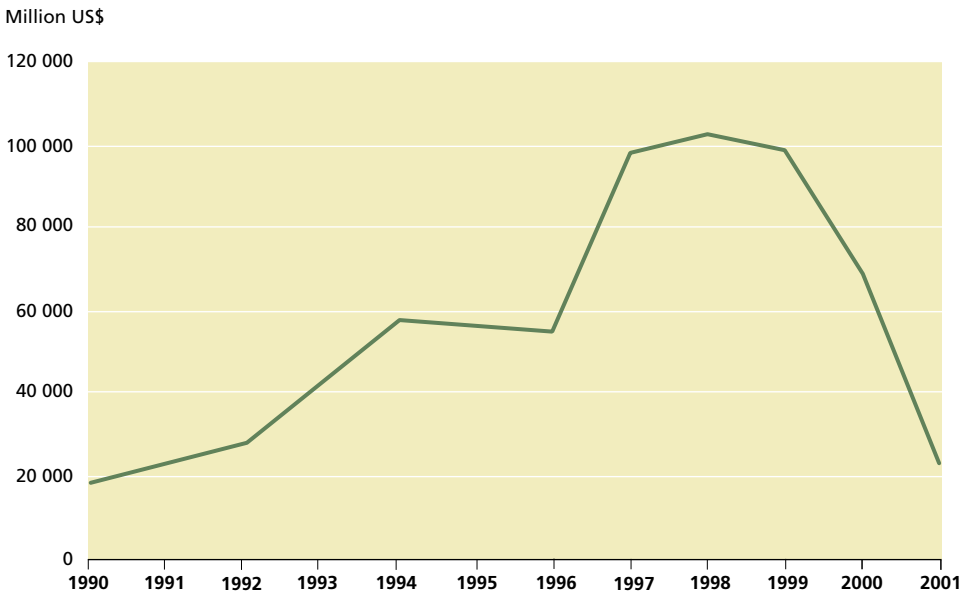
Institutional issues

Internal and external factors such as public pressure and economic realities are continuing to influence change in the forest sector and to shape the way forestry is defined and practised. Policies in other natural resource sectors are having a direct impact on sustainable forest management, increasing the urgency to improve synergies and strengthen partnerships. The recent expansion of the EU will also bring about new challenges and opportunities, also influencing markets for forest products. This chapter notes the latest trends in privatization; shows how modern reforms, including new technologies, are affecting the ways in which forests are managed; identifies forces driving forestry in countries with economies in transition; updates progress in forest law compliance; and outlines some of the challenges that developed countries must face in measuring and reporting their use of forests and wood products to meet commitments under UNFCCC and the Kyoto Protocol.

TRENDS IN PRIVATIZATION IN THE FOREST SECTOR

Governments have often used privatization measures to improve economic performance, especially since the end of the 1970s. Between 1985 and 1999, more than 8 000 transactions of this nature were completed around the world, for a total value exceeding US$1.1 trillion (in constant 1985 US dollars) (Brune, 2004). From the sale of state-owned enterprises alone, the Organisation for Economic Co-operation and

FIGURE 5
Amounts raised from privatization in OECD countries, 1990–2001



Source: OECD, 2002.

Development (OECD) countries received about US$693 billion between 1990 and 2001 (Figure 5).

Forests, however, were not among the first assets to be privatized, partly because of the sensitivities surrounding sovereignty, a growing recognition of their importance in protecting the environment and in providing services to society, and perceived high risks or low returns. Rather, initial efforts to privatize focused more on goods and services that brought a better return on investment, showed clear market opportunity and were less prone to civil society opposition. As it stands, privatization in the forest sector usually entails the transfer of property rights through the sale of natural forests or planted forests and through the devolution of forested land. Governments also involve the private sector through lease or concession contracts and outsourcing for services.

In the 1970s and 1980s, only a limited number of countries privatized forests. Chile moved in this direction, laying the foundation for a rapidly growing plantation industry; the Forestry Commission in the United Kingdom sold a small portion of its forest area; and China began to transfer rights associated with use and management in many parts of the country. In the 1990s, water, land and forests were more frequent targets for privatization, since few options were available in many countries. In 1999, privatization of primary industries such as petroleum, mining, agriculture and forestry overtook privatization of infrastructures.

Planted forests

Since 1974, the use of government incentives in Chile has resulted in the expansion of private planted forests to more than 2 million hectares. In New Zealand, privatization started in the late 1980s with the sale of 550 000 ha of state-owned forests, sawmills, nurseries and other assets. The sell-off of long-term cutting and management rights to domestic and foreign investors followed in the early 1990s. By 2000, 94 percent of planted forests in New Zealand were privately owned, but not the land (Ministry of Agriculture and Forestry, New Zealand, 2002). Similarly, South Africa privatized an estimated 90 000 ha of planted forests between 2000 and 2002, and the process is continuing (H. Koetze, personal communication, 2004). Several other countries in Africa are also taking measures to privatize planted forest, for example Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe.

Protected forest areas

Increasingly, private entities and NGOs are purchasing forest areas and acquiring land through concession contracts for protection and conservation purposes. For example, 32 percent of the national park area in Lithuania and 50 percent of protected forest areas in the Czech Republic are privately owned (Indufor and EFI, 2003). In Chile, private-sector interest in managing forests for conservation is growing as well. Governments in several countries, including Canada and the United States, are also discussing the possibility of outsourcing the management of protected areas.

