a career in conservation while providing workers with new and valuable skills and opportunities that they might otherwise not have had. Projects are wide ranging, from cleaning up abandoned minelands in remote areas to restoring forests in rural areas or in major metropolitan centres.

Within five weeks after the President signed the authorizing legislation, the Forest Service had already disbursed 10

percent of its ARRA funds for projects in 21 states (USFS, 2009a). Projects are of four kinds: restoring resources on public lands; improving recreational facilities, partly to promote safety and health; creating opportunities for youth; and reducing fire risk to communities while restoring ecosystems to health.

Restoring resources

ARRA projects will improve a range of resources on public lands, both natural and infrastructural. Some projects will rebuild vital access roads to make them safer for forest visitors and local residents alike, particularly in the event of an emergency. Other projects are designed to improve water quality in lakes and streams or to restore critical fish habitat and passage.

In Alaska, for example, the community of Hoonah depends on a crumbling forest road for its lifeline to vital forest resources in the Tongass National Forest. Culverts installed long before the advent of modern design often plug up during heavy rains, threatening to wash out whole sections of road. The Forest Service is spending US\$1.45 million in ARRA funds to resurface 18 miles (29 km) of road, eliminate another 20 miles (32 km) of unneeded road and remove or replace 120 deficient culverts. This work will help improve stream



A rebuilt culvert in the Umpqua National Forest, Oregon: many Forest Service projects funded under the American Recovery and Reinvestment Act are designed to improve water quality and restore critical fish habitat and passage

quality and reopen ten blocked fish passages so that salmon will regain access to many miles of upstream spawning habitat.

Most ARRA projects involve construction; these tend to create more jobs at higher wages than other project types (USFS, 2009b, 2009c). Such projects provide work for skilled equipment operators and construction workers in hard-hit rural areas while sustaining a critical sector of the economy.

Improving recreational facilities

Outdoor recreation is tremendously popular in the United States. Each year, the national forests and grasslands alone record about 200 million visits. Especially when times are hard, a week or two spent hiking, fishing, camping or birdwatching in a national forest can be an attractive low-cost alternative to an expensive resort holiday. However, visitors rightly expect good access and safe facilities, and weather alone can confound their expectations.

In the heavily forested eastern United States, winter often brings devastating ice storms. Downed branches and trees can block roads into the national forests, making trails, campgrounds and other recreational facilities not only inaccessible, but also unusable until the damage is repaired.

In January 2009, for example, an ice storm ravaged eastern Kentucky, shutting down much of the Daniel Boone National Forest. This area is heavily dependent on tourism as a driver of the local economy, especially since the failure of a local sawmill and a car parts manufacturer. The Forest Service invested more than half a million dollars of ARRA funds to repair storm damage throughout the forest. Using local labour, the agency is clearing forest roads, removing hazard trees and making trails passable again. These jobs are putting people back to work at a variety of skill levels. By making it possible to reopen the national forest in time for summer 2009, the Forest Service revitalized recreational

use, thereby stimulating local businesses across eastern Kentucky.

Some ARRA projects are designed to make recreational facilities “greener”, for example by retrofitting buildings with new energy-efficient windows. A project in Alabama will upgrade a research laboratory to meet standards set by the United States Green Building Council (under a certification programme called Leadership in Energy and Environmental Design for Existing Buildings). Such upgrades include digital controls as well as new heating and air conditioning systems and new measures for saving water and managing waste.

Creating opportunities for youth

California is one of the states hardest hit by recession; its unemployment rate in February 2009 already exceeded 10 percent (Lifsher, 2009). Recessions tend to hit young people especially hard by causing elimination of entry-level jobs. Fortunately, California has a network of programmes with roots in the old CCC, including AmeriCorps, the California Conservation Corps, the Los Angeles Conservation Corps and the Urban Youth Conservation Corps.

National forests cover 20 percent of California’s land area, with all kinds of job opportunities: trails in need of work, recreational areas in need of repair, facilities in need of maintenance,

Fishing in the Apache-Sitgreaves National Forest, Arizona: recovery funds are used to revitalize forest recreation, offering inexpensive opportunities for relaxation in hard times and stimulating local businesses



APACHE-SITGREAVES NATIONAL FOREST/TB DYKSTRA

Young people restoring habitat for endangered species, Colorado: youth employment programmes help young people learn new skills while gaining work experience in conservation



ARAPAHO ROOSEVELT NATIONAL FOREST/TIM MANGIERE

hazardous fuels in need of reduction, etc. The Forest Service has released US\$3.75 million in ARRA funding for such projects across the state, employing hundreds of young people through the existing network of youth corps. By restoring forests, rebuilding recreational facilities and making communities safer from wildfire, young people are learning new skills while gaining experience and insight into conservation.

Reducing fire risk and restoring forest health

Since the 1980s, fire seasons in the United States have gotten steadily worse. Some fires now reach catastrophic proportions unheard of a generation ago, spreading across 200 000 ha or more and costing billions of dollars in damage to homes and communities. In 2004 and 2005, more than 3 million hectares burned nationwide; in 2006 and 2007, more than 3.5 million hectares. Under

current conditions, destruction by fire could reach 5 million hectares per year.

The Forest Service is using ARRA funds to address the threat by reducing excess fuels and restoring forest health. In the Humboldt National Forest in Nevada, for example, the agency has spent US\$1.3 million to treat about 3 120 ha of forest and rangeland, partly to reduce the risk of catastrophic fire. Forest health treatments in Nevada's pine and mixed-conifer ecosystems entail removing excess vegetation, incidentally helping forests adapt to climate change in a region where water is already in short supply.

Such projects create critical jobs in rural areas, and they are highly cost effective. Economic studies have shown that ecological restoration generates more jobs than any other project type (USFS, 2009c). Moreover, the biomass removed can be used for bioenergy, creating still more jobs. In Nevada, for example, a local mill used removed biomass to manufacture wood pellets, helping to mitigate climate change by offsetting fossil fuel use. Funds no longer needed for rebuilding burnt homes and community structures can instead be used to help the economy recover.

RESTORING HOPE

Projects like these – rebuilding infrastructure, putting young people to work, restoring forests to health, and protecting homes and communities – offer hope for the future. Of course, the Forest Service has only just begun; project implementation is still under way. The American Recovery and Reinvestment Act was designed as a one-time shot in the arm for an ailing economy. No one knows for sure how effective it will be. Moreover, ARRA projects will barely dent the multi-billion-dollar funding backlogs for fuels and forest health treatments as well as roadwork and facilities construction



Prescribed burning to sustain open ponderosa pine woodland, Montana: recovery funds are used to help diminish wildfire risk by reducing excess fuels and to restore forest health while creating critical jobs in rural areas

CUSTER NATIONAL FOREST/D. SASSIE

and maintenance in the national forests and grasslands.

Yet the signs of success are mounting: by putting people back to work, helping families bridge hard times and getting money flowing through the economy again, the Forest Service is helping to ease the burden of recession in tangible ways. Perhaps even more important are the intangible ways in which the agency is helping. Business leaders understand that the state of the national economy greatly depends on the national state of mind (Hill, 2009). Fear can grind economic activity to a halt when lenders are afraid to extend credit and consumers are afraid to spend money. At a time of widespread caution and doubt, ARRA is designed to restore hope and instil confidence. Every project puts workers on the ground for local people to see; every project leaves lasting results for people to talk about after the workers are gone. By modelling a spirit of optimism and enterprise, the Forest Service is subtly setting the stage for recovery, inspiring a “can-do” attitude that, in time, can bring renewed prosperity.

The United States Forest Service is investing in the future. People still marvel over the sound stone structures built by the old CCC, many of which have become historic landmarks. The many stimulus projects carried out under ARRA, like those of CCC, will provide lasting benefits to people. Ultimately, they will help the Forest Service fulfil its mission by delivering a range of ecosystem services for generations to come. ♦



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How forest plantations can contribute to economic renewal in South America

I. Tomaselli

In those South American countries where forest plantations are important or have potential for development, investment in them is one option for creating jobs.

Although the current economic crisis began in the United States of America, it is now affecting most countries around the world. Demand and prices are declining, economic activities are slowing down and unemployment is increasing. Almost one year after the crisis started, there is no consensus on how the global economy will be affected and when recovery will start.

Crisis in South America started in late 2008. Large economies in the region have seen demand for and prices of their exported products decline. Foreign direct investment has decreased and capital repatriation and dividend remittances have increased, contributing to the devaluation of national currencies, economic slowing and increasing unemployment.

The forest sector is important in several countries in the region, and forest-based activities have potential for development. Investment in forest plantations is one option for generating employment in the region in a relatively short time. In the long-term, forest plantations can

provide raw material to a competitive timber industry, contributing to the sustainable development of the region.

This article describes the impacts of the global financial crisis on the region's economy and the forest sector in particular, and examines the potential for creating jobs based on a forest plantation programme.

IMPACTS OF FINANCIAL CRISIS IN SOUTH AMERICA

Most countries in the region have not properly assessed the impact of the crisis on their economies or the potential implications for their societies or, in some countries, for their eventual political stability. Furthermore, as in other parts of the world, opinion diverges on the likely duration of the crisis and the efficacy of measures taken by governments to reverse the current downward trend.

The impacts of the crisis vary among the world's countries depending on several factors. South American economies, for instance, with a few exceptions, are less globalized than those of most developed

Workers in a large-scale nursery, Brazil: plantation establishment involves high labour demand



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This article was developed from a presentation at the special event "Impacts of Global Economic Turbulence on the Forest Sector" at the nineteenth session of the FAO Committee on Forestry, Rome, 20 March 2009.

TABLE 1. Importance of exports: Brazil compared with some Asian economies, 2007

| Country | Exports (billion US\$) | Exports as percent of GDP |
|----------------------------|------------------------|---------------------------|
| Brazil | 200 | 15 |
| Malaysia | 196 | 49 |
| Singapore | 350 | 66 |
| Taiwan (Province of China) | 273 | 36 |
| Republic of Korea | 458 | 35 |

Source: CIA, 2009.

and rapidly developing countries; thus international trade represents a relatively small share of the national gross domestic product (GDP).

Brazil has the largest economy of the region, but in spite of its efforts to increase international trade, its exports in 2008 reached a little more than US\$200 billion, representing not more than 15 percent of the country's GDP. In contrast, in most Asian countries exports are higher in both absolute and relative terms (Table 1). The Asian Development Bank (Pilling, 2009) estimates that 60 percent of the final consumption of Asian products takes place in developed countries, and this is a good indicator of how Asian countries have been participating in the globalization process.

The economic downturn that has taken hold in importing developed countries is thus expected to affect South American countries less than Asia's export-oriented countries. China, Japan and the Republic of Korea reported reductions of around 30 percent or more in their exports in the first few months of 2009; declining exports are expected to translate into a drop in economic growth of 2 to 7 percent in some Asian economies.

Most South American countries' exports, on the other hand, are based on commodities. The increase in international commodity prices over the past few years was largely associated with the growing demand for raw materials in Asian countries, where demand is now declining.

The decline in commodity demand and prices is affecting South American econ-

omies to varying degrees. It is estimated that exports from the region in 2009 will be about 30 percent lower in value than in 2008. Based on the contribution of exports to local economic development, Patu and Fagundes (2009) predicted that the decline in exports alone could limit the region's economic growth in 2009 to less than 1 percent, with some countries expected to enter a recession.

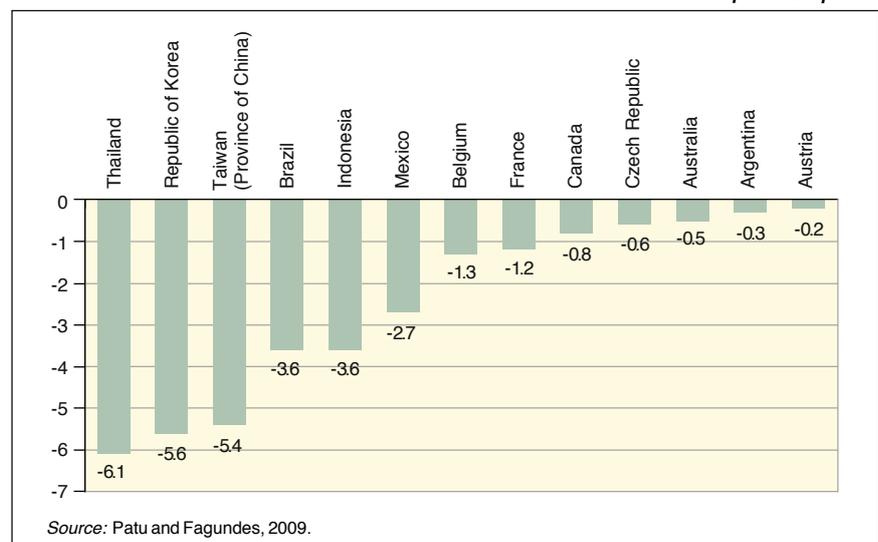
Bolivia, Ecuador and Venezuela have seen their export earnings strongly affected by the drop in oil and gas prices. Bolivia, Brazil and Chile are affected by the reduction of demand for and prices of minerals in the international market. Argentina and Brazil face enormous reductions of earnings from agricultural exports as prices of soybeans and other agriculture commodities have declined. In the relatively developed South American economies, declines in exports of

manufactured goods are also a problem. Car exports from Brazil, as from Mexico, were almost halved in volume over the first few months of 2009. These are some examples of the breadth of the crisis in geographic and sectoral terms.

The intensity of the crisis in South America varies among countries. In early March 2009, Brazil officially announced that in the last three months of 2008 the country's GDP declined by 3.6 percent compared with the previous quarter, and further reductions were expected to take place during the first months of 2009 (Patu and Fagundes, 2009). This places Brazil as one of the most affected countries in the world (Figure 1). In other South American countries, such as Argentina, the impact (so far) has been less intense.

The strong reduction of economic activity in Brazil shows that reduction in international trade is not the only factor affecting economies around the world. Capital movements around the world are possibly even more important than exports. In South American countries, as in other developing and emerging countries, foreign direct investments are quickly

1
GDP reduction in selected countries during the last quarter of 2008 as compared with the previous quarter



Forestry is Chile's second most important economic activity, contributing more than 3 percent to national GDP

declining. Transnational companies have increased the repatriation of capital and remittances of dividends to solve liquidity problems faced by operations in other parts of the world. One example is the car industry in Brazil, a highly profitable operation that sent several billion dollars to company headquarters in the first few months of 2009.

