PART VI

THE WAY FORWARD
. . . .

Marko Katila

24 The Need for New Strategies and Approaches

Glenn Galloway, Pia Katila and Joachim Krug

24.1 Different Drivers of Change Interact to Impact Forests

Many of the world´s forests and forestry in general are undergoing far-reaching changes stemming from human activities. Important drivers of change relate to climate change, population growth and urbanization, and associated changes in values and consumption patterns. The globalization of markets and investments also influences decisions on the production and commercialization of forest products and services.

While much of the focus in international arenas is currently focused on climate change, it is clear that different drivers of change interact in complex ways. For example, changes in climate are augmenting problems in forests such as insect pest infestations and wildfires. These disturbances, in turn, increase carbon emissions into the atmosphere, further accentuating the problems of climate change. In like manner, increasing global demand for forest-based goods and services have led to deforestation and forest degradation, especially when problems of illegality and poor institutional capacity have resulted in unsustainable practices.

Demand continues to increase for forest products and services. While growing demands are being placed on forests, they are also increasingly valued for the ecosystem services they provide, especially for their role in sustaining a healthy water cycle, in carbon sequestration and storage, and in biodiversity conservation. Ecosystem services are also important to human health and well-being both in urban and rural areas. These services include e.g., temperature regulation, air filtration, and provision of medicinal products and food. Forests are also important arenas for recreation, aesthetic appreciation, and stress relief, all of which are of high importance to the health of an increasingly urbanised population.

Global forests, including planted forests, are an important source of energy. Forest-based energy production is seen as an alternative capable of contributing to society's efforts to reduce greenhouse gas emissions, improve the security and price stability of the energy supply and reduce dependency on fossil fuels, while revitalizing rural economies by providing jobs and income through the sustainable management, harvesting and conversion of biomass.

Unfortunately, even while there is a greater demand for forest products and a greater recognition of the diverse functions of forests; they continue to decline in many parts of the world through deforestation and degradation. Forest conversion into agricultural lands, over-exploitation, and invasive species are all detrimental to forest ecosystems and threaten the availability and production of ecosystem services that are fundamental to human well-being; healthy forests are crucial for providing these services.

Concern for forests and the services they provide is not limited to rural environments. Global urbanization is increasing the demand for urban forests and green spaces and heightens the pressure on those areas. In addition, a warmer climate will change the ecological conditions available for urban greenery. Changes in values and increase in the level of environmental and social awareness can also affect consumption patterns and demand of wood and wood-based products and thus influence forest based production.

Although many of the drivers of change affect forests, forestry and forest-dependent people all over the world, the effects will be most severe in less developed regions where people lack adaptive capacity because of poverty, political and institutional marginalisation and geographic isolation from centres of power.

489

24.2 Global Changes Shape Local Realities – Local Changes Have Global Implications

This book has clearly shown that we live in an increasingly interconnected, crowded and complex world, and that the drivers of forest change addressed in the previous chapters cut across different scales. Global processes, such as climate change, can directly affect the health, resilience and sustainability of ecosystems and socio-cultural systems at the local and regional levels, while land use decisions at more local scales can either contribute to or help to mitigate the problems of climate change. Similarly, the adaptation of the wider society to climate change is based on adaptation measures adopted at the local level. Increasing temperatures and changes in precipitation patterns have been shown to have a role in augmenting pest and disease problems, favour the emergence of new pests and/or disrupt vital relationships developed through co-evolution upon which diverse forest species depend. Other problems such as the loss of species and provenance adaptation have been cited, as well as impacts on the water cycle. The very ability of forests to contribute to climate change mitigation and adaptation will be impacted by local and/or regional responses to climate change.