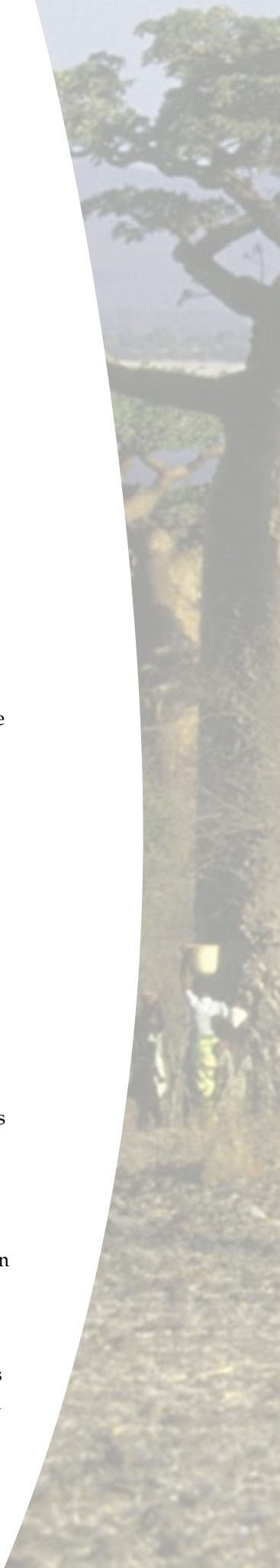
Natural forests and woodlots

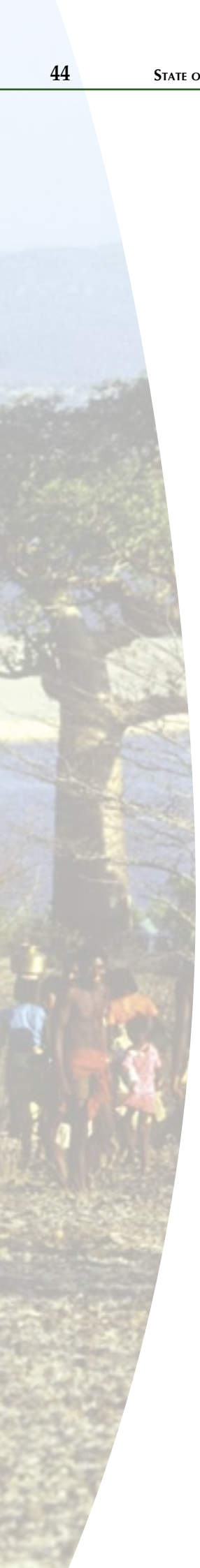
The privatization of natural forests through the transfer of land or forest ownership is less marked than that of planted forests, except in Central and Eastern Europe, where forest land is being returned to former owners. Trends vary across regions, depending on the economic model and the social and environmental conditions.

More common forms of private-sector involvement in the management of natural forests are concessions or leases, volume permits or standing timber sales, outsourcing and community-based approaches. According to a conservative estimate, the proportion of forests owned or administered by communities has doubled in the past 15 years, to about 350 million hectares (Scherr, White and Kaimowitz, 2003).

Regional trends

Africa. In most African countries, the state owns forest resources and allocates use rights through administrative or competitive mechanisms. In Gabon, 221 forest concessions are managing





11.9 million hectares, or 56 percent, of the forest area (Global Forest Watch, 2000). Cameroon has allocated 81 percent of its forests to concessions, of which 37 percent have been granted (White and Martin, 2002). Because of the importance of market forces and privatization in forestry, governments are reforming policies to be in a better position to move towards sustainable development. In some areas, however, armed conflicts prevent or slow down private sector involvement in the sector (see page 116).

In South Africa, the private sector owns and manages 70 percent of plantations (GCIS, 2004) – a trend that generally characterizes the current and possible future role of private companies in industrial plantations and outgrower schemes in southern Africa.

Impacts of European Union expansion on markets for forest products

Ten new members joining the EU means an increase in the trading bloc's population by 20 percent to 454 million. The establishment of a larger internal market should encourage trade and thus help to improve economies and raise standards of living. Larger EU membership could benefit the forest sector through:

- savings in transport time because of open borders;
- freer movement of labour;
- consistent quality control and trade regulations;
- better market information;
- almost 25 percent more forests available for wood supply.

Source: UNECE/FAO, 2004.

Asia. Privatization of the forest sector in Asia involves both entrepreneurs and communities. Participation of the latter is increasing as they are given the right to manage forests close to their villages through project-based activities and joint schemes.

After 1997, Malaysia guaranteed secure tenure for 100 years to private companies in Sabah through agreements covering more than 2.5 million hectares. In 2000, some 650 concessions of 69 million hectares were reportedly granted in Indonesia, although fewer than half were operational by the end of the year, covering almost 34 million hectares (Matthews, 2002).

Since the early 1980s, China has encouraged private investment by devolving use and management rights to households while retaining ownership of forest land. Both Chinese and foreign-owned companies are now making deals with communities and with households, to mutual benefit.

In India, 63 600 communities participate in joint forest management and are protecting and regenerating almost 14 million hectares or more than 19 percent of the forest land (Press Information Bureau, Government of India, 2003).

Central and Eastern Europe. In most Central and Eastern European countries, property expropriated by former regimes is being returned to owners, including forest land. Institutional restructuring and the rapid development of forest-based industries are also taking place. Many of the more than 4 million new forest owners, holding an average of about 2 ha, are inexperienced in forest management, business or market economies.

In countries that have joined the EU (the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia) or are about to join (Bulgaria and Romania), restitution efforts cover 2.8 million hectares of forests, with the state still owning 63 percent of total forest area.