The International Labour Organization (ILO) (cited by Schwartz, 2009) estimates that another 50 million people around the world will be unemployed in 2009. Growing unemployment in developed economies will have an impact in those developing countries that had had high rates of emigration. Remittances by migrant workers to their countries will be reduced, and unemployed migrant workers will return to their home countries; thus unemployment will basically be transferred to the developing world. Some countries in South America and Central America will be particularly affected. Mexicans working overseas sent home around US\$24 billion in 2008 (*Gazeta Mercantil*, 2009), which represents a significant share of the country's GDP. Ecuador and many Central American countries also have a significant percentage of their citizens working abroad, mainly in the United States and Europe. These countries can expect a reduction in capital inflow and an increase in unemployment.

Because of several factors (including reduction of foreign investments, uncertainties, dividend remittances and capital repatriation by transnational companies), national currencies of some



PHOTO: SPATIE BEIJER

South American countries depreciated over the last months of 2008. Depreciation has partly helped to compensate for the lower international prices and to maintain export volumes, especially in countries where commodity exports are important. On the other hand, the devaluation of the local currency has contributed to further decline in international prices of some goods, and has created a burden for companies that financed investments and have payments due in foreign currency.

SOUTH AMERICAN FOREST SECTOR AND THE CRISIS

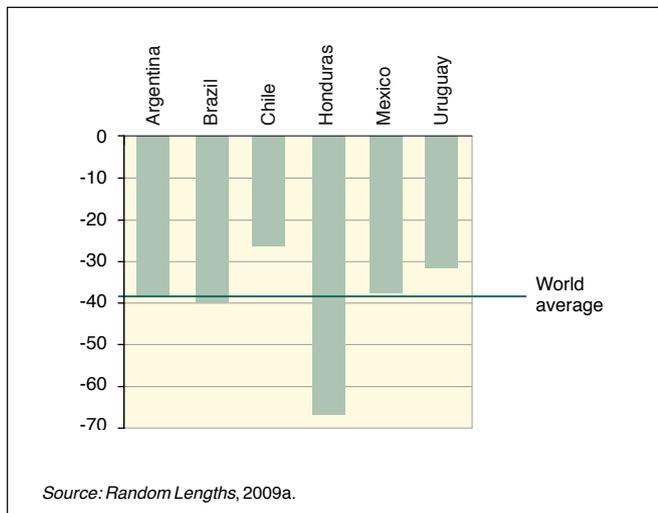
Forestry is an important economic sector for many South American countries, especially Chile, Brazil and more recently Uruguay. The Chilean forest industry contributes more than 3 percent to national GDP and approximately 7 percent of total exports (INFOR, 2009); it is the country's second most important economic activity. In Brazil, the forest sector accounts for more than 3 percent of GDP and around 5 percent of total exports (ABRAF, 2009).

The region's forest sector has been directly and indirectly affected by a slow-

down of economic activity in the United States, Europe and Asia. With the decline in demand and prices of pulp, paper and wood products, many companies in Brazil and Chile have reduced their production, while some have phased out their activities and most have postponed or cancelled new investments.

The devaluation of the Brazilian currency against the United States dollar at the end of 2008 had a strong impact on the forest industry. Temporary benefits that might have resulted from the devaluation, such as a gain in competitiveness in international markets, were lost as prices declined at basically the same rate. The quick change of the markets and the devaluation of the local currency undermined the financial strategy of leading companies, causing Aracruz Celulose, for example, to postpone its investment plans and restructure its debts.

The strong decline in the housing sector in the United States, an important market for South American producers, caused the region's softwood timber exports to the United States to collapse. In volume terms, 2008 global imports of softwood timber declined by 31 percent compared with 2007 (*Random Lengths*, 2009a). In



Central America, exports from Honduras dropped more than 60 percent – a strong impact for a relatively small economy (Figure 2). Several sawmills in South American producing countries have had to shut down. This situation is not expected to change much in 2009.

The structural wood panels sector has undergone a similar decline. United States imports of softwood plywood in 2008 were 25 percent lower in volume in 2008 than in 2007, the lowest since 2002. In 2008, South America supplied 94 percent of all United States softwood plywood imports, Chile currently being the main exporter. Imports from Brazil, the leader from 2003 to 2007, dropped 44 percent, while those from Uruguay were reduced by almost 50 percent. Prices of structural wood panels dropped by 20 percent from 2007 to 2008. Thus exports of structural wood panels to the United States lost around 45 percent in value (*Random Lengths*, 2009b).

Other important markets for South American forest industries have also collapsed. Imports of mouldings by the United States were significantly reduced in 2008, and Brazil and Chile (the main moulding exporters in the region) have shut down mills. Decline in the demand for and prices of flooring material in the United States and other importing markets has affected the flooring indus-

try, mainly in Brazil and Bolivia; it has also affected South American timber exporters, as China's imports of tropical hardwoods for use in flooring declined in terms of volume and price.

The social and economic implications of the global crisis for the forest sector, at the national and regional levels, have not yet been thoroughly assessed. There are indications that the impact will be significant in Bolivia, Brazil, Chile, Uruguay and parts of Argentina. Within each country, regions where the forest sector makes an important contribution to the local economy are expected to be most affected by the reduction in demand for and prices of forest products. For example, in Paraná State, Brazil, where the forest sector contributes around 5 percent to GDP, employment in the timber industry was reduced by 21 percent in 2008. In Brazil as a whole, however, the reduction in employment was less – 6 percent – with pulp and paper, reconstituted panels and the charcoal-based pig iron industry taken into account (ABRAF, 2009). Most of the reduction was associated with reductions in forest plantation activities by the pig iron industry.

As in other parts of the world, prices of forest products have diminished in most South American countries in line with the reductions in international demand. In

Brazil and Chile, prices dropped around 30 percent in the second half of 2008 (Figure 3) and are now down to the levels of 2005–2006. Most of the price reduction reported for 2008 is related to the devaluation of the local currencies, as prices in local currency have changed little. The exchange rate in the first quarter of 2009 was stable, and prices in United States dollars continued to decline. In the second semester of 2009, local currencies of most South American countries started to appreciate and prices tended to be stable.

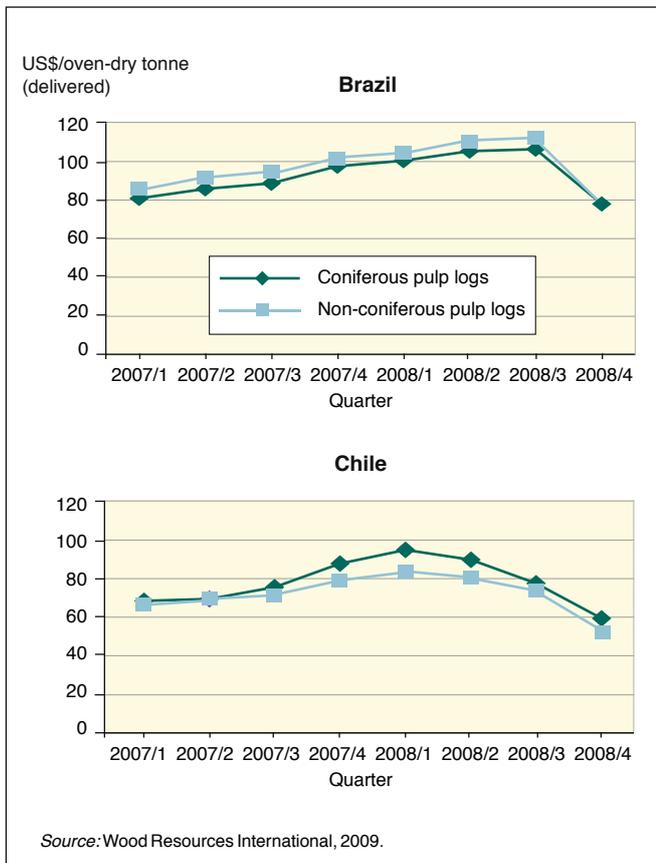
FOREST SECTOR INVESTMENTS IN SOUTH AMERICA AND THE GLOBAL CRISIS

Recent and future investments

Most of the ongoing and announced investments in the region's forest sector are linked to forest plantations in Brazil, Chile and Uruguay. In Brazil, direct domestic investments are the most important, while in Chile and Uruguay the main investors are foreign companies. The pulp and paper industry is the largest investor in all three countries, but institutional and other private investors are gaining importance.

The forest sector investments in Brazil over the past five years have been largely associated with the expansion of the pulp and paper, reconstituted panels (medium-density fibreboard and particleboard) and charcoal-based pig iron industries. As shown in Figure 4, forest sector investments in the country dropped 26 percent from 2007 to 2008, and companies' projected investments for the subsequent five-year period dropped 36 percent.

Uruguay has received immense investments in the forest sector over the past few years, but investments in the country have slowed down as a result of the global financial crisis (Wood Resources International, 2009). The Finnish company Botnia, which had recently invested in a pulp mill with a capacity of around 1 million tonnes per year, has reduced produc-



3
Recent wood fibre prices in Brazil and Chile

Peru and Colombia are considering the implementation of forest plantation programmes, but have not yet developed structured plans.

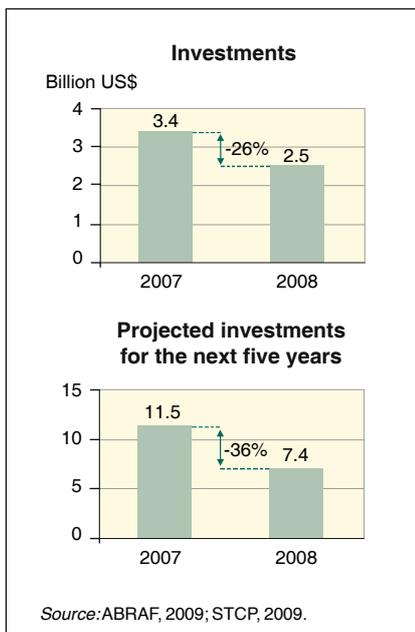
Forest plantations and employment

Forest plantations are long-term investments. In a short time, a well-structured plantation programme can create (directly and indirectly) permanent jobs in rural areas, helping to mitigate the effects of financial crisis. But it will also foster socio-economic development in the long term, attracting investment in wood processing activities that facilitates the creation of a cluster, generating employment in the industry and services.

The investment required to establish and manage a forest plantation and generate employment varies largely in the region, depending on the local soil and climate conditions, tree species, technology, forest management requirements and work productivity, among other factors. For example, the establishment of large-scale, fast-growing plantations by the pulp industry tends to generate less employment than smaller-scale long-rotation plantations established to produce high-quality timber for the solid wood industry. The balance between capital and labour requirements may vary. For example, mechanization can be used for planting in flat terrain, while on slopes most operations are manual. Soil variations from site to site have implications for soil preparation, fertilization, weed control and other costs. Some species require more fertilizers and chemicals than others.

Table 2 presents a cost range for establishing and managing plantations in Brazil, which could also be applied to other countries of the region. The information is derived from actual operations based on manual and mechanized planting of pine and eucalyptus in different locations, managed for the solid wood industry (larger-diameter logs). Investments are

4
Impacts of the crisis on forest sector investments in Brazil



tion because of the weak markets. ENCE, a Spanish paper company, has encountered a slowdown in investment for a planned pulp mill. Portucel Soporcel, a Portuguese paper company, faces the same problem in establishing a planned pulp and paper mill in Uruguay.

In 2007, Ecuador adopted a National Plan for Forestation and Reforestation which includes a target of establishing 1 million hectares of new plantations over the next 20 years (Tomaselli, 2008). The forest sector was made one of the ten priority development sectors, and US\$75 million from the national budget was made available for direct investment in plantations. However, because of the need to revise the government budget in view of the financial crisis, only a small amount was invested in forest plantations in 2008; most of the allocation was transferred to other priority programmes.

TABLE 2. Forest plantation costs in Brazil (pine and eucalyptus)

| Investment phase | Range (US\$/ha) |
|------------------------------|--------------------|
| Planting | 1 100–1 600 |
| First year (maintenance) | 210–550 |
| Second year (maintenance) | 130–340 |
| Following years | 90–130 |
| Total (full rotation) | 2 500–3 700 |

Source: STCP, 2009.

TABLE 3. Labour demand in forest plantation, Brazil

| Investment phase | Labour demand (person/ha) |
|---------------------------|---------------------------|
| Planting | 0.025–0.132 |
| First year (maintenance) | 0.010–0.047 |
| Second year (maintenance) | 0.005–0.040 |
| Following years | 0.010–0.015 |

Source: STCP, 2009.

heavily concentrated in the first two to three years. The total investment for one full rotation varies from US\$2 500 to US\$3 700 per hectare. In Brazil, rotations for solid wood are relatively short – 12 to 14 years for eucalyptus and 18 to 20 years for pine.

Table 3 shows the direct labour demand created in establishing and managing forest plantations in Brazil, excluding jobs created indirectly at the nursery, in the supply chain and in harvesting operations. The demand for workers is mostly concentrated in the plantation establishment phase. It can be estimated that for each direct job in planting and management operations, two indirect jobs are created.

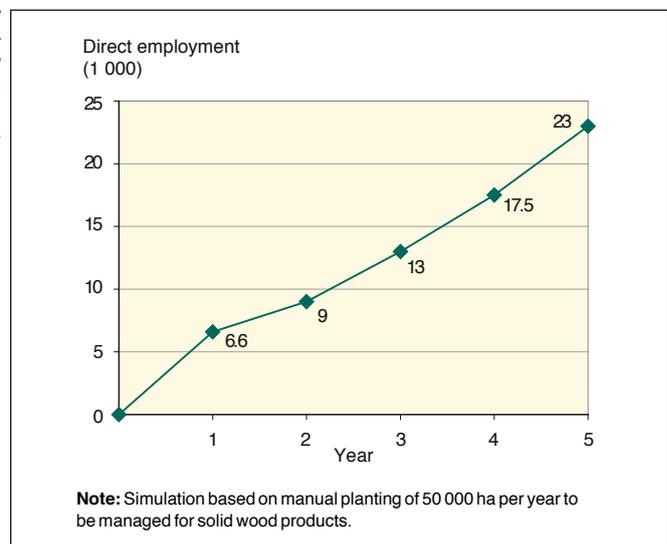
Figure 5 presents a simulation of direct job creation if Ecuador (as an example) were to plant 50 000 ha of forest plantations per year as part of its strategy to reduce the socio-economic impact of the financial crisis. It predicts that employment in the forest sector would gradually increase so that at the fifth year around 23 000 new direct jobs (in forest plantation establishment and management operations) would have been created. If indirect jobs are considered as well, around

70 000 people would be employed in the fifth year. The total accumulated investment required to implement such a programme over a five-year period would reach around US\$480 million (Figure 6). The annual investment would tend to stabilize at about US\$120 million after year five.