Growing demand for and increasing trade in forest products has important ramifications at regional and local levels, affecting forest industries, local livelihoods, and the future of forests. In response to globalisation, climate change, rising energy prices and, more recently, the financial crisis, the forest industry and forest products trade and investments have undergone profound changes. In the past decade, rates of growth in consumption of many forest products have been two to three times higher in the developing than in the developed world. Foreign direct investments in past years have mirrored this trend, being most notable in developing and eastern European transition countries. Shifting consumption and investment in production capacity from Europe and North America to Asia and Latin America are the main driving forces behind the changes in global trade. Demand for wood products is increasing especially in Brazil, Russia, India, and China. The reallocation of the forest industry's production capacity is associated with the role of mergers and acquisitions, and rapidly increased foreign direct investment in the forest industry, especially in the world's emerging producer countries. Forest industry is also increasingly relying on intensively managed and planted forests located in South America, Africa, and Asia, and on new forest products and technological innovations for their manufacturing.

The increasing importance of forest biomass based energy generates new opportunities for investors, forest industries, and local producers. Forest based energy production can provide work and income in production, harvesting, and conversion of biomass. However, the availability of land for bioenergy production and the capacity of forests to sustain productivity under intensive production and harvesting regimes vary greatly between areas and countries. For example, careful planning and implementation of the sustainable management of fuelwood are needed to avoid negative impacts on site and forest productivity. Examples from Brazil and Senegal have shown that with the engagement and commitment of policy makers, local industry, and people, positive changes can be achieved in the supply of forest biomass based energy.

These ongoing developments can contribute to deforestation and forest degradation at the local level, but they can also create new opportunities to promote sustainable forest management and local development by increasing economic benefits to rural producers – including small-holders, community-based forest enterprises and other small or medium sized enterprises – and other actors along supply and value chains. Challenges associated with these opportunities will be addressed later in this chapter.

Clearly, the analysis of the drivers of change illustrates the intersection of global interests with national and local realities. Thus in order to succeed in creating positive outcomes, forestry-related approaches and strategies will have to take into account these relationships. Indeed, many of the problems alluded to have been shown to have no respect for borders; causes and effects impact both the developed and underdeveloped world and therefore must be dealt with in a multilateral fashion.

24.3 The Effects of Extra-Sectoral Drivers Are Often Critical

Problems and potential solutions not only cut across different scales, they also cut across different disciplines and sectors. The strongest drivers of change for forests and forestry often originate outside the forest sector, such as the demand for land for agriculture, livestock and bioenergy production. Often these extra-sectoral drivers of forest change also result from policies or regulatory frameworks governing other economic sectors. In addition, increases in the prices of agricultural commodities, and the incentives ("perverse" incentives) for promoting the production of agricultural or livestock commodities have often resulted in deforestation because it become profitable to open new forest areas for cultivation. The identification and quantification of the effects of extra-sectoral pressures on forest landscapes, for-

490

estry, and forest-dependent communities forms the basis for developing more integrated cross-sectoral management and policy options that would take advantage of potential opportunities and reduce social and environmental costs.

A key challenge often relates to the limited ability of forestry activities to generate profitable income under the ecological and economic circumstances prevalent in forested regions in many parts of the world: remoteness, poor rural infrastructure, paucity of basic human services, scant institutional presence, among others. That said, a number of economically attractive forestry activities have been reported when a favourable set of conditions combine to encourage sustained local participation in forestry development initiatives. When developing policies and strategies for a given sector, the potential effects on other sectors should be closely analysed and taken into consideration. This can be realized through landscape-scale planning and development approaches, which simultaneously focus on different economic activities and social and environmental values over broad areas.

24.4 Forestry Is a Part of Changing Social Landscapes

To a large degree, it can be argued that landscapes are social constructs reflecting ongoing social processes and a number of societal drivers impacting forests and other natural resources. For example, increasing urbanization and concentration of populations will lead to fragmented landscapes, with dynamic intermediate land use changes in the urban fringes, and further fragmenting in the forests and woodlands. Today, about half of the world population lives in urban areas. Over the next several decades, population growth is expected to concentrate in the poorest urban communities in sub-Saharan Africa, south Asia and the Middle East. In the urban fringes of the more densely populated areas, land development and conservation will be increasingly competing. For an increasingly urban population, both in developing and developed world, forests are important for recreation, aesthetic beauty, and stress relief. Many of the positive effects that forests have on human health and well-being may be placed in jeopardy as a result of climate change and subsequent changes in forest structure and forest cover.