By June 2003, more than 1.4 million hectares, or 29 percent, of forests in Romania had been returned to former owners, mostly to municipalities and communities. Individuals received slightly more than 224 000 ha. National

FAO/FO-0336/T. HOFER

In Slovakia, as in most Central and Eastern European countries, forest land expropriated by former regimes is being returned to owners

forest administrations at the central and branch levels targeted the end of 2004 for completing the process (Indufor and EFI, 2003).

Latin America. In Latin America, the state owns most natural forests and, in many countries, the transfer of land titles is limited to poor farmers. Some forest areas have been allocated to private land use as a result of pressure from ranchers or private business. In the largest tracts of natural forests, land-use change is intimately linked to agricultural demands.

In Peru, following the enactment of legislation pertaining to forests and wildlife in 2002, the government assigned 21 million of 67.5 million hectares of forests for timber production through concessions covering between 5 000 and 40 000 ha for up to 40 years (*El Peruano* newspaper, 2002).

In Bolivia in 2003, 5.4 million hectares, or 10.2 percent, of the forest area was managed as regular concessions. The government awards different types of land leases for long-term contracts (400 000 ha) and scientific research (200 000 ha) (Scherr, White and Kaimowitz, 2003).

Ecuador outsources forest administration, while in the Dominican Republic, independent foresters monitor the implementation of government-approved forest management plans on private land and report findings to authorities.

Commonwealth of Independent States. While these countries have not yet transferred ownership of forest resources, involvement of the private sector is increasing, mainly through the transfer of long-term use rights in the form of forest concessions.

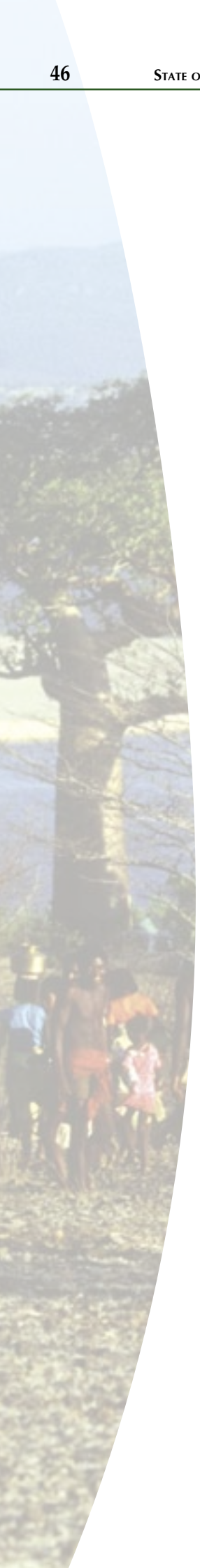
In the Russian Federation, forest resources are likely to remain under state ownership, but the private sector is becoming involved through concessions or other contractual arrangements supervised by the forest administration. It is expected that most production forests will be managed this way, with the state retaining authority over conservation.

TRENDS IN FORESTRY ADMINISTRATION

Modern reforms are opening opportunities and creating challenges for forestry administrations around the world. Drivers for change include the transition from command and control to market economies; sustainable development; globalization; political, economic and social-equity dimensions of governance; and new technologies, including information technology.

Functions and methods of operation

In response to public demand for greater accountability, increased participation in planning and decision-making and better delivery of goods and services, central forestry



Privatization methods

The most common methods to privatize the forest sector in the past three decades have varied according to the economic model, type of forest resources and desired outcome.

- Transfer of property rights is completed either through the sale of forest resources to the highest bidder or to a preferred beneficiary with or without a financial transaction. This method was widely used to privatize planted forests in some countries, for example New Zealand and South Africa.
- Restitution involves governments' handing back productive assets to former owners through transfer of resource tenure, revenue ownership and management rights to individuals or corporate bodies. This method is used in Central and Eastern Europe and to a limited extent in South Africa.
- Transfer of use rights to private companies, communities or households maintains government ownership of the forest resource. It involves either an administrative allocation of resources or a lease through competitive tenders. Governments may retain rights to decide the flow of goods and services.
- Procurement or outsourcing of private-sector services maintains government ownership and responsibility for deciding the flow and distribution of goods and services. Governments may outsource forest management and operational activities such as inventory, harvesting, silviculture and forest protection.

administrations are increasingly transferring resources and responsibilities to subnational governments and are delegating more functions down the chain of command. In general, policy and regulatory functions remain with central governments, while the private sector and civil society are taking charge of operations. Decentralization has also resulted in a larger role for municipalities.

In Africa, Asia and Latin America, more than 30 countries report some degree of decentralization in the sector. Faced with limited and sometimes dwindling resources, forestry administrations are also reducing personnel and streamlining operations. For example, Argentina, Costa Rica, New Zealand and South Africa have introduced reforms in an effort to cut costs and increase efficiency.

Organizational structures

Many forestry administrations that have national responsibility for commercial production, conservation and extension are moving towards a three-tier system: a national component with reduced personnel to direct and implement change; regional units to coordinate activities and give technical guidance; and municipal and local units to manage the resource. Chile, Costa Rica and the Sudan, among others, are structured along these lines.

National component. At the national level, a streamlined central unit fulfils state responsibilities for the stewardship of natural resources, for strategic planning and coordination and for the provision of public goods. This unit also develops and analyses policies, establishes national goals and directs the collection and management of information for decision-making. The establishment of self-financing units is one of the new approaches being used to carry out such functions and to overcome salary limitations that often prevent public services from hiring the most qualified professionals. Examples of smaller, less costly organizations that are financed with revenues from forest fees and fines are found in the Sudan and Suriname.