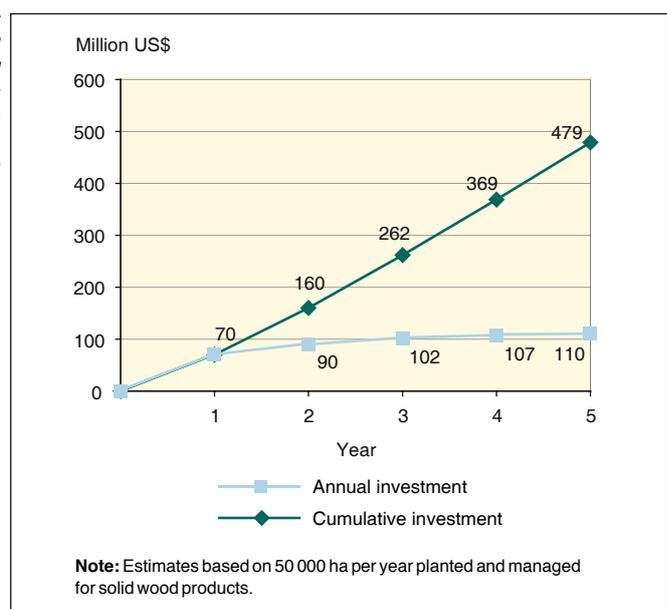
Based on this simulation, for each job created, Ecuador would have invested less than US\$5 000 per year, a relatively small amount considering the immediate social benefits and especially the

benefits that the plantations would generate in the future. The Corporation for Export and Investment Promotion of Ecuador (CORPEI) estimates that the plantation programme has the potential to generate over US\$2.5 billion annually based on trade of products in international markets (Tomaselli, 2007). The expansion of forest plantations is the only option for sustaining the development of the country's forest industry and making its export programme feasible.

5
Simulation of direct employment potential based on Ecuador's forest plantation programme



6
Estimated investments required for implementing Ecuador's forest plantation programme



CONCLUSIONS AND RECOMMENDATIONS

The global financial crisis is affecting economies around the world; unemployment is growing and developing countries will need to find strategies for mitigating the social impacts. For some South American countries, part of the solution can be found in the forest sector. Forest plantations are a competitive business in the region, and their expansion can immediately increase employment. The investment capital can come from government incentives, local or international financing programmes or direct investments from private investors.

The cost involved in a plantation establishment programme will most probably be equivalent to that of any social programme that would be put in place to support unemployed workers. The difference is that while mitigating the social effects of the crisis, the programme would also be creating value.

In order to ensure that future benefits are maximized and sustainable, plantation establishment needs to be part of a long-term development strategy; this is more important than job generation in the short term. In this case relatively short economic cycles cannot be considered, although adjustments can be made over the long term to accommodate eventual market changes.

Several countries in South America, including Brazil, Chile and Uruguay, have already demonstrated the effectiveness of including support for the establishment of large plantations in the national development strategy. These countries are currently the main receivers of direct investments in the forest sector in the region. As a result, in these countries the forest sector is an important contributor to national socio-economic development. ♦



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

J.R. Matta

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

Green 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 m³ 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 NWFP 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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The Philippines' Upland Development Program: cushioning the impacts of global financial crisis and climate change through green jobs

J.L. Atienza, Jr

A new programme will create thousands of jobs in restoring forests and watersheds, helping to mitigate hunger and poverty.

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The Department of Environment and Natural Resources in the Philippines has created the Upland Development Program in support of the government's Economic Resiliency Plan, launched in February 2009 to cushion the impact of the global financial crisis on the Filipino people. The programme aims to improve incomes in upland areas and mitigate hunger, while also enhancing the country's capacity to adapt to climate change. Forestry has a major place in meeting both challenges, since upland populations are highly dependent on forest resources for subsistence and livelihood, and forests serve as a natural carbon sink.

The target of the Upland Development Program is to create more than 52 000 jobs for farmers in upland and coastal areas, in conjunction with the government's Comprehensive Livelihood and Emergency Employment Programme. The government provides farm inputs including tree seedlings, organic fertilizers and other implements. The farmers' contribution is their labour, for which they will be paid. This strategy enables people in the uplands to devote their time and energies wholly to the rehabilitation of the environment while earning in the process.

In 2009, the Philippine Government has allotted 1.5 billion pesos (roughly US\$30 million) for the implementation of the programme, which will cover more than 52 000 hectares of 180 watersheds supporting major river basins and protected areas. The Upland Development Program integrates other upland programmes

and is envisioned to expand existing initiatives consistent with the country's Medium-Term Development Plan (2004–2010).

Funding will be used for specific activities such as establishment and operation of nurseries, development of forest plantations and agroforestry farms, rehabilitation of river banks, enrichment planting of inadequately stocked areas and assisted natural regeneration, as well as forest maintenance and protection through patrol work. In these activities the Department of Environment and Natural Resources will partner above all with peoples' organizations engaged with the department under community-based forest and resource management agreements. Other partners will include local government units, communities and civil society organizations involved in rehabilitation activities, and smallholders who can benefit from soil and water conservation activities in their landholdings.

An interesting feature of the programme is its strong support to the government's hunger mitigation and poverty alleviation programmes – for example, by helping to meet the raw material requirements of industries involved in the Trade and Industry Department's "One Town One Product" scheme, which encourages towns to specialize in a single product according to local comparative advantage in resources and skills. The scheme's intent is to ramp up production while promoting entrepreneurship and creating income opportunities, especially for micro, small and medium-sized enterprises. The Upland Development Program's linkage to this scheme ensures ready markets for the products generated under the programme, further enhancing livelihoods of people's organization members.

The stark reality of global financial crisis and climate change increases the urgency of involving and empowering upland communities to carry out the imperatives of conservation, protection and sustainable utilization of forest lands. To this end, the Upland Development Program aims to transform poverty into self-sufficiency and degradation into restoration.

For more information, see: forestry.dnr.gov.ph/SUDP.htm



Upland Development Program site at Mount Kitangland Range Natural Park, the Philippines

How Chinese forestry is coping with the challenges of global economic downturn

Q. Ma, J. Liu and W. Du

China's domestic economic stimulus package aims to encourage consumption of wood and wood products; raise investment in afforestation, reforestation and protection of natural forests; and support forest enterprise through reduced taxes and other benefits.

The global financial crisis is creating severe challenges for Chinese forestry, and especially for small and medium-sized wood-processing enterprises. Exports of forest products, domestic demand for forest products and timber prices have dropped sharply since 2008. Some small and medium-sized forest enterprises have closed down (SFA, 2008a).

The Chinese government has adopted a financial and monetary stimulus policy to cope with the crisis. Measures in the forest sector include increasing investment and expanding domestic demand to create a favourable environment for enterprises to develop and to respond to the challenges. This article discusses the impact of the financial crisis on China's forest industry and the strategies and concrete actions taken by the forest sector.

A SECTOR OF RAPID GROWTH

The forestry sector in China has developed rapidly along with the fast overall growth of the national economy. The total output value of the sector reached US\$180 billion in 2007. The average growth rate of production in the forestry sector, including primary, secondary and tertiary industry, was 20.6 percent per year from 1997 to 2007 (SFA, 2008b). China has become a leading country in the production, consumption, import and export of forest products in general and is the world's top exporter of wood-based panels (FAO, 2009) and wood furniture (UNECE and FAO, 2008). The scale of the country's forest industry has also expanded; more than 15 000 forest enterprises now have at least US\$730 000 of annual sales each (Jia, 2009).

The economic development of forestry in China has greatly depended on external trade; timber imports have increased by on average 30 percent per year over the past ten years. In 2007, China imported around 37 million cubic metres of logs as well as wood pulp, waste paper and other paper and wood products equivalent to about 180 million cubic metres of logs; these imports accounted for 47 percent of China's total wood consumption (SFA, 2008a). The import and export of China's main forest products amounted to US\$63 billion in 2008 (US\$27 billion of imports and US\$36 billion of exports), accounting for 35 percent of the total output of the forest sector. In total trade value of forest products, China ranked second in the world after the United States of America (SFA, 2008a).

IMPACTS OF THE FINANCIAL CRISIS

Since the second half of 2008, the negative impacts of the international financial crisis have overlapped with accumulated problems caused by the overwhelmingly rapid expansion of the forest industry. An objective look at the economic situation could assist governments and enterprises in formulating appropriate policies and actions.

Decreased trade

The world economy is in recession as a consequence of the financial crisis. United States and European purchasing power has decreased drastically. The construction industry, which has been a major consumer of forest products, experienced a severe downturn. The United States dollar has continued to

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depreciate against the Chinese yuan. All these factors have direct impacts on China's trade in forest products.

China's foreign trade in forest products rose by 9.6 percent in 2008. However, the growth rate decreased by 12.9 percentage points (i.e. by 57 percent) from 2007. The import value of forest products grew 14 percent, and their export value rose 6 percent. The total trade value of major forest products represented 2.5 percent of the national total in 2008, dropping 0.18 percent from 2007 (China Customs, 2009).

Imports of logs and wood-based panels and exports of wooden furniture, plywood and wood flooring are the most significantly affected by the current economic crisis (SFA, 2009). All went down in both volume and value except for furniture, whose export value increased slightly (3.1 percent) because of price increases from 2007 to 2008. Wooden furniture is among China's most important forest product exports;

The economic crisis has caused a drop in exports and export prices of Chinese wood products such as flooring, leading to industry closures



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in terms of export value, it accounted for 30.7 percent of the total national value of major forest products in 2008. But for the first time in the past ten years, furniture export volume declined notably (14.4 percent) because of reduced imports by the United States, Japan and European countries. The growth rate of furniture export value fell by 18.6 percent (China Customs, 2009). China's imports of roundwood (the main forest product import over the past decade) decreased for the first time in 2008, by 20.3 percent compared with the same period in 2007.

Unbalanced market

Domestic roundwood demand is lower than supply, causing lower prices of raw materials and wood products from month to month. The domestic property market remains depressed, resulting in reduced demand for processed wood products. The reduced price of timber has not stimulated demand, and the supply backlog continues to grow. Between August and November 2008, average roundwood prices in the provinces of Jilin and Shandong decreased notably – poplar by 4.4 percent, birch by 15.3

percent, larch by 15.2 percent and eucalyptus by 12.3 percent. The price of eucalyptus in Zhangzhou, Fujian Province, fell 25 percent, from US\$95 to \$72 per cubic metre, between September and December 2008. The price of poplar veneer fell 16.7 percent, and the price of eucalyptus veneer declined 12.1 percent during the same period. The export price of wood-based panels fell 25 percent and the export price of wooden flooring fell 30 percent from January to October 2008 (SFA, 2008a).

Slowed production and closures

With the cooling of market demand, production has fallen in the wood processing and wood-based panel, wooden furniture and pulp and paper industries. These products accounted for about 48 percent of the total gross added value of the forestry sector in 2008; therefore their slowed pace of development has great impact on the value of the sector. For the first ten months of 2008, China's wood processing industries suffered a total approximate loss of US\$5 billion (Global Wood, 2009). The reduced export prices of wood-based panels and wooden flooring have caused many processing and exporting enterprises to close or temporarily stop production (see Box opposite). About 20 percent of flooring enterprises are facing difficulties in surviving. More than 50 percent of plywood businesses and nearly 65 percent of primary wood processing enterprises have stopped production, creating a state of semi-shutdown in China (SFA, 2008a). In addition, about 7 000 furniture enterprises were reported to have closed from January to October 2008 (ITTO, 2009).

Exchange rate fluctuations

Exchange rate fluctuations have had impacts on enterprise efficiency. The United States dollar and the euro are expected to depreciate further in 2009, while the Chinese yuan is expected to appreciate. Because of the depreciation

Slowdowns and shutdowns: some statistics from Guangxi Province

In 2008, prices of major forest products decreased by about 15 to 20 percent in Guangxi Province. Some 30 to 40 percent of eucalyptus-based plywood enterprises ceased or slowed production because of poor sales. Pine-based plywood enterprises stopped producing, with the exception of a few large businesses producing more than 10 000 m³ per year. In the peeled veneer industry, about 300 enterprises (45 percent of the total) closed down. The rosin industry is in a slump because of shrinking raw material resources and prices; in the second half of 2008, rosin production was reduced by 30 to 40 percent compared with the same period of the previous year (Forestry Department of Guangxi Province, 2008).

of the United States dollar, the export value of the China Jilin Forest Industry Group Co. Ltd, which was US\$75 million in 2008, will be reduced by US\$5 million in 2009. Exchange rate fluctuations resulted in losses of US\$2.3 million in income in 2008 for Xinyuan Wood and Forest Hill Wood of the Yanbian Forestry Corporation (Forestry Industry of Jilin Province, 2009).

Economic and social impacts

The effects of the crisis in the forest industry are having wider repercussions for the economy and society. In key State-owned forest regions, forestry accounts for a large proportion of the local economy. Disruption of development in the forest industry has been affecting other related industries, and local economic development has slowed down as a result.

The financial crisis has also had negative impacts on forest dwellers' livelihoods and on social stability. Industry closures and slowdowns have resulted in drastic unemployment and thus in local social instability. Reduced income and decreased purchasing power have restrained increases in consumption. The consequent decrease in internal demand has also inhibited social development in forest areas.

FACING THE CHALLENGES

The State Forestry Administration is taking a number of measures to increase

investment, stimulate domestic demand and provide a more favourable environment for forest enterprise.

The central government rapidly provided a supplementary investment of US\$530 million in the fourth quarter of 2008, focusing on projects to protect the natural forests and to establish forest plantations designated for environmental protection, including afforestation and reforestation of 2.6 million hectares. The newly increased investment is expected to boost local and communal input by US\$1.4 billion, to provide jobs for about 1.2 million rural workers every year and to employ former farm-

ers returning to forest areas from cities (SFA, 2008a).

To boost farmers' income, the State Forestry Administration has also introduced a key measure promoting investment from the central budget of the Forest Ecological Benefit Compensation Fund, established in 2001. In 2008, 46.6 million hectares of public-benefit forests were incorporated into the compensation scheme, with investment of US\$500 million from the fund's central budget. This investment included US\$290 million for 26.5 million hectares of collective forests, benefiting 20 million families and 70 million forest farmers.

The State Forestry Administration will assist with the alleviation of some of the problems faced by forest enterprises in China. The first measure is to continue the policy of reimbursement of the value-

As one means of providing jobs, the Chinese Government is boosting investment in forests, including establishment of protective forest plantations (mangrove nursery for coastal protection, Hainan Province)



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Enterprises using wood processing residues and small-diameter wood will benefit from reimbursement of value-added tax (eucalyptus residues processed into chips for use in pulp and paper production)

added tax (VAT) for producers, which has rebated nearly US\$14.4 million annually to forest industry enterprises. Industries producing products using wood processing residues and small-diameter wood also benefit from the same tax policy. The second measure is to aid forest industries by lending with reduced interest rates. In 2008, a total of US\$1.26 billion was loaned with a reduced interest of US\$60 million in total. In 2009, US\$4.5 billion will be loaned with the interest rate reduced by 2 percentage points; the US\$90 million of reduced interest will be paid from the State budget. Third, the import of seeds and provenances of plants and animals to be used as propagation material was exempted from the VAT on imports. In 2008, a total of about US\$3 million was exempted (SFA, 2008a).

The State Forestry Administration is also taking some measures to stabilize wood product exports. A main measure is to increase the rates of the export tax rebate for 117 wood product items. These items include bamboo products, wood-based panels and flooring products, for which the export tax rebate increased from 5 to 9 percent. The rebate

for furniture products increased from 11 to 13 percent. The rebate for some paper products was increased from between 0.5 and 11 percent to 13 percent. The government is also negotiating with

importing countries such as the United States, Japan and the European Union (EU) to improve market access for forest products.

Finally, local governments and enterprises are taking various measures to increase capacity to cope with the challenges of financial crisis, such as enhancing the raw material base, promoting new technology and expanding domestic and international markets, for example through increased product quality and value added (see Box below). To reduce market risks, the use of both domestic and foreign capital to develop both markets is encouraged.

Pizhou's government pushes development of panel industry

Pizhou City in Jiangsu Province is one of the four main centres of wood-based panel processing in China. It has more than 3 000 wood processing enterprises and more than 2 200 downstream production lines, which are worth US\$2.3 billion in output value. In response to the economic slowdown, the city government has taken a variety of measures to enhance the area's international competitiveness and its capacity to mitigate risks.

First, the city has strengthened its industrial raw material base through rapid expansion of the local forest area. In early 2009, Pizhou had a total of 2.8 million cubic metres of poplar stocks, which guarantee the sustainable development of the local forest industry.

Second, the leading enterprises are supported by new technology. The city government has implemented strategies to accelerate technology development and expand the scale of production, to develop large-scale forest industry as a driving force of the economy.

Third, the city has worked to keep its international market and to expand the domestic market. Pizhou is the source of up to 70 percent of national wood-based panel exports. To maintain international cooperation, the city government has set up representative sales offices and established selling agent relationships with companies in France, Germany, the Republic of Korea and the United States, as well as ten export ports. The government is expanding the domestic market by establishing new sales offices in 12 large and mid-sized cities and by setting up 40 Web sites for small and medium-scale enterprises to strengthen the exchange of market information on wood-based panels.

Source: ITTO, 2009.

Enterprises are increasing capacity to cope with financial crisis through measures to enhance the raw material base and promote new technology (vegetative propagation of young eucalyptus for high-productivity plantations)



PHOTO: GUYA/ISTOCK

DISCUSSION

The past rapid growth of Chinese production and trade was the result of multiple factors, including the low cost of labour, technological innovation and the development of complete production chains. However, since 2008 China has encountered some obstacles:

- non-tariff trade barriers, such as recently established EU regulations for wood and wood products requiring all the commercial companies in the production chain to submit documents certifying the legality of the raw material – which entails additional costs to producers;
- enterprises' lack of confidence because of trade barriers and a rise in the price of raw material;
- shrinkage of domestic demand for wood and wood products, especially caused by the reduction of investments in fixed assets and real estate;
- increased costs of coastal land (where the majority of forest industries are located), environmental protection and labour benefits;
- greatly increased cost of labour.

The current economic crisis actually provides opportunities for the Chinese forest industry insofar as the domestic economic stimulus package is expected to generate consumption of wood and wood products and to provide benefits such as the continuous reduction of taxes and fees for forestry (e.g. the export tax rebate) and lower labour costs. This is thus a unique and strategic period for the Chinese forest industry to develop and become competitive in global markets. However, with trade in decline at present,

China will be pressed to maintain its increased share in the international market over a long period.

Therefore, the authors suggest a need to adjust the rapid growth of China's forest industry. The financial crisis can provide an opportunity:

- to improve technology, promote branding and increase the production scale of forest industry enterprises;
- to refine the physical distribution of the supply chain, for instance the closeness of processing enterprises to markets, since in the furniture industry, for example, transport is the greatest contributor to the cost of the end product;
- to transfer low value-added production chains to the country of origin of the raw material, in order to avoid the constraints of importing raw materials, and to encourage enhanced cooperation and coordination among enterprises (although it is crucial to adapt enterprises to advanced industrial production processes);
- to analyse the strengths and weaknesses of the forest processing industry – recognizing that while China

has been and will mostly likely continue to be a dominant country in the forestry sector, its exports cannot exceed its imports because China needs to meet domestic demand for roundwood and other primary products rather than seek significant export growth.

Furniture exports improved in March 2009 and showed positive growth compared with the same month in 2008 (China Customs, 2009). Although this may suggest that furniture has been one of the first industries to recover, the apparent recovery is the result of the factors mentioned above such as the export tax rebate policy, stabilization of labour prices, the decrease of international timber prices and the financial stimulus programme.

The crisis also provides a strategic opportunity for addressing problems of wealth distribution and poverty in forest regions, where poor living conditions include problems of transportation, education, health and culture. Salaries in State-owned forest regions are among the country's lowest, and more than half of China's poor population lives in forest areas. Over the long term, the large sums

invested by the government in forests and forestry to overcome the financial crisis will have a high return rate by increasing farmers' incomes, promoting farmer employment and maintaining social stability, while also improving the environment.

For example, in Jiangxi Province the total output of forestry in 2008 was US\$11.1 billion, with an average net income per farmer of US\$99.6, accounting for 14.9 percent of the province's average rural net income. Jiangxi Province had 6.8 million former farmers working in cities, but because of the economic crisis 1.2 million of them have returned to their rural homes since June 2008. Large-scale afforestation and reforestation programmes in the province have absorbed many of these returnees, including about 18 000 large and relatively wealthy forest households each with more than 3.3 ha of forests, and 130 000 returned farm workers (Hu, 2009). Increased investment in forestry by the central government has helped to reduce disparities in wealth distribution and local development.

CONCLUSION

The current economic crisis provides both challenges and opportunities for Chinese forestry. The domestic economic stimulus measures are expected to increase investment in forestry at both the central and local levels, and policies are being established to minimize the negative impacts of the economic crisis on forestry and to promote forestry development.

The economic downturn also provides unique opportunities for developing more sustainable approaches in forest management. The investments by central and local governments in forest plantations for environmental protection programmes and as a source of raw material for wood industry will help to rebuild natural assets. Furthermore, the establishment of forest plantations and improved management of forests will

directly contribute to climate change mitigation and adaptation efforts. Such investments provide a large number of jobs, which could absorb unemployed workers, specifically those returning from cities to rural areas, increasing their income and consumption. Forestry could contribute to economic renewal in unique ways, and could provide a turning point in converting China from a fast-growing economy into a green economy. ♦



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Coping with crisis in Central Africa: enhanced role for non-wood forest products

J.C. Tieguhong, O. Ndoye, P. Vantomme, S. Grouwels, J. Zwolinski and J. Masuch

Examples from Cameroon and other countries highlight the capacity of non-wood forest products to provide employment, income and sustenance in times of crisis – given a suitable legal framework to help safeguard local access and prevent resource depletion.

The current financial and economic crisis has directly and indirectly affected the drivers of Africa's recent growth performance (AfDB, 2009). Demand for and prices of African commodities are falling, capital flows are declining, and promised increased aid has not materialized. Through contagion, the crisis has affected financial markets, foreign exchange markets and commodity markets – the last being of particular importance for forest products.

In Central Africa – considered in this article as the ten member countries of the Central African Forests Commission (COMIFAC): Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Rwanda and Sao Tome and Principe – the crisis has taken a heavy toll on the economies that are highly dependent on natural resources. Several extractive industries in the Democratic Republic of the Congo, the Central African Republic and Cameroon have cancelled or postponed projects. Closure of 70 mining companies in the Kantaga region of the Democratic Republic of the Congo, for instance, led to a loss of up to 200 000 jobs between the end of 2008 and mid-2009. The recent crisis is also having serious impacts on the timber sector as orders for timber from importing countries diminish and logging and timber processing companies are forced to cut costs, close concessions and lay off workers.

Apart from the overall macroeconomic impacts, the crisis presents a gloomy situation for rural households, which make up 62 percent of the region's popu-

lation. For resilience in times of crisis, many rural communities depend on the presence of accessible economic opportunities such as the collection of non-wood forest products (NWFPs) (Arnold and Townson, 1998).

In a region where forests cover 44.6 percent of the land area (FAO, 2009), about 60 percent of the rural population depends on access to forests to meet their daily needs in terms of subsistence, employment and cash income (Arnold and Ruiz-Pérez, 1998; Tieguhong and Ndoye, 2004, 2006; Tieguhong and Zwolinski, 2008). The main products extracted by forest-dwelling people are fuelwood, poles and NWFPs, including bushmeat. Political, economic, technical and legal entry requirements for earning

A Baka pygmy family completely dependent on the forest for housing and food: about 60 percent of the rural population in Central Africa depends on access to forests to meet their daily needs



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income from NWFP gathering are relatively few (in comparison with timber enterprise, for example). Particularly in times of crisis, NWFPs are a major source of supplementary income and work for those unable to obtain formal or other sufficient employment; they also provide food, medication and other products for household and subsistence use, thus acting as a “safety net”. But economic crisis can aggravate conflict among users (and between subsistence and commercial users) by creating increased dependence on and competition for NWFP resources.

This article reviews the importance of NWFPs as a source of self-employment, income, livelihood and sustenance in Central Africa, with particular reference to Cameroon and the Democratic Republic of the Congo. It outlines how free access to forest resources must be guaranteed for poor forest-dependent people so as to reduce poverty and help diminish the negative impacts of the global financial and economic crisis for rural households. Finally, it describes the development of a legal framework for commercial use of NWFPs, to safeguard people’s rights of access and prevent depletion of the resources.

NOT THE FIRST CRISIS

The countries of Central Africa already experienced more than one economic crisis in the mid-1980s and the devaluation by 100 percent of the local currency (the CFA franc) in the mid-1990s. Rural people’s reliance on NWFPs increased as a result. In Cameroon, for example, the crisis lowered the financial profitability of cocoa in the international market, and induced rural communities to diversify their income sources (to minimize the risk associated with cocoa farming) (Ndoye and Kaimowitz, 2000) and to turn increasingly to NWFPs for income (Tieguhong and Ndoye, 2004). Furthermore, the economic crisis increased the level of poverty in rural areas as many people who had had minimum-wage jobs

in cities had to return to their villages, and NWFPs began to substitute now less affordable products. For example, the currency devaluation increased the price of beer and whiskey and made palm wine more attractive; and the price of pharmaceutical products increased, so rural dwellers and poor urban households increasingly turned to herbal medicines for their health care (Ndoye and Tieguhong, 2004).

Before the current crisis, the region’s gross domestic product (GDP) per capita was already low, ranging from US\$107 in the Democratic Republic of the Congo to US\$5 915 in Equatorial Guinea (where oil exploration has raised per capita GDP from previously among the lowest in the region). Apart from Equatorial Guinea, which has an annual GDP growth rate of just over 16 percent, growth rates are below 5 percent; the Central African Republic is in recession with –0.8 percent growth. Meanwhile, the region’s population (almost 117 million in 2006) continues to grow quickly, at an average annual rate of 2.5 percent (FAO, 2009).

ECONOMIC CONTRIBUTION OF NON-WOOD FOREST PRODUCTS National economies

In Central African countries, data on NWFPs are not included in national production and trade statistics, so their contribution to GDP is poorly known

(Tieguhong and Ndoye, 2006). Research in Cameroon has shown that NWFPs are of great economic importance to rural households, traders and the national economy (Ndoye and Tieguhong, 2004; Tieguhong and Ndoye, 2006) (Table). Between 1999 and 2003, the regeneration tax owed to the Cameroon Government by NWFP licensees (10 CFA francs [US\$0.02] per kilogram of NWFP harvested and sold, ostensibly for replanting harvested plants) was alone worth over 350 million CFA francs (US\$700 000) (Betti, 2004) – and this figure does not take into account other taxes, e.g. on exports and on NWFP processing industries. The international market value of NWFPs in Cameroon is also significant. For example, export value for 206 tonnes of *Dacryodes edulis* (an edible fruit rich in fats and oils) to France and Belgium in 1999 amounted to US\$1.7 million. The annual market value of *D. edulis* fruits in Cameroon was estimated at over US\$7 million (Awono *et al.*, 2002).