Regional units. Structured along the lines of central administrations, regional units provide technical guidance at the local level when capacity is insufficient, for example, to develop forest management systems, prevent and control

forest fires and address issues related to forest health. In production forests, these units can also develop guidelines for silviculture and for biodiversity conservation. Officials work with other regions and municipalities to coordinate initiatives, collect information and monitor activities.

Municipal and local levels. Subnational governments and stakeholders close to the forest who possess knowledge of the resource and of local customs, demands and values are becoming key players in forestry administrations and in forest management, especially in sub-Saharan Africa and on community-owned lands in Asia. In countries where land-use rights are more formally defined, farmer associations and small entrepreneurs mostly assume this responsibility, subject to municipal regulations. In general, responsibilities for sustainable forest management on the ground rest at the municipal level. In addition, administrators at this level resolve local conflicts related to forests and promote public participation in planning and decision-making.

Advances in technology

Technological changes are opening important opportunities to improve ways in which the sector is governed and how administrations operate. Advances in information and communication technologies, including satellite imagery and detection as well as spatial information and decision-support systems, offer the greatest potential to achieve gains.

Given that many forestry administrations have invested in information technology such as digital cartography, planning and policy analysis are expected to improve significantly as a result of better data and more extensive databases. Such developments should enhance the effectiveness of national forest programmes and foster greater participation and transparency in forestry administrations.

Spatial information technologies and related satellite applications have opened the way for multipurpose information systems and enhanced the capacity of forestry administrations. Many countries, for example, are using satellite technology to detect

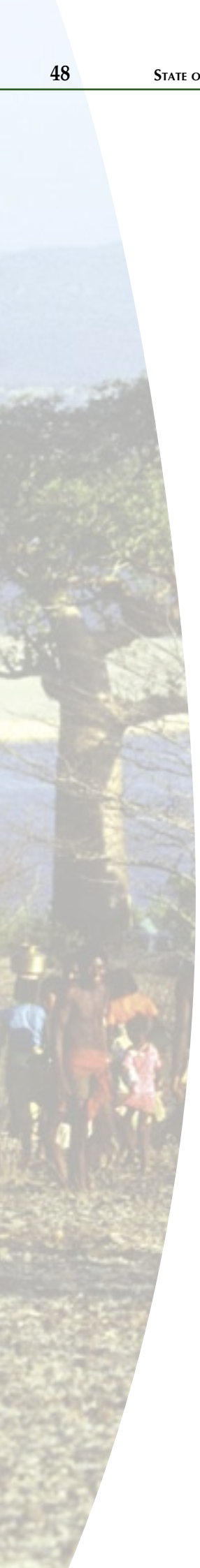
National forest programmes

A national forest programme is both a dynamic process responsive to change and a framework for planning and action. It provides strategic orientation to the forest sector and facilitates coordinated implementation of sustainable forest management. Basic characteristics include:

- national sovereignty and country leadership;
- consistency with national constitutional and legal frameworks;
- linkages to national sustainable development strategies;
- complementarity to international agreements relevant to the forest sector;
- approaches that integrate the range of values and functions of forests and trees;
- cooperation and collaboration across sectors;
- partnerships;
- participatory policy development, planning, implementation and monitoring.

Since FAO established an online information platform on national forest programmes in 2003, more than 90 countries have prepared profiles that are being made available online. In addition, the Organization is supporting 22 member countries with implementation efforts.

To assist developing countries with national forest programmes, a number of international organizations and donors, including FAO and the National Forest Programme Facility, are helping to link the programmes with broader agendas, address governance issues, develop national capacity and make knowledge available to those involved in the process.



Changes in forest management in transition economies

In February 2003, a workshop held by the Ministry of Natural Resources of the Russian Federation and the World Bank, with support from the Program on Forests (PROFOR), identified the following factors driving reforms in countries with transition economies:

- dramatic changes in the business environment in the past decade;
- continuing unfavourable investment climate for developing forest industries;
- flexible tenure systems that are site and situation specific;
- appropriate rent capture/taxation and sound financing of forest management;
- forest certification to secure environmentally and socially sensitive markets;
- institutional changes to respond to the needs of a market economy and competition.

The workshop, which was held in Moscow, the Russian Federation, and attended by almost 100 experts, pointed out that large-scale projects need to be flexible enough to respond to sometimes rapidly changing policy and legal environments; and that in larger countries, diverse geographic and socio-economic conditions need to be taken into account before a particular approach to institutional change is chosen (PROFOR, 2003).

forest fires and to help assess the extent of deforestation and forest degradation. Others are using satellite technology for monitoring and planning purposes.

Government organizations in other sectors are applying these technologies as well, especially with regard to land use. The development and modernization of land administration systems will have significant bearing on information regarding land rights, responsibilities and restrictions, and will facilitate land transactions around the world. The ease with which land can be bought and sold as a result of reliable information on ownership means that the forest sector could become more open to free trade and globalization. In this new era, forestry administrations will be expected to focus on policy development and move away from traditional operations.

Constraints and opportunities

Streamlined forestry administrations based on a central system, regional networks and local participation are changing the ways in which forests are managed. Information technology increases capacity for planning, monitoring and assessment, and facilitates wider involvement of parties. However, the chronic lack of resources and low public investment in forestry remain problematic.

Reforms are affecting administrations in other natural resource sectors as well, increasing the urgency to establish synergies and partnerships. Although changes in forestry administrations are taking place, they do not appear as extensive as in other areas. For example, governments are creating new executive agencies to deal with territorial administration and decentralization, local government, capacity building and gender development. These new entities perform functions that are closely related to forestry and sometimes assume responsibilities that once belonged to others, making it all the more important to share information, coordinate activities and invest in managing change.