Household economies

The importance of NWFPs in Central Africa is most visible at the household level. For instance, Tieguhong (2009) found that in five villages surrounding Lobeke National Park in Cameroon, household-consumed goods represented 44.6 percent of the cash flow to surveyed households. Goods associated with

Some NWFPs of high economic value in Cameroon

| Product | Part of plant used | Use | Value (US\$) |
|-------------------------------------|--------------------|-------------------------------|--------------|
| Edible plants^a | | | |
| <i>Cola acuminata</i> | Seed | Snack, stimulant, aphrodisiac | 212 000 |
| <i>Dacryodes edulis</i> | Fruit | Food (vegetable) | 244 000 |
| <i>Irvingia</i> spp. | Seed | Condiment | 302 000 |
| <i>Ricinodendron heudelotii</i> | Seed | Condiment | 460 000 |
| Medicinal plants^b | | | |
| <i>Pausinystalia johimbe</i> | Bark | Aphrodisiac, stimulant, tonic | 600 000 |
| <i>Prunus africana</i> | Bark | Prostate treatment | 700 000 |

Source: Ndoye, 1995 (edible plants); CARPE, 2001 (medicinal plants).

^a January to July in the humid forest region.

^b Annual value at national level.

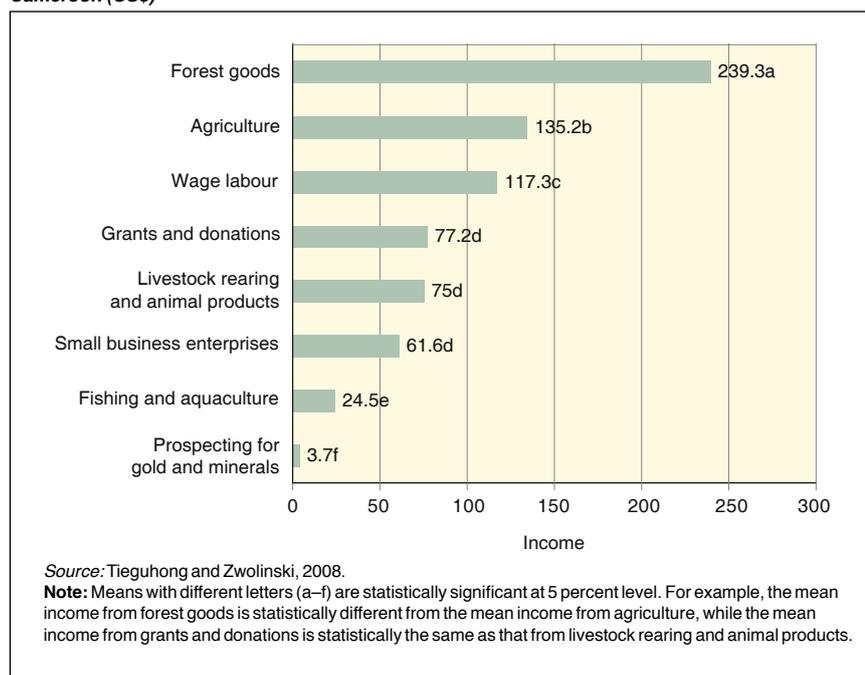
shelter and food security dominated the income generated by the households, with forest products being the main and most valuable source of them (Tieguhong and Zwolinski, 2008) (Figures 1 and 2). NWFPs were also found to constitute the main source of income for 39 percent of women in Nko'ongop village, located at the periphery of Campo Ma'an National Park in South Cameroon (Sonne, 2001).

In Équateur Province of the Democratic Republic of the Congo, charcoal, palm wine and edible leaves of *Gnetum* spp. are the NWFPs that provide the highest profit to traders, averaging US\$216, \$166 and \$131 per month, respectively. These profits are higher than the average wage of secondary school teachers (US\$50 to \$70). In the same province, households selling six NWFPs (Maranthaceae leaves, caterpillars, mushrooms, charcoal, *Gnetum* spp., palm wine) obtained, on average, a monthly revenue

In Cameroon, fruits of *Dacryodes edulis* are of great economic importance to the economy, with annual market value estimated at over US\$7 million (Makenene market)



1
Mean annual household income by activities registered in villages near Lobeke National Park in Cameroon (US\$)



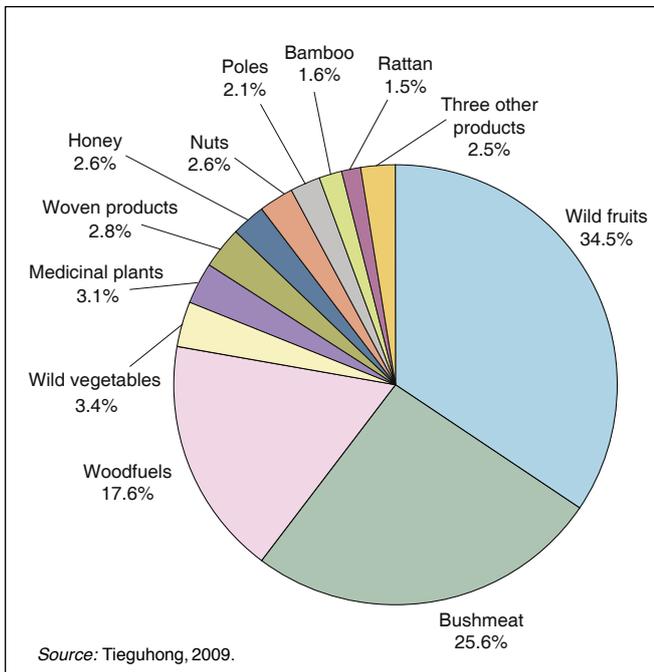
of US\$84, comparable to that of a civil servant (US\$80) (Ndoye *et al.*, 2007). In Bandundu Province, traders in these same products gained a profit of US\$40 per month. Traders from Bandundu exporting leaves of *Gnetum* spp. to Kinshasa

gained an average monthly income of US\$270, which is higher than that of a medical doctor (US\$190 to \$250).

Employment

NWFPs have a major role in rural employment and income generation, mostly in the informal sector. A survey of a heavily forested zone in southern Ghana showed that 10 percent of the rural population gains some income from activities in the NWFP value chain (Arnold and Townson, 1998). If a similar percentage is assumed in Central Africa, it can be estimated that about 6.5 million people in the region are engaged in NWFP activities (based on population estimates from FAO, 2009).

Rural women are particularly involved in gathering and processing NWFPs and are likely to be the main beneficiaries or losers from forest resource management interventions in Central Africa that may affect free access to the forests. In Cameroon, for example, women represent 51 percent of the population, but more than 70 percent of them live in rural areas and exploit natural resources to meet



2
The most important forest products in terms of income and/or subsistence for households surveyed in villages near Lobeke National Park, Cameroon

these resources; the increasing access to trade (national, regional and global) facilitated by the expanding network of roads and logging tracks; or the surge in subsistence and commercial demand arising from the ongoing recession in the timber sector. The national forest codes and legislation elaborated in the 1990s did not address these weaknesses of the traditional regulatory framework, partly because they were more geared to timber products.

Through a fully participatory process within a recently completed regional project (2006–2008), major forest stakeholders and representatives of governments, the private sector and local people's associations in Central Africa have developed innovative model legislation governing the subsistence and commercial use of NWFPs in Central Africa. The model law – *Directives sous-régionales relatives à la gestion durable des produits forestiers non ligneux d'origine végétale en Afrique centrale* (FAO, 2008) – is designed to promote business development but also to protect the rights of the weakest segments of society to access forest resources for their subsistence needs. It serves as a blueprint that can be adapted to national circumstances for integration in national forest legislation. The model law was endorsed by all COMIFAC countries in November

the livelihood needs of their families. More than 94 percent of 1 100 NWFP traders surveyed in rural and urban markets in Cameroon were women (Ndoye, Ruiz-Pérez and Eyebe, 1997). In the Democratic Republic of the Congo, more women than men were observed to participate in the bushmeat trade (Tshombe *et al.*, 2000); women represented 80 percent of bushmeat traders in Kinshasa markets (Ndonga, 2004).

Domestication of wild resources (see Box) presents a promising opportunity for investment and for employment (or self-employment) for local farmers and NWFP gatherers – who may well be the same. However, neither domestication nor increasing the gathering and hunting pressure of NWFP species can go on in an unregulated way, as it may exclude the weakest members of rural society from continuing their NWFP gathering activities for subsistence and income generation. Furthermore, unregulated exploitation of any NWFP may lead to overharvesting of the species and forest degradation. Hence the need to put in place a regulatory framework governing access to the forests for all users.

LEGAL AND INSTITUTIONAL DIMENSIONS

As long as NWFPs were primarily used for subsistence, centuries-old informal rules and customary practices were sufficient for overall use and stewardship of the forests by many diverse user groups. However, the traditional regulatory framework is no longer adequate to deal with the needs of increasing populations; the complexities of expanding commercial use of

Rural women are particularly involved in gathering, processing and selling non-wood forest products (women selling leaves of *Gnetum* spp. in Kinshasa market, Democratic Republic of the Congo)



O. NDOYE

2008. Cameroon and the Democratic Republic of the Congo are already in the process of adapting and implementing the legislation at the national level, and three more countries (Congo, Gabon and the Central African Republic) are beginning to do so.

The model legislation is intended to supplement relevant traditional customary rights and enables self-employment in commercialization of NWFPs to become formal and legal. It covers:

- access to NWFPs: user rights and norms and procedures for obtaining harvesting titles;
- NWFP market chains: procedures for harvesting, transport, processing and commercialization;
- fiscal arrangements: taxation, special funds;
- infractions and sanctions;
- institutional arrangements and capacity building;
- identification of competent authori-

ties and procedures for implementation of the law.

Additional institutional support to increase the contribution of NWFPs might include:

- capacity-building for actors involved in NWFP value chains;
- promotion of local community participation in all aspects of forest management, and sharing of benefits derived from forest products;
- analysis of institutional factors that favour or disadvantage access to benefits along the value chain;
- initiatives to ensure access to resources and to empower weaker rural populations and minority groups, especially once NWFP values become important;
- dissemination and implementation of the legal framework, including identification of inequities in trade transactions in terms of selected commodity chains.

CONCLUSION AND RECOMMENDATIONS

As a consequence of economic crisis, the pressure on many NWFPs has increased, which could lead to overexploitation of these species. But with sustainable harvesting techniques and domestication, the economic and ecological benefits could be substantial. The NWFP sector could benefit substantially from investment and the development of local technologies, increased quality standards and recognition of property rights of local communities. The main problem is to translate policies from official, well-designed texts into concrete development activities on the ground.

Domestication of species providing NWFPs offers great potential as an income and/or employment source, but it requires large investments which are not easily available during a financial crisis, and definitely not to poor forest dependent people. "Small is beautiful", and it is likely to be through small-scale investment that the NWFP sector can contribute most during the current crisis. The sector involves numerous collectors, using simple tools and requiring little investment, who can easily adapt to changing economic patterns to improve their livelihoods. However, an appropriate legal and institutional framework must be in place to prevent the weakest segments of society from exclusion and to avoid resource degradation. The NWFP model law project in Central Africa has piloted a participatory process for incorporating rights-based legislation into national government programmes – a prerequisite for supporting self-employment and small-scale enterprises; and it has demonstrated the value of involving regional structures (in this case COMIFAC) to facilitate harmonization and collaboration among the countries of a region, enabling them to have a comparable basis for their rules and laws. ♦

Opportunity for investors: domestication of NWFP-producing species

Since the economic crises of the 1980s, cocoa farmers in the humid forest zone of Cameroon have diversified their farm income by planting *Irvingia* spp. and *Ricinodendron heudelotii*, both used as condiments (Tieguhong and Ndoye, 2006). Between 1996 and 2003, the average price of 1 kg of the fruits from these species in the Yaounde region of Cameroon was 200 percent higher than the average price of 1 kg of cocoa beans (Ndoye and Tieguhong, 2004). This comparison suggests that NWFPs should not be overlooked as a source of income generation in Central Africa.

Another exciting NWFP with potential that could be developed further is *Prunus africana*, whose bark has medicinal uses. *P. africana* is a major economic resource in many countries of East, West and Central Africa; it is already cultivated, but only on a small scale to date. According to Tchoundjeu (2004), the world market requires about 5 million trees of *P. africana* in cultivation to satisfy demand. This could come from 1 farmer growing 5 million trees, 10 farmers growing 500 000 trees, 100 farmers growing 50 000 trees, 1 000 farmers growing 5 000 trees, 10 000 farmers growing 500 trees, 100 000 farmers growing 50 trees or 1 million farmers growing 5 trees. Economic analysis (Tieguhong and Ndoye, in preparation) shows that 10 000 farmers (with average age of 30 years and average household size of two) each growing 500 trees of *P. africana* to maturity and exploiting their bark following sustainable harvesting methods with rotation of five years, would each earn an average sustainable annual income of 975 254 CFA francs (US\$1 950), more than twice the country's per capita income. Perhaps investment of a few million dollars would suffice to realize this potential in less than two decades.



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Global economic crisis and long-term development: a view from the South African forestry sector

R.N. Heath and S. Chipeta

While safeguarding domestic industries and jobs, crisis mitigation policies and measures should also help to build growth prospects for the world economy.

The world financial system meltdown and resulting economic crisis have caused a growth crisis in African economies. A great concern is that the growth crisis may degenerate into a development crisis as the recession deepens. Like other developing countries which are strongly integrated in the world economy and significantly dependent on its good health, South Africa has been affected by the sharp fall in demand for its export products and the drop in prices of key export commodities.

The South African Government has proposed a number of broad principles to govern South Africa's response to the crisis. These include:

- avoiding placing the burden of the downturn unfairly on the poor and the vulnerable;
- protecting and supporting activities aimed at strengthening the capacity of

the economy to grow and create jobs in the future;

- maintaining the planned high levels of investment in public sector infrastructure and encouraging private-sector actors to maintain and increase their fixed direct investment;
- ensuring that interventions are timely and appropriately targeted and tailored.

The Department of Agriculture, Forestry and Fisheries endorses a combination of measures for public and private-sector employment and training to help avoid massive job losses in the period ahead. Under the auspices of the Expanded Public Works Programme, the Forest Department will accelerate implementation of labour-intensive programmes such as Working for Woodlands (to rehabilitate degraded woodlands), Working for Water (a programme for removing invasive species) and Working on Fire. Through these programmes appropriate training courses will be offered, accredited by the relevant authorities. Equitable representation of unemployed youth, women and disabled people will be sought to satisfy social as well as environmental needs. So far (to August 2009), South Africa has announced a major public investment programme of approximately 787 billion rands (US\$101 billion) over the three financial years to March 2012 to assist in these processes.