Forestry administrations must prepare staff to deal with new realities, apply and master emerging technologies and take steps to ensure that all levels of authority have access to the knowledge and skills they require to perform their tasks.

EFFORTS TO IMPROVE FOREST LAW COMPLIANCE

Governments, with the help of international organizations, NGOs and the private sector, are continuing their efforts to improve forest law compliance. Most initiatives are built on the premise that, although important, compliance

Decentralization and national forest programmes

In April 2004, 182 experts from countries and organizations around the world met in Interlaken, Switzerland, to share experiences on decentralizing forestry systems and to identify strategies that would allow national forest programmes to address issues related to the process. The Workshop on Decentralization, Federal Systems in Forestry and National Forest Programmes, held by the Governments of Indonesia and Switzerland in support of the United Nations Forum on Forests (UNFF), noted that decentralization is a means to alleviate poverty, achieve sustainable development and protect forest values. The experts recognized that the process is complex and dynamic and needs to take into account the specific conditions of each country. While progress is being made, participants also felt that true democratic decentralization has rarely been implemented to date as much of the decision-making, resources and benefits from forests remain with central authorities.

The workshop highlighted the need for the following actions, among others:

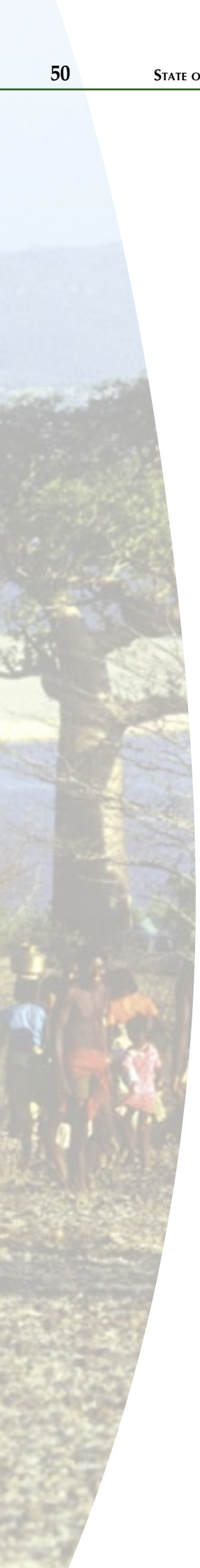
- developing a common understanding of concepts, terms and definitions related to decentralization in the forest sector;
- enhancing understanding of decentralization through information dissemination;
- formulating approaches to maintain protected areas while promoting the use of traditional knowledge and practices;
- developing principles to devise equitable representation and to devolve authority and resources for forest management to the lowest appropriate level;
- promoting the valuation of, and compensation for, the environmental services that forests provide;
- sharing information and establishing partnerships across sectors;
- integrating decentralization into national forest programmes at the national or subnational levels;
- strengthening the human and institutional capacity of stakeholders and promoting partnerships;
- involving NGOs and other major groups in the planning, implementation and monitoring of decentralization activities.

strategies can no longer rely on policing alone but must include efforts to streamline policy and legal frameworks; to provide incentives to comply with regulations; to improve employment conditions of enforcement officers; to conduct public education and awareness programmes; and to use national and international market restrictions to limit opportunities for trading illegally sourced wood. This section describes major undertakings to date.

Multilateral initiatives

As the need to improve forest law compliance has gained prominence in international discussions, the need to take concerted action to conserve and use species in a sustainable manner has become increasingly apparent. The expanded Programme of Work on Forest Biological Diversity of CBD also includes actions to promote forest law compliance and address trade issues.

In 2001 and 2002, the United Nations Security Council investigated the role of illegal exploitation and trade of natural resources in fuelling the civil war in Liberia and, as a result, imposed an embargo on exports, transportation and imports of Liberian wood in 2003. In addition, G8 countries (Canada, France, Germany, Italy, Japan, the Russian Federation, the United Kingdom and the United States) strengthened their resolve to combat illegal activities in the forest sector, and in 2003 committed to supporting efforts in Africa.



UNFF is currently discussing issues related to illegal logging and trade as well, urging countries to improve law enforcement in the forest sector and to control illegal trade in forest products. It has also called on the international community to assist countries in building their capacity to improve forest law enforcement.

Following the Forest Law Enforcement and Governance (FLEG) East Asia Ministerial Conference in September 2001, a regional task force was established to identify ways to implement the declaration that was adopted during the meeting. As a result, Indonesia, for example, has entered into a partnership with the World Bank and WWF to develop a strategy that identifies action to be taken to enforce and prevent illegal acts in the sector.

The Asia Forest Partnership, launched at the World Summit on Sustainable Development (WSSD) in 2002, recognizes that many initiatives support sustainable forest management and the control of illegal forest activities in Asia, and aims to promote further cooperation in addressing urgent issues. Although the partnership does not focus exclusively on the control of illegal logging and forest law enforcement, both figure prominently among its objectives.

In May 2003, the European Commission unveiled an EU Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT). Measures include support for improved governance in producer countries; partnerships with producer countries to ensure that only legally harvested timber enters the EU market; and international collaboration to combat trade in illegally harvested timber. Through the plan, the EU will help interested producer countries set up a voluntary scheme of licences to verify the legal origin of forest products before exporting them to its member countries. The EU also supports activities to restrict investments that may induce illegal transactions and is addressing the use of illegally sourced forest funds to finance armed conflicts. Along with FLEG, the plan is one of the most comprehensive to fight illegal logging and associated trade.

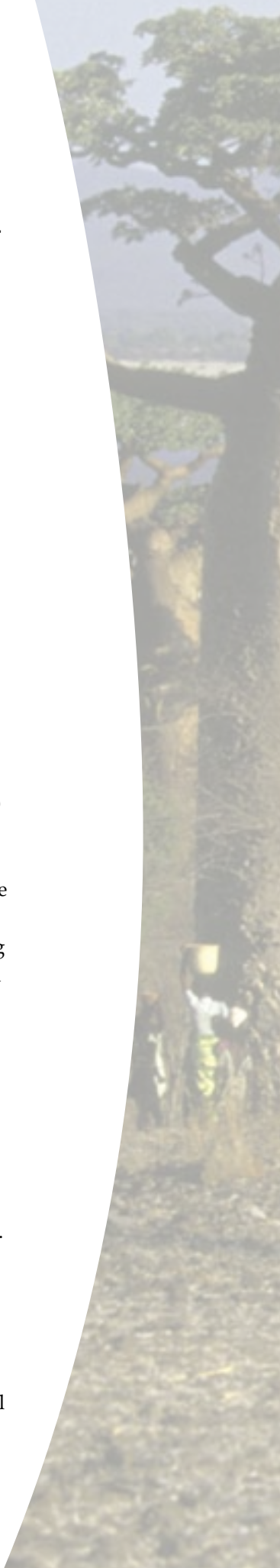
In October 2003, under the auspices of the New Partnership for Africa's Development (NEPAD), African ministers pledged to fight violations to forest law by strengthening national initiatives and collaborating on a bilateral, regional and multilateral basis. Their declaration outlines 38 actions that countries should take to improve law enforcement in the region. NEPAD's efforts complement other initiatives to bring about change in natural resource management such as the Congo Basin Forest Partnership.

In 2003, the Ministerial Conference on the Protection of Forests in Europe (MCPFE) signed the Vienna Living Forest Summit Declaration, in which parties commit, among other actions, to improving governance in the forest sector, promoting the enforcement of forest laws, combating illegal harvesting of forest products and related trade and fostering sustainable forest management in Europe and elsewhere. A work programme is being developed to achieve these ends.

Agreements targeting illegal logging and illegal trade

As an example of exporter and importer countries working together to combat illegal logging and related trade, the Governments of Indonesia and the United Kingdom of Great Britain and Northern Ireland signed a Memorandum of Understanding in 2002. The countries made a commitment to develop systems of verification and compliance; increase the involvement of civil society; strengthen institutions, data collection and collaboration; and enlist the support of the private sector. Indonesia has also signed bilateral agreements with China, Japan, Malaysia and Norway to curb illegal logging and trade of Indonesian timber.

In July 2003, the United States launched the President's Initiative Against Illegal Logging, which focuses on three regions: the Amazon Basin and Central America; the Congo Basin; and South and Southeast Asia. The scheme supports activities related to good governance, community-based actions, technology transfer and optimum use of market forces. The United States has also launched an initiative in Liberia to stop illegal harvesting and restore deforested areas.



Work of international agencies and other organizations

FAO, in partnership with ITTO, has identified best practices and developed compliance guidelines to help decision-makers design and implement effective policies, legislation and institutional frameworks. FAO has also compiled a catalogue of national forest laws and conducted case studies to determine factors that facilitate or compel people to engage in illegal actions in the sector. The studies are providing insight into the causes of unlawful acts and potential remedial measures. FAO is also examining ways in which private forest corporations can adhere more fully to the law in the countries in which they operate by adopting codes of conduct.

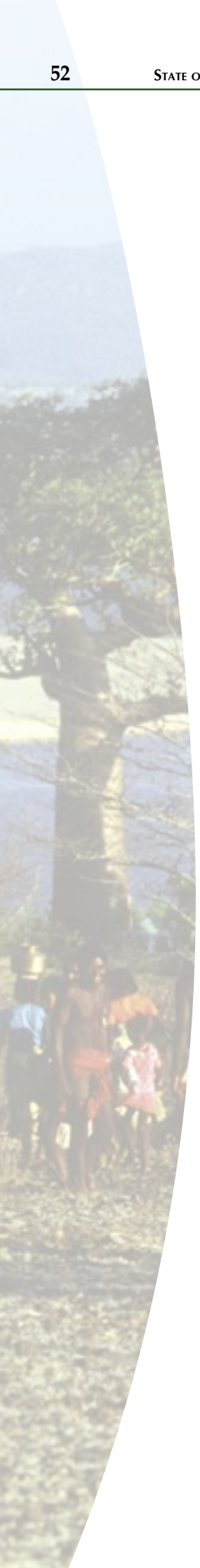
ITTO is assessing the consistency of export and import data on tropical timber and related products and is continuing to assist member countries in designing frameworks for forest law enforcement. In partnership with WWF and others, it finalized a study on the potential role of phased approaches to timber certification, an important step in verifying the legality of wood being traded. In addition, ITTO, in cooperation with FAO, facilitated a meeting of major national and international forest certification schemes in June 2003 to increase mutual understanding of different approaches.

CIFOR examined the impact of law enforcement on rural livelihoods, analysing the situation in six countries in Africa, Asia, Latin America and North America. The initiative looked at ways to involve rural communities in reforms, increase awareness, identify gaps in knowledge and help develop strategies that address livelihood issues. CIFOR is also carrying out research on ways to use money-laundering legislation to curb illegal logging and signed a memorandum of understanding with the Government of Indonesia to develop measures to reduce money laundering linked to forestry crimes. In this regard, Indonesia became the first country to list forestry crimes as a predicate offence in its new money-laundering law.