The Forestry Sector Transformation Charter which was approved by Parliament in 2008 (see www2.dwaf.gov.za/webapp/Documents/ForestSectorCharterSection9Gazette.pdf) provides a framework for efforts to abate the current crisis. The charter guides the diversification of products and development of new products to widen market access. Furthermore, it steers financial support of emerging and small, medium and micro enterprises (SMMEs). The Department of Agriculture, Forestry and Fisheries is developing a contract with the Industrial Development Corporation (IDC) to administer soft loans to SMMEs in forestry. In addition to enabling coordinated and accelerated financing of SMMEs, the funds secured from IDC will be used to avoid job losses and increase employment in the forest sector.

Based on commitments made in the charter, the Forestry Branch has requested additional funding of 100 million rands (US\$12 million) from treasury to restore degraded forests and restock temporarily unplanted areas of about 17 000 ha. It is envisaged that these efforts will absorb some retrenched workers and also cater for an increase in afforested land, while also helping to combat the negative effects of climate change.

The forest industry is the fourth largest exporter in South Africa. From a macroeconomic point of view, the government recognizes the value of a competitive exchange rate. With the rand currently depreciated, there are opportunities to increase employment and generate export commodities in the forest sector. The national response to the global economic slowdown is to rebuild local industrial capacity and avoid deindustrialization during the period ahead. Critical to such a strategy is the need to improve the competitiveness and performance of key local industries, particularly of vulnerable sectors and small businesses.

Countries and the international community need to monitor and review their crisis mitigation policies and measures carefully to ensure that while safeguarding domestic industries and jobs, they do not unintentionally constrain trade growth, which could undermine the economic growth prospects of other countries. Given the intricacies of the crisis, this is an opportune time to review development strategies. The impact of the crisis on international trade and investment must be addressed as a key element of the multilateral agenda. Individual countries must also put in place development strategies that can mitigate the negative effects of the crisis on economic growth and development. Governments must emphasize a focus on development gains.

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FAO FORESTRY

COFO 2009/World Forest Week

"Forests in a changing world" was the overall theme of the nineteenth session of the Committee on Forestry (COFO), held at FAO headquarters in Rome from 16 to 20 March 2009. Under the banner of the first World Forest Week, the biennial forestry meeting of FAO member countries was expanded to welcome the participation of many partner organizations. The event attracted over 550 participants.

The keynote speaker was Gro Harlem Brundtland, the United Nations Secretary-General's Special Envoy on Climate Change, formerly Prime Minister of Norway and head of the World Commission on Environment and Development (best known for developing the broad political concept of sustainable development, published in the 1987 report *Our common future*). In her address, Brundtland called for mutually supportive forest and climate change policies and emphasized the imperative of including forests in a post-Kyoto Protocol climate agreement, noting that reducing deforestation and forest degradation would be the most cost-effective way to address climate change. She underlined, however, that the future agreement must also safeguard the rights of forest-dependent people.

Sustainable forest management in relation to climate change was one of the two main topics addressed at COFO. Presentations noted that climate change concerns raise potential for financing forest management activities – particularly through the inclusion of a mechanism for reducing emissions from deforestation and degradation (REDD) in the post-2012 climate change agreement. Delegates emphasized that any REDD arrangement must take into account the range of values forests provide.

The discussions underscored the linkages between sustainable forest management and REDD, and stressed that to adapt to and mitigate climate change, sufficient financial resources must be devoted to sustainable forest management. The joint climate change strategy presented by the Collaborative Partnership on Forests (CPF) (see *Unasylva* 231/232, p. 87) underlined the need for the forestry community to present a united front to ensure that sustainable forest management is included in the prospective climate agreement.

The second main theme at COFO was institutional change in a dynamic world. The discussions focused on how public sector



Gro Harlem Brundtland delivers keynote speech at the nineteenth session of the FAO Committee on Forestry, 17 March 2009



A giant chair donated by Federlegno, the Italian Wood Industry Federation, towers over the COFO exhibit in the FAO atrium – a reminder that using wood is good

forestry agencies need to adapt to economic, political, social, environmental and technological changes at all levels, so as to become more responsive to society's needs and more efficient in delivery of economic and environmental services.

In parallel to sessions presenting official COFO agenda items, approximately 20 special World Forest Week events were held to enable greater participation by intergovernmental organizations and more informal, off-the-record discussion among countries. Topics included, among others, the future of public forestry research; new perspectives in forestry education; fire and climate change; forest adaptation to climate change; and access to financing for sustainable forest management. Featured speakers included leaders and representatives of many CPF partner organizations.

One of the special events was a dialogue among heads of forestry departments, which gave participants an opportunity to discuss the challenges they face – such as budget constraints; changing societal and stakeholder expectations, needs and activities; shifting government priorities and structures; and environmental stresses such as climate change, fires, pathogens and pests – and to share innovations for dealing with them, including creative funding processes and partnerships with the private sector.

Finally, a special session addressed the impacts of global economic turbulence on the forest sector. Panelists raised concerns that the global economic downturn would be likely to lead to reductions in investment and wood supply, job losses and overexploitation of forest resources for subsistence. However a main thrust of the session was to highlight the role that sustainable forest management can play in responding to the crisis. The central message was that investment in forestry could not only create millions of jobs, but would address climate change at the same time. This session provided the basis for many of the articles in this issue of *Unasylva*.



FAO Strategy for Forests and Forestry endorsed

At its nineteenth session, the Committee on Forestry (COFO) endorsed the new FAO Strategy for Forests and Forestry, which was developed through a consultative process as requested by the eighteenth session of the committee in 2007.

The new strategy is aligned with ongoing reforms in FAO, and in particular with the new framework of results-based management adopted by the Organization in accord with the recommendations of an Independent External Evaluation carried out from 2005 to 2008. The FAO reforms are being implemented through an Immediate Plan of Action adopted in November 2008.

The new strategy for forests outlines three global goals for society as a whole. Paraphrased, these include:

- informed, coordinated, transparent and participatory decision-making across sectors, based on timely and accurate information;
- increased contribution of trees, forests and forestry to livelihoods, poverty alleviation, food security and sustainable supply of raw materials and energy, and increased recognition of these benefits;
- good forest management practices, leading to increased forest resources and thus a greater contribution of forests and trees to mitigating climate change, combating desertification, conserving biodiversity and ensuring water quality – as well as increased recognition of these ecosystem services.

The strategy identifies nine core functions of FAO in forestry:

- providing long-term perspectives and leadership in monitoring and assessing trends in forest resources and services, and the production, consumption and trade of forest products;
- generating, disseminating and applying information and knowledge, including statistics.
- leading the development of voluntary guidelines, supporting the development of national legal instruments, and promoting their implementation;
- articulating policy and strategy options and advice to improve the social, economic, and environmental aspects of forest development and conservation;
- providing technical support to promote technology transfer, catalyse change and build effective and sustainable institutional capacity for sustainable forest management;
- undertaking advocacy and communication to mobilize political will and to promote global recognition of required actions to achieve sustainable forest management;
- bringing integrated interdisciplinary and innovative approaches to bear on work in the forest sector and in other key sectors that have an impact on forests;
- working through strong partnerships and alliances where joint action is needed;
- facilitating linkages between national, regional and global levels.

Focus on results

At the Conference of FAO in November 2008, member countries approved in principle a revised strategic framework based on 11 strategic objectives for the Organization as a whole; these include one forestry-specific objective: "Sustainable management of forests and trees". The FAO Draft Strategic Framework 2010–2019 identifies six main organizational results directed towards meeting this objective:

- Policy and practice affecting forests and forestry are based on timely and reliable information.
- Policy and practice affecting forests and forestry are reinforced by international cooperation and debate.
- Institutions governing forests are strengthened and decision-making improved, including involvement of forest stakeholders in the development of forest policies and legislation, thereby enhancing an enabling environment for investment in forestry and forest industries. Forestry is better integrated into national development plans and processes, considering interfaces between forests and other land uses.
- Sustainable management of forests and trees is more broadly adopted, leading to reductions in deforestation and forest degradation and increased contributions of forests and trees to improve livelihoods and to contribute to climate change mitigation and adaptation.
- Social and economic values and livelihood benefits of forests and trees are enhanced, and markets for forest products and services contribute to making forestry a more economically viable land-use option.
- Environmental values of forests, trees outside forests and forestry are better realized; strategies for conservation of forest biodiversity and genetic resources, climate change mitigation and adaptation, rehabilitation of degraded lands, and water and wildlife management are effectively implemented.

These results cannot be achieved by FAO alone, but FAO can make a significant contribution. For each result, the strategy identifies priorities to guide FAO during the period 2010–2013. Specific outcomes and indicators are being developed under the the FAO Medium-Term Plan, and progress will be monitored and reported to FAO governing bodies, including COFO.



Industry committee ponders impacts of financial crisis

The global economic decline was high on the agenda when the Advisory Committee on Paper and Wood Products (ACPWP), one of FAO's statutory bodies in forestry, met at FAO headquarters in Rome for its fiftieth session on 26 May 2009.

The committee, comprising senior executives from the private industry sector worldwide, meets yearly to provide guidance to FAO on issues relevant to the paper and forest products industry, in support of member countries' efforts to progress towards sustainable development.

Country reports prepared by ACPWP members highlighted emerging issues and business developments over the preceding year. The main emerging issues were identified as climate change; potential market imbalances due to emission trading schemes; water supply and quality; certification issues, including the difficulty of certifying smallholdings; the energy market; and corporate social responsibility.

The most important business development identified in the country reports was without question the precarious economic situation, which had resulted in difficulties in obtaining loans, loss of retail sales and consumer confidence and decreased advertising expenditures. Lower production costs and raw material prices were seen to provide relief, but lower freight rates were exacerbating competition. The committee noted that the exceptionally uncertain economic situation calls for a rapid ability to adjust, as well as for measures to improve productivity and competitiveness. As export demand wanes, cost competitiveness becomes increasingly important.

The session that focused on the impacts of the financial crisis on the forest industry also looked at some ways out of the crisis, with particular attention to green building and to closer integration of biofuels and green chemicals with forest industries. Increased building with wood and substitution of wood for non-renewable building materials were perceived as a potential basis for a renaissance in sawmilling and woodworking industries, for example, especially in Europe. Some of the leading international forest corporations have announced intentions to integrate biofuel production in pulp mill processes. Biorefinery technologies being pursued include production of biodiesel, bioethanol and heavy fuel oils from forest residual biomass such as bark, stumps and branches; and synthesis and purification of gas from wood. In terms of the more traditional wood energy market, the downturn in wood prices bodes well for wood pellet manufacturing.

Another session addressed the need for industry to work together to communicate positive messages and reverse public misperceptions about wood and wood industries.

The committee also reviewed industry-relevant developments related to forests and climate change, and avenues for engagement of forest industry in ongoing climate change negotiations.

The day before the ACPWP meeting, FAO also hosted the annual meeting of the International Council of Forest and Paper Associations (ICFPA).

For more information about ACPWP, see: www.fao.org/forestry/51819

Forest tenure, governance and enterprise in Central and West Africa

In Central and West Africa, as in many regions, weak governance and insecure tenure rights often undermine the contributions of forestry to local, national and regional livelihoods and economies, and to the health of the environment. Clarification and recognition of tenure rights can open up opportunities for forest communities to invest in and enhance the sustainable use of forests.

At the International Conference on Community Forest Management and Enterprise, held in Brazil in 2007, African participants called for a follow-up conference to chart a time-bound plan for systematically expanding community forest tenure, management and enterprise in Africa to agreed, achievable targets by 2015. To this end, the Ministry of Forests and Wildlife of Cameroon hosted the conference Forest Tenure, Governance and Enterprise: New Opportunities for Livelihoods and Wealth in Central and West Africa, from 25 to 29 May in Yaounde, Cameroon. The objective of the conference was to catalyse new and wider-ranging actions by governments and civil society organizations towards more secure land and forest tenure in the region.

The meeting was organized by FAO, the International Tropical Timber Organization (ITTO), the Rights and Resources Initiative (RRI), the International Union for the Conservation of Nature (IUCN), the Center for International Forestry Research (CIFOR), the World Agroforestry Centre (ICRAF), Intercooperation, the Global Alliance of Community Forestry (GACF) and the Central African Forests Commission (COMIFAC). It attracted close to 250 participants from all regions.

The conference comprised nine sessions addressing:

- current status of tenure and emerging lessons from ongoing reform;
- tenure reform – experiences and lessons from other countries (with positive examples from Brazil, China, Guatemala, Mexico, Mozambique, Nepal, the United Republic of Tanzania);
- the role and perspectives of forest communities in the forest reform process;
- tools and strategies for recognizing and mapping rights;
- the role of tenure and governance in climate change mitigation and adaptation;
- experiences with conventional and alternative tenure and wood-based enterprises;
- experience with extraction and management of non-wood forest products;



- reforming land tenure – how to ensure effective reforms and implementation;
- next steps to accelerate reforms in Central and West Africa.

The conference concluded with agreement on a time-bound set of activities for implementation by governments and social actors, the “Objective 2015”. These activities include:

- prioritizing forest tenure reform as a national development issue in all African countries by 2015;
- reversing the assumption that all lands are State owned;
- recognizing the human rights of all ethnic and minority peoples by 2015, including their rights to land and access to resources;
- empowering communities to claim their rights by expanding participatory mapping of community land rights before development of land use plans and zoning;
- setting ambitious targets for community ownership of forest lands (e.g. a percentage to be reached by 2015) through multistakeholder processes, and developing strategies and plans to achieve those targets;
- addressing constraints to community and small-scale enterprises, markets and trade, to aim towards at least quadrupling community incomes from all forest operations by 2015;
- strengthening political will and action to advance forest tenure reforms;
- setting up mechanisms for monitoring and following up on the Objective 2015.

Further information about the conference is available at: www.itto.int/en/workshop_detail/id=44270000

Moving ahead with community-based fire management

Every year fires affect an estimated 350 million hectares of land, with damage to property, natural resources and livelihoods, and frequently with loss of life. Uncontrolled vegetation fires also contribute to global warming, air pollution, desertification and loss of biodiversity. Developing countries are often the most susceptible.

Fire management cannot be fully shouldered by government agencies or communities alone. FAO therefore promotes community-based fire management (CBFiM) – an approach in which a local community (with or without the collaboration of other stakeholders) has substantial involvement in deciding the objectives and practices involved in preventing, controlling or using fires. CBFiM can be especially effective in those places where ignition by humans is the primary cause of wildfires. Over the past five years, FAO and The Nature Conservancy (TNC) have been jointly preparing and presenting training programmes and workshops to disseminate the approach.