The new forest strategy of the World Bank includes provisions to address corruption and illegal activities through better forest laws, regulations and enforcement. As part of its programme on governance in the sector, the World Bank supported the FLEG process and hosted a forum on forest investment with senior executives of forest companies, private- and public-sector financial institutions and leading conservation agencies from around the world. The forum concluded with a call to curb illegal logging and promote responsible investment. In addition, current and proposed policies of the World Bank, the African Development Bank, the Asian Development Bank and the Inter-American Development Bank all contain references to curbing illegal activities in the forest sector.

Various corporations are adopting codes of conduct, most of which include reference to illegal forest activities. The European Foundation for the Preservation of African Forest Resources, whose members include companies with concessions in Africa, made significant commitments to improve forest management in countries of the region. The Interafrican Forest Industries Association (IFIA) developed a code of conduct for members operating in the Congo Basin and humid West Africa. Other entities fighting illegal acts include the Japanese Federation of Wood Industry Associations, the only organization representing the country's wood industries; the International Council of Forest and Paper Associations, representing industries from 43 countries, 75 percent of the world's paper and more than 50 percent of the world's wood production; the Timber Trade Federation of timber importers from the United Kingdom; the International Technical Tropical Timber Association; the Confederation of European Paper Industries; and the American Forest and Paper Association. Individual corporations are also taking steps to avoid buying and selling illegally sourced timber.

In addition, NGOs such as Greenpeace International, the Environmental Investigation Agency, the World Rainforest Movement, Global Witness, Friends of the Earth International and Transparency International are working on



their own or with a number of governments to expose, monitor and help suppress illegal forest activities through education campaigns, studies and research.

CREATING NATIONAL FRAMEWORKS FOR FORESTS UNDER THE KYOTO PROTOCOL: CHALLENGES AHEAD

Almost three decades ago, Dyson (1977) proposed that harmful emissions of carbon dioxide (CO_2), the main cause of global warming, could be turned into new forests via the process of photosynthesis, thereby replacing some of the 16 million hectares of natural forests that the planet loses annually (FAO, 2001). Finally, 188 Parties to UNFCCC have elaborated rules and guidelines to put his idea into practice through the Kyoto Protocol.

Negotiating the extent to which industrial countries could use forests and wood products to meet their commitments to mitigate climate change proved time consuming and contentious. Rules are complicated, and measurement and reporting procedures are costly to the point that they may prevent some countries from using the full range of forestry activities eligible under the Kyoto Protocol. Now, countries face the formidable challenge of creating national frameworks to implement commitments in the context of their domestic forests, and little time remains until 2008, the start of the first commitment period. Three major tasks – acting on the general commitments, monitoring and reporting forest carbon stock changes and implementing the international climate change agreements – lie ahead:

- General commitments can be acted on with relative ease, for example, by including forests in national adaptation and mitigation programmes, raising awareness of the role of forests in climate change, promoting sustainable forest management and conserving and enhancing forest sinks.
- Monitoring and reporting forest carbon stock changes places demands on countries to develop methods for including carbon in forest inventories, in measurement protocols and in data management systems. In some instances, meeting this requirement may require new laws and more reliable forest inventories.
- Implementing the international climate change agreements after ratification of the Kyoto Protocol will require new or revised legislation on forests and in other related areas at the national or subnational level, along with appropriate institutions to support implementation. Few countries have begun to tackle this aspect. Ownership of carbon in forests, trees and wood products is one of the key issues.

Who owns the carbon?

Carbon ownership comes with rewards but also with risks. In countries with ambitious afforestation and reforestation programmes, young, fast-growing forests can offset a substantial part of industrial CO_2 emissions to help fulfil reduction obligations (see Box on facing page). These new forests remove carbon from the atmosphere and reduce the need for a country to lower industrial emissions or purchase carbon credits to meet commitments. The question is whether private, community and subnational forest owners should undertake these activities without reward, particularly when fossil fuel emissions contain not only CO_2 but also sulphur, nitrogen and heavy metals, which, as components of acid rain, harm their forests.

The risky side of owning carbon rights is linked to the obligation for countries to account for carbon released during the commitment period as a result of all deforestation since 1990. Should a private forest owner, after converting a forest to pasture, be liable for the carbon released from trees, soils and litter during the first and possibly subsequent commitment periods? Or should the government, ultimately responsible under the Kyoto Protocol, assume ownership of, and liability for, all gains and losses from afforestation, reforestation and deforestation?

With regard to afforestation, reforestation and deforestation since 1990, industrialized countries are obliged to account for the net carbon stock

changes that result from these actions. For forests established before 1990, they may opt for forest management, as defined under the Kyoto Protocol, as one of several eligible activities. If carbon stocks in these older forests increase, a country may gain credits up to a specified upper limit. On the other hand, a country also risks incurring debits if domestic growing stocks decrease as a result of accelerated harvesting, for example.

Again, the ownership question arises. Should the government avail itself of sequestration in older domestic forests without compensating owners? Should owners receive payment in proportion to the growing stock increment in their forests? In turn, are owners prepared to risk losses or to pay back carbon revenue after harvest? Should owners be eligible to sell carbon fixed by their forests in domestic or even in regional or international markets?

For most industrial countries, credit allowances for forest management amount to only 15 percent of the total carbon increment of domestic forests. Governments will need to decide whether they will draw exclusively on state-owned forests to fill the national quota, thereby possibly creating a disadvantage for private forest owners and a distortion in the timber market; whether they will award credits only to those who take deliberate action to enhance carbon sequestration in their forests; and which forest management practices should be recognized to achieve such results.