In March 2009, for example, FAO, TNC and the China State Forestry Administration held a workshop in Xishungbanna,

Yunnan Province (southwestern China) to promote CBFiM in China and elsewhere in Asia, via the use of local and global examples. In Asia the frequency and intensity of fires, and the severity of pollution problems from the associated smoke and haze, has increased over the past 30 years. In China, forest fires are largest and most numerous in remote, highly forested regions of Heilongjiang, Inner Mongolia, Yunnan, Guangxi and Guizhou, where climates are extreme (including extreme wind events) and both access and fire prevention and control facilities are limited. At the workshop, forest fire scientists, managers, policy-makers and non-governmental organizations from Northeast Asia sought viable fire management options for their particular socio-cultural, environmental and geographic conditions.

CBFiM is based on the following principles, which have been developed since 2001 by Project FireFight South East Asia (an initiative of the World Wide Fund for Nature [WWF] and the International Union for the Conservation of Nature [IUCN]) together with FAO, the Global Fire Monitoring Center and German, Thai and United States government agencies; the principles have been tested in tropical, temperate and savannah environments. Fire management:

- should focus on people, not on equipment or legal constructs;
- requires a sense of ownership, without which people’s motivation to participate will be eroded;
- can be adapted to use local and indigenous knowledge, taking caution to ensure that the adaptations can fit within a rapidly evolving environment;
- benefits from communities’ tendency to focus on prevention over suppression;
- draws on the strengths of and balance between community members and government agencies.

For more information about CBFiM, see: www.fao.org/forestry/firemanagement

Publications on CBFiM can be viewed at: www.fao.org/forestry/35893

Ken King, 1929–2008

FAO has recently learned of the death of Ken King, Assistant Director-General of the FAO Forestry Department from 1974 to 1978, on 30 July 2008 in Georgetown, Guyana.

Kenneth Fitzgerald Stanislaus King was born in Georgetown, Guyana (then British Guiana) on 22 August 1929. After completing his secondary education he began his career as a Forestry Officer in the Guyana Forest Department, but resigned to continue his education in the United Kingdom. He gained a forestry degree at Bangor University, Wales, and a law degree from London University, both in the same year (1956). In 1963 he obtained a doctoral degree in forestry economics from the University of Oxford with a thesis on land use in the tropics.



King joined FAO in 1964, working first on a project in Nigeria to help establish a forestry faculty at the University of Ibadan. In 1968 he became Chief of the Development Planning Section in the Forestry and Forest Products Division at FAO headquarters in Rome. In 1970, he became Forestry and Land Use Officer in the FAO/World Bank Cooperative Programme. In 1972, King returned to Guyana to serve in his country's government, as Vice-Chairman of the Guyana State Corporation (GUYSTAC), an umbrella organization overseeing public enterprises, and then as Minister of Economic Development.

However, frustrated by difficulties in implementing the national development plan, whose preparation he had led, King returned to FAO in 1974, this time as Assistant Director-General in charge of the Forestry Department. During his tenure in this position, the department added programmes oriented towards meeting the

needs of rural populations, materially strengthening the community forestry component of its work.

In 1978, he left FAO to become the first Director-General of the International Council for Research in Agroforestry (ICRAF) (now the World Agroforestry Centre) in Nairobi, Kenya. This position was followed by an appointment as United Nations Development Programme (UNDP) Regional Representative in Addis Ababa, Ethiopia.

In 1991, he returned to Guyana, occupying in the years that followed a number of ministerial and political leadership positions. From 2002 to 2004, he was his country's Ambassador to Belgium and Permanent Representative to the European Union. But while in Belgium his health deteriorated; he resigned his post to undergo treatment in Saint Lucia.

Ken King's wife Joyce had died in 2005. They are survived by a son and a daughter.

UNFF continues search for solution on financing for sustainable forest management

Over 600 participants attended the eighth session of the United Nations Forum on Forests (UNFF-8), held from 20 April to 1 May 2009 at United Nations headquarters in New York, United States of America. Seeking agreement on how to finance the implementation of the Non-legally Binding Instrument on All Types of Forests (NLBI), established at UNFF-7, was the main task at hand.

UNFF was established in 2000 as a subsidiary body of the United Nations Economic and Social Council (ECOSOC), with the main objective of promoting the management, conservation and sustainable development of all types of forests by:

- facilitating implementation of forest-related agreements and fostering a common understanding on sustainable forest management;
- providing for continued policy development and dialogue among governments, international organizations, and major groups, in a holistic, comprehensive and integrated manner;
- enhancing cooperation and policy and programme coordination on forest-related issues;
- monitoring, assessing and reporting on progress towards, and strengthening political commitment for, sustainable forest management.

UNFF-8 had two main themes. Under the theme “forests in a changing environment”, delegates addressed issues of forests and climate change, forest loss and degradation, desertification and biodiversity conservation. The second theme, “means of implementation for sustainable forest management” embraced transfer of technology, capacity building and financing for

sustainable forest management. Participants divided into two working groups to deliberate on these and other issues.

Working Group 1 focused on forests in a changing environment, regional inputs and enhanced cooperation. Substantial time was devoted to forests and climate change, in particular the relationship between measures for reducing emissions from deforestation and forest degradation (REDD) and sustainable forest management. Many delegates stressed the need for adequate consideration of sustainable forest management in REDD policies, including ensuring that policies for climate change mitigation and forest financing consider the multiple values of forests and the whole range of forest products. Some delegates expressed the hope that UNFF could provide an opportunity to give a holistic perspective on forests and climate change to the outside world, including the climate change convention.

Working Group 2 covered means of implementation, progress towards sustainable forest management and forest law enforcement and governance (FLEG) as a cross-cutting issue. On the subject of financing, however, delegates were unable to reach agreement. The developing countries favoured the establishment of a global forest fund, while donor countries would prefer a facilitative process to enhance access to current funding and create enabling conditions for investment. Delegates eventually agreed on the establishment of an Ad Hoc Expert Group to consider the establishment of a voluntary global forest fund. This group will submit a preliminary report to UNFF-9 and final recommendations to UNFF-10. The resolution adopted after a final all-night session contains bracketed text for negotiation at the forum’s next session.

During the meeting, delegates also participated in two multistakeholder dialogues which addressed the participation of women, youth and indigenous people in decision-making. Panel discussions were held on forests and biodiversity, climate change and desertification, the financial crisis and regional perspectives on forests in a changing environment.

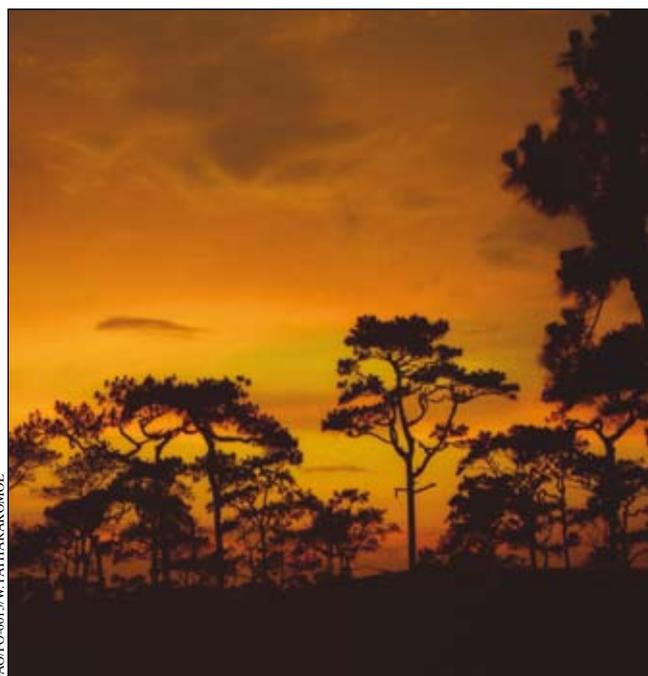
The ninth session of UNFF will be held in New York from 24 January to 4 February 2011 with the theme “People, livelihoods and poverty eradication”.

More information, documents and the report of the session can be viewed at: www.un.org/esa/forests/index.html

A forest road to Copenhagen

Climate change negotiators have been meeting throughout 2009 in the run-up to the final negotiation of a post-2012 agreement to follow the Kyoto Protocol – due to be concluded in Copenhagen, Denmark, from 7 to 18 December 2009, at the fifteenth session of the Conference of the Parties (COP-15) to the United Nations Framework Convention on Climate Change (UNFCCC).

Deliberations on the text for agreement at Copenhagen are being carried out by two working groups:



- the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA), which is responsible for the Bali Action Plan discussions on UNFCCC's total long-term emission reduction targets and actions on mitigation;
- the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP).

The ad hoc working groups convened from 29 March to 8 April 2009 in Bonn, Germany; again in Bonn from 1 to 12 June; and in informal intersessional consultations from 10 to 14 August. Further meetings of the working groups will take place 1 to 12 September in Bangkok, Thailand, and 2 to 6 November in Barcelona, Spain.

Many of the discussions are of interest to the forest sector, particularly negotiation (under AWG-LCA) of a mechanism for reducing emissions from deforestation and forest degradation (REDD). Major issues to be resolved include the form of a financial incentive mechanism (fund, market-based or mixed) and whether REDD could be used for generating carbon offsets.

The scope of REDD activities is also under discussion. There appears to be widespread support for a "REDD-Plus" instrument (covering REDD plus conservation, sustainable management of forests and enhancement of forest stocks) and some support for REDD-Plus-Plus (which would also address activities outside the forest sector that drive deforestation and forest degradation). Support for these expanded proposals is consistent with the call by the Collaborative Partnership on Forests (CPF) for a more comprehensive approach to REDD.

Some environmental groups recommend excluding production forests from REDD, claiming that REDD funds should not be used to subsidize industrial logging operations. Negotiators recognize, however, that excluding production forests from a REDD instrument could actually undercut efforts to reduce deforestation and forest degradation, since a REDD-Plus mechanism would require carbon accounting in all forests and thus provide an incentive for their improved management. Such a mechanism would also help avoid leakage (i.e. loss of carbon from one site because of mitigation actions taken elsewhere).

Support for a phased approach to REDD (from readiness to early actions to full implementation with measuring, reporting and verification) and for a mix of market and non-market financing appears to be emerging. Many parties have emphasized the need to ensure that REDD activities respect the rights of indigenous people and forest-based communities and safeguard biodiversity.

Possible expansion of the scope of the Clean Development Mechanism, to include agriculture and other forest activities in addition to afforestation and reforestation, has also been receiving increased attention in recent months.

Several issues under discussion in AWG-KP would have implications for the forestry sector in Annex I (developed) countries:

- **Harvested wood products.** Inclusion of harvested wood products in carbon accounting by Annex I Parties is gaining

support. Instead of assuming loss of all carbon from trees at the time of their harvesting, carbon emissions from harvested wood products would be discounted over time to reflect carbon stored in long-lived wood products (construction wood, furniture, etc.). Some environmental groups object to this, on the grounds that it would lead to increased use of wood products and thence to deforestation – objections that erroneously equate sustainable harvesting with deforestation, and neglect the carbon mitigation benefits of substituting wood for other more energy-intensive materials such as concrete or steel. Higher demand for harvested wood products could also provide incentives for more sustainable management of forests in developed countries.

- **Accounting for forest management.** Under the Kyoto Protocol, Annex I countries can choose to include carbon stock changes due to forest management in their national greenhouse gas accounting. Alternative accounting methods are being proposed for those that select this option, which could result in greater incentives for managing forest lands sustainably.
- **Land-based accounting.** Some parties propose that Annex I countries should include greenhouse gas emissions and removals from all land-based activities rather than only select ones. Related issues under discussion concern natural disturbances and non-permanence, as well as greenhouse gas accounting in wetlands.

Discussions on adaptation have remained relatively general, laying out principles for action. There is agreement that adaptation efforts should reflect country priorities; that priority should be given to the most vulnerable countries and the most vulnerable people within countries; that funding should be sufficient, additional to official development assistance (ODA) and equitably distributed; and that implementation and impact of adaptation programmes should be monitored, reported and verified.

World's three largest tropical forest regions to collaborate on biodiversity conservation

At a meeting in Montreal, Canada, from 8 to 10 July 2009, the intergovernmental regional organizations representing the world's three largest tropical forest regions – the Amazon Cooperation Treaty Organization (ACTO), the Association of South-East Asian Nations (ASEAN) and the Central Africa Forests Commission (COMIFAC) – agreed to work more closely in the conservation and sustainable management of tropical forests and biodiversity.

Amazonia, Southeast Asia and Central Africa together contain more than 80 percent of the world's tropical forests and an estimated two-thirds of all terrestrial species. To promote sharing of the regions' different experiences and approaches in conservation of their rich forest biodiversity, the Secretariat of the Convention on Biological Diversity (CBD), in collaboration



with Germany, facilitated a meeting among the three regional organizations on South-South cooperation and sustainable forest management, with a focus on forest biodiversity. In addition to experts from the three organizations, participants included international partners of CBD such as the Secretariat of the United Nations Forum on Forests, representatives of Parties to CBD and resource persons.

Sustainable forest management is a key objective of all three of these regional organizations. The participants exchanged

knowledge, strategies and experiences. They agreed to continue developing their cooperation through participation in major events, exchange of experts and technical and managerial expertise, coordination of programmes and projects, and sharing and learning from successful initiatives.

The meeting was held in the context of the implementation of the Bonn mandate on South-South Cooperation. The CBD Secretariat convened a similar meeting in 2006.

Guidance for drafting forest fire legislation

Forest fires and the law – guide for national drafters based on the Fire Management Voluntary Guidelines. E. Morgera & M.T. Cirelli. 2009. FAO Legislative Study No. 99. Rome, FAO. ISBN 978-92-5-106151-0.

Forest fires can threaten livelihoods, ecosystems and landscapes. Fire management is the discipline of using fire to achieve land-management and land-use objectives, while safeguarding life, property and resources such as forests and other vegetation in rural areas. It encompasses prevention, preparedness, early warning, detection and mobilization, suppression and restoration (including research and technology transfer). It entails the appropriate use of natural or human-caused fire in maintaining ecological values and the integrity of certain ecosystems, and the use of fire to reduce the accumulation of natural fuel and residues from commercial and non-commercial activities.

Starting in 2003, FAO coordinated a multistakeholder process to develop Fire Management Voluntary Guidelines as part of a global strategy for international cooperation in fire management. The guidelines set out non-legally binding principles and internationally accepted strategic actions to address the cultural, social, environmental and economic dimensions of fire management at all levels. They can serve as a checklist to strengthen and implement policies, legal and regulatory frameworks, plans and procedures, and provide a basis for their development where these do not exist. Principle 8 of the voluntary guidelines clearly recognizes the role of legislation in supporting and institutionalizing forest fire management. Indeed fire prevention and suppression are often hampered by unclear lines of institutional responsibilities and by conflicting policies and legislation.

Using the Fire Management Voluntary Guidelines as a foundation, the present publication systematically identifies the elements of a coherent national legal framework on forest fires, capitalizing on the experience gained by FAO in advising

member countries on how to improve their forest legislation. It identifies emerging trends and singles out best practices and innovative legal solutions, taking as examples national and subnational legislation in a representative group of countries from different regions, having different ecosystems and different legal traditions.

The study concludes with key recommendations designed to help drafters of national legislation ensure that legal measures on forest fires are supportive of a holistic approach to fire management.

The publication is also available online at: www.fao.org/docrep/011/i0488e/i0488e00.htm

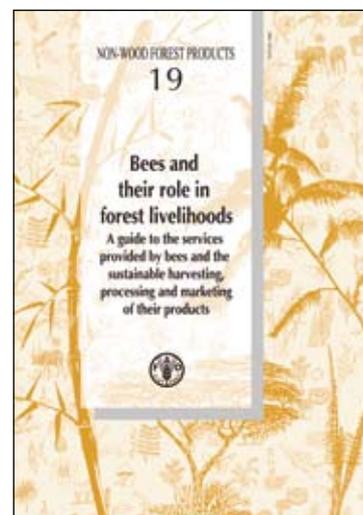
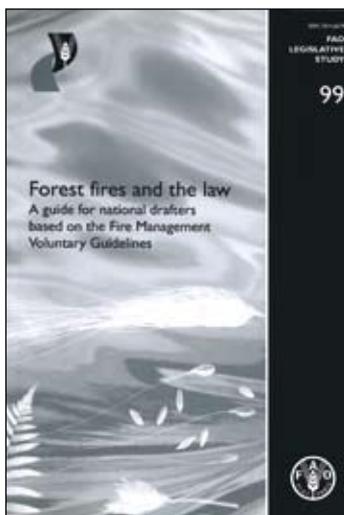
Bees – not only for honey

Bees and their role in forest livelihoods – a guide to the services provided by bees and the sustainable harvesting, processing and marketing of their products. N. Bradbear. 2009. Non-wood Forest Products No. 19. Rome, FAO. ISBN 978-92-5-106276-0.

Bees are a fantastic resource: they are essential for sustaining the environment because they pollinate flowering plants; they sustain agriculture by pollinating crops; and they provide honey and other products that sustain the livelihoods of forest-dependent people in almost every country on earth. In many parts of the world, significant volumes of honey are still obtained by plundering wild colonies of bees, while elsewhere beekeeping is practised as a highly developed skill.

This book provides insight into the many ways in which bees and beekeeping contribute to people's livelihoods, and considers how to strengthen this contribution. It provides basic information on managing wild bees and on the use of their products. Its aim is to promote more sustainable beekeeping practices which will better sustain forest-dependent livelihoods in the developing world.

After describing the main bee species and introducing their importance in nature, the publication outlines the importance of



apiculture for rural livelihoods and describes considerations in honey hunting and beekeeping. It reviews the impact of beekeeping on management and conservation of forests and the value of bees for crop pollination.

Next it turns to the products from bees – honey, beeswax, pollen, propolis, royal jelly and others – considered at both subsistence and commercial levels. It examines their production, value addition, trade and marketing, as well as constraints to their development.

Particular attention is given to further development of the potential for managing wild bee species in developing countries.

The text is supplemented with case studies from around the world, 12 pages of colour plates and a glossary of apiculture terms.

The publication is available online at: www.fao.org/docrep/012/i0842e/i0842e00.htm

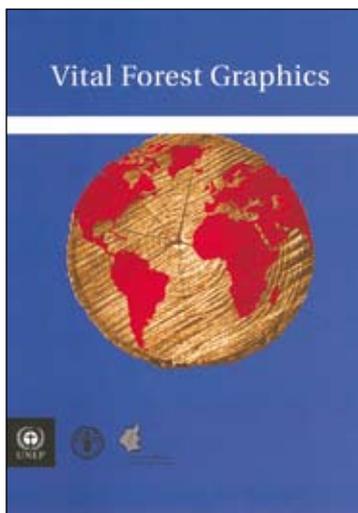
Graphic overview of forest issues

Vital forest graphics. 2009. Nairobi, Kenya, UNEP; Rome, FAO; New York, USA,

UNFF. ISBN 978-92-807-2903-0 (UNEP); 978-92-5-106264-7 (FAO).

The United Nations Environment Programme (UNEP) Vital Graphics series presents critical environmental issues in a simple and immediate way through the use of extensive graphics. To help communicate the value of forests to policy-makers and the wider public, UNEP, FAO and the United Nations Forum on Forests (UNFF) joined efforts to produce the present volume in the series, which analyses, synthesizes and illustrates two dozen topical forest issues, mostly presented as two-page spreads.

Vital forest graphics first sets the stage by looking at what defines a forest. It provides an overview of global trends in forest cover and challenges in forest conservation and management, then focusing in on the world's four largest forest ecosystems: the tropical forests of the Amazon, the Congo Basin and Southeast Asia, and the boreal forests.



The publication scrutinizes some of the key drivers behind forest loss and reviews some of the best practices for sustainable forest management, including participatory management and economic incentives. It reviews the importance of forests for people's livelihoods, examining topics such as forests and food security, forests and conflict, and forests and indigenous people.

The book also analyses the role of forests with regard to today's most pressing environmental issues, including climate change, loss of biodiversity, land-use pressure, trade, air pollution, energy and biofuels. It reviews the main environmental functions provided by forests in support of human well-being, including regulation of the hydrological cycle and microclimate.

Finally *Vital forest graphics* highlights legal and economic tools that have been implemented to help conserve the forests and secure the livelihoods of forest-dependent communities.

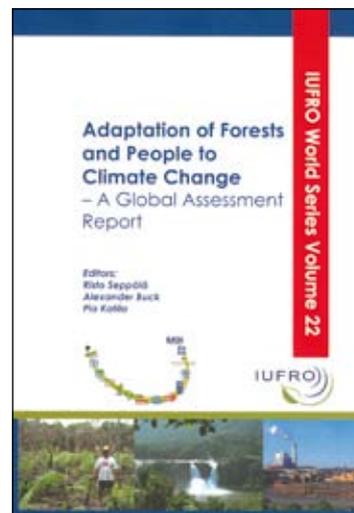
This book is of general interest and will be especially useful to those seeking graphic evidence for key forest concepts. It is available electronically at: www.grida.no/_res/site/file/publications/vital_forest_graphics.pdf

Adaptation panel's assessment

Adaptation of forests and people to climate change – a global assessment report.

R. Seppälä, A. Buck & P. Katila, eds. 2009. IUFRO World Series Vol. 22. Helsinki, Finland, IUFRO. ISBN 978-3-901347-80-1.

The Global Forest Expert Panels (GFEP) initiative of the Collaborative Partnership on Forests is a new mechanism for providing objective and independent scientific assessments of key forest-related issues to support international processes and decision-making at the global level. It is led and coordinated by the International Union of Forest Research Organizations (IUFRO). *Adaptation of forests and people to climate change* is its first product, prepared by an Expert Panel on Adaptation of Forests to Climate Change comprising 35 scientists and experts from



different forest-related disciplines and different parts of the world.

The publication is divided into two main parts. The first analyses past and future impacts and vulnerabilities, both environmental and socio-economic. The second assesses adaptation options; it includes a chapter on current adaptation measures and policies, and another on management for adaptation.

The assessment notes that climate change over the past half-century has already affected forest ecosystems and could cause them to be lost entirely if carbon emissions are not reduced substantially. In a vicious circle, the loss of forests releases great quantities of carbon to the atmosphere, causing further climate change. The publication notes that climate change could increase the supply of timber in some regions, but elsewhere its negative impacts on forest goods and services will have social and economic consequences for forest-dependent people, especially those living in poverty.

The authors emphasize that sustainable forest management is essential for reducing the vulnerability of forests and people to climate change. Since there is no universally applicable measure for adapting forests to climate change, forest managers must have sufficient flexibility to deploy the adaptation measures most appropriate for their local situations. Secure land tenure and forest user rights and sufficient financial incentives are important. Finally, the authors stress that unmitigated climate change could exceed the adaptive capacity of many forests during the course of the present century. Large reductions in greenhouse gas emissions from fossil fuels and deforestation are therefore needed to ensure that forests retain their capacity to mitigate and adapt to climate change.

There are still major gaps in knowledge about the impacts of climate change on forests and people and about how adaptation actions can best be tailored to local conditions. This book provides a solid basis for discussion and further research, thus contributing to the development of effective adaptation strategies.

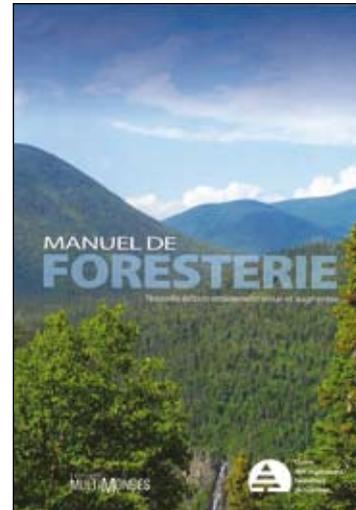
The assessment also forms the basis of a policy brief entitled *Making forests fit for climate change – a global view of climate-change impacts on forests and people and options for adaptation*, prepared especially for policy- and decision-makers. Both publications are available at: www.iufro.org/science/gfep

A compendium of principles and knowledge in forestry

Manuel de foresterie – nouvelle édition entièrement revue et augmentée. 2009. Quebec, Canada, Éditions MultiMondes. ISBN 978-2-89544-138-0.

The forestry profession covers a large variety of disciplines. Today's foresters must master a more diversified field of knowledge and deal with a greater breadth of issues than their predecessors, traditionally concerned for the most part with the tending and harvesting of forests.

The *Manuel de foresterie* is a unique – and uniquely large –



book. This revised and expanded edition of the 1996 original covers in 36 chapters and about 1 500 pages a large cross-section of subjects and disciplines of great use to the modern forester. Although written for the Canadian forestry context, and more precisely for Quebec, it also contains many sections that will be of interest to an international audience of forestry professionals, such as excellent chapters on forest biometeorology and hydrology, a significant ensemble of chapters on different aspects of forest measurement and monitoring, and many texts of interest on technical aspects of forest harvesting. The last section on wood technology starts with a chapter on the management of the value chain, an industrial management principle that clearly transcends national boundaries.

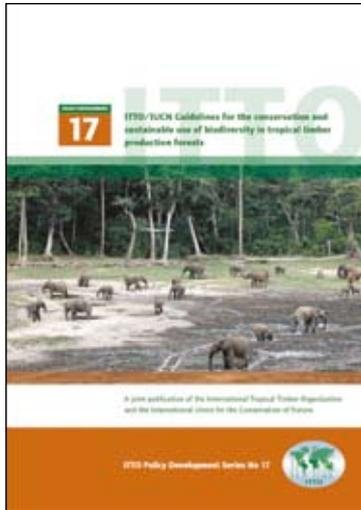
This massive storehouse of information will be useful as a teaching tool and a reference work, and is a worthwhile addition to a forester's library. It is available only in French.

How to reduce the impact of logging on biodiversity

ITTO/IUCN guidelines for the conservation and sustainable use of biodiversity in tropical timber production forests. 2009. ITTO Policy Development Series No. 17. Yokohama, Japan, ITTO & IUCN. ISBN 4-902045-41-9.

Natural tropical forests are enormously important for the conservation of biodiversity, containing perhaps 80 percent or more of the world's terrestrial species. This publication is concerned with the 90 percent of tropical forests that are outside protected areas and may be used for the cyclical extraction of timber and other products. It sets out the specific actions that policy-makers, forest managers and other stakeholders should take to prevent logging in tropical forests from posing a threat to biodiversity.

The International Tropical Timber Council first adopted guidelines on conserving biological diversity in tropical production forests in 1993. This updated version, produced through a consultative



process, takes account of the great changes that have taken place since then in public awareness, practice and policy related to biodiversity.

These changes include developments in scientific knowledge of conservation biology; the adoption of large-scale, landscape approaches to conservation; better technologies for observing changes in forest systems and greater knowledge of species distribution and ecology. They include international policy developments such as the Convention on Biological Diversity (CBD) Expanded Programme of Work on Forest Biological Diversity and CBD's adoption of the ecosystem approach; and

developments in certification, land rights and benefit sharing, payment for ecosystem services, forest law and governance, trade liberalization and the sourcing of wood from planted forests. The physical environment has also undergone change, for example from changing climate. One of the most important messages in the guidelines is that forest managers must be capable of monitoring changes in both biodiversity and society's requirements for biodiversity and of adapting their management accordingly.

Part I provides background and introduces key concepts. The heart of the book is Part II, which gives 11 principles, 46 guidelines and numerous related priority actions for biodiversity conservation, consistent with the principles of sustainable forest management. Part III gives advice on implementing the guidelines, addressing for example training and incentives. A glossary defines key terms. Annexes include specific cases from Central Africa, Cameroon, Indonesia, Guyana, Brazil, the Philippines, Malaysia and Ghana.

The revised guidelines were drafted by a core team of biodiversity specialists and then evaluated in the field among timber companies, forest agencies and local communities in four producer countries. An expert panel met in 2007 to further revise the guidelines in light of the field evaluation.

This publication will provide forest policy-makers, owners and managers with excellent guidance on how best to reduce their impacts on biodiversity in tropical timber production forests. The application of these guidelines will help countries implement their obligations under CBD.

The publication is available online at: www.itto.int/policypapers_guidelines