Developing countries do not have quantitative greenhouse gas reduction commitments. In the context of CDM, the host country must nevertheless recognize that foreign investors in afforestation and reforestation projects have rights to all or part of the carbon sequestered by CDM projects or that ownership of sequestered carbon may be transferred abroad, independent of ownership of the timber.

Giving forest owners the rights to sequestered carbon involves additional issues (FAO, 2004), such as how to:

- assess, verify and record sequestered carbon;
- promote orderly sales or other transfer of ownership;
- allocate the risk of failure of carbon sequestration;
- assess liability for damages to, or elimination of, the potential of a forest to sequester carbon.

National legal and policy frameworks

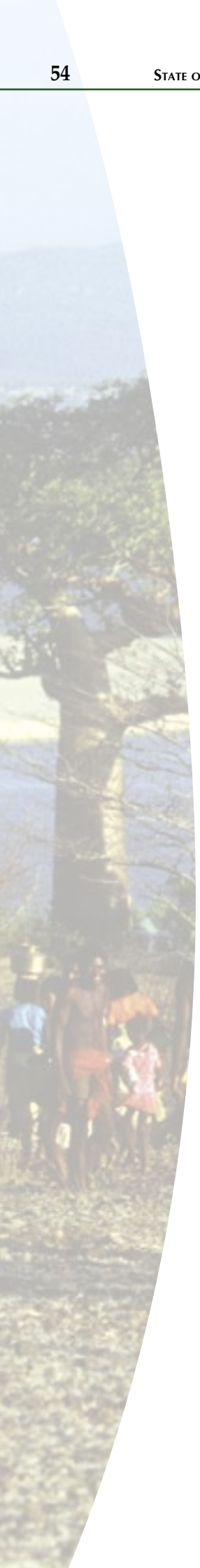
Beyond clarifying ownership rights, countries may enhance net carbon sequestration in forests by other means (see Box on page 54). Approaches could encompass laws that restrict harvesting, harvest methods and ages, silvicultural systems, treatment of logging slash, regeneration lag, minimal stocking, fire

Valuing carbon sequestration in Irish forests

Ireland's industrial emissions will probably exceed Kyoto commitments, which entail annual emission reductions of approximately 15.4 million tonnes of CO_2 or 4.2 million tonnes of carbon (Bacon, 2003). Forests established since 1990 will fix 0.3 million tonnes of carbon per annum, offsetting about 6.5 percent of Ireland's projected excess emissions and reducing carbon credits to be acquired in international markets by this amount. At a market value of €30 per tonne of carbon in international emission trading, these young Irish forests alone would save the country an expense of about €9 million annually or €45 million over the commitment period 2008–2012.

The average rate of carbon gain in these young forests is estimated at 3.4 tonnes of carbon per hectare per year. They would thus accumulate a carbon value of approximately €100 per hectare annually.

Credits for forest management in Ireland are capped at 50 000 tonnes of carbon per year. If the country chooses forest management as an eligible activity under the Kyoto Protocol, an additional value of €1.5 million could accrue annually in the form of carbon revenue.



protection and controlled burning. Where forest management agreements or concessions regulate forestry operations, applicable laws and contracts may need to be revised.

In some instances, laws might need to be streamlined to facilitate climate change mitigation projects. Carbon sequestration projects in California, for example, were subject to at least 16 federal and state regulations (Vine, 2004). The Kyoto Protocol and many countries require environmental and social-impact assessments for afforestation and reforestation (Bekhechi and Mercier, 2002). The carbon sequestration services that forests provide should probably be given a weight in these assessments as well as in laws on land-use planning or zoning (Kennett, 2002). In some countries, laws on landscape conservation require material offsets for human interventions. In Germany, for example, the administration responsible for constructing a new highway through forest lands must compensate for lost forest services by establishing new forests or by enhancing biological diversity or other services in adjacent forests.

Creating a domestic framework for forests and climate change in Spain

Spain adopted a new forest plan in 2002 and a national forest law in 2003 that define domestic forest policy regarding climate change. The plan considers policy support crucial to climate change mitigation. It establishes the potential for mitigation based on available area, evaluates technical capacity for sequestration and assesses possibilities for enhancement. The law recognizes global climate change mitigation and wood energy as valuable functions of forests that should be enhanced. Public administrations may grant subsidies, conclude contracts with owners or invest directly in public lands to achieve goals. Research on energy use from logging residues and adaptation of forests to climate change has also been initiated.

Countries might also enhance carbon fixation by forests through subsidies, taxes, risk reduction, research, extension services and public awareness initiatives. Moreover, national forest programmes appear to be an effective means to integrate the opportunities, rules and modalities of the Kyoto Protocol into national forest policy and planning.

Future challenges

National frameworks under the Kyoto Protocol hinge on institutional capacities and on countries identifying a Designated National Authority if they are contemplating using CDM. At last count, only the European Community, eight industrial countries, 39 developing countries and six countries with economies in transition had done so. Since 2002, FAO has helped build capacity for CDM in Central America and, with IUCN and the United Nations Environment Programme (UNEP), in Africa, Asia and Latin America.

Parties to UNFCCC have now established most modalities, rules and guidelines at the international level. As the first commitment period approaches, only a few countries have decided if and how to use their forests for climate change mitigation and adaptation. Consequently, little effort has gone into developing national legal and institutional frameworks for implementing the protocol in the forest sector. Many challenges lie ahead in this regard. ◆

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