Also, urban-centred consumption and production activities are essential drivers of long-term ecosystem change. Urbanization relates closely to changes in attitudes and perceptions. Consideration of these changes is important for gaining public support and social acceptance for new policies and approaches, as well as for their successful implementation. Also,

for increasing participation and cooperation in forest-related decision-making it is crucial to understand the perceptions and priorities of all relevant stakeholder groups.

Despite increasing urbanization, it is estimated that over 300 million people still depend directly on forests and forest products for their livelihoods. These forest-dependent people have built up intimate relationships with forests and the goods and services they provide. At the same time, in many countries, as was cited for the Amazon basin, policies explicitly encourage the colonization of forested areas, the expansion of rural infrastructure, and changes in land use to extend industrial agriculture and foster economic development. In these cases, it has been hard to achieve a fair balance in which the voices of local grassroots organizations are heard on a par with those of the powerful private sector being favoured by these public policies.

In many developing countries where efforts have been made to promote community-based forestry development or sustainable forest management, a number of issues have been pointed out that have limited effective, widespread participation of rural peoples and communities in these processes. For example, many programs have failed to make an effort to truly understand local values and perceptions, and to take advantage of local knowledge. In some cases, lack of understanding has resulted in forestry programs placing excessive emphasis on trying to link community-based production to international value chains, neglecting opportunities to orient production to meet local demand. To be lasting, forestry development must be rooted in local social structures, economies, and values. If not, they have tended to be ephemeral, falling off quickly once external funding sources have dried up.

One condition that has been repeatedly cited as essential for community-based forestry development is the granting of land tenure and/or the establishment of long-term use rights. These rights must be complemented with the strengthening of local capacities to carry out technical, managerial and administrative functions, access to capital, and a favourable political and institutional environment that does not stifle efforts to manage forests and natural resources in a sustainable manner. There are positive examples of community and small-holder based forestry development (e.g. in Chile and Finland), which has benefitted from global markets when these basic elements that support sustainable resource utilisation and provide incentives for investing in forestry are in place.

24.5 Sustainable Forest Management Revisited

Over the past two decades sustainable forest management (SFM) has evolved as the dominant international paradigm in forestry. It has become the overarching principle for forestry practices and forestry development. The concept of SFM encompasses the idea of managing forests according to the principles of sustainable development and sustaining the provision of the diverse ecosystem services provided by forests. In general, SFM aims to balance the increasing demands for forest products and benefits of the society with conserving forest extent, health, and diversity. Globally, SFM has still not been extensively applied despite considerable efforts in the 1990s by numerous international initiatives and organizations to establish principles (criteria and indicators, national forest programmes) for its implementation at national and local levels.

Thus far in this chapter, we have pointed out how drivers of change interact and cut across different scales; how extra-sectoral drivers, i.e. drivers from outside the forestry sector, strongly influence the fate of forests and the ecosystem services they provide, and how landscapes are expressions of the relationships between society and their environment, including forests and other natural resources. Consequently, it is essential to recognize that SFM is not only about management practices being implemented in a certain forest area, even though this has often been its focus. Instead, it is important to broaden this understanding to encompass a wide range of social, economic, and environmental processes and interrelationships that affect the decision-making, benefit-sharing, and environmental effects related to forests, as well the interrelationships between forestry and other sectors within a given territory. The inclusion and attention to these issues within SFM is essential in order to meet the current and future challenges facing forests and forestry. Under the changing social, economic, and environmental circumstances it is also important that SFM embraces the idea of continuous and adaptive development of approaches and objectives for meeting the challenges.

Drawing on these reflections, we will focus our attention on a number of elements that must form part of, or need to be strengthened, in developing SFM. Many of these elements are not new: however, the ongoing global changes have again emphasized their importance. To provide structure to this discussion, these elements are organized below around the three dimensions of sustainability: environmental aspects including technical and ecological considerations; economic aspects including those related to the production and commercialization of forest products and services, and the use of incentives; and social and cultural aspects. A brief discussion of these elements will be followed by considerations concerning the integration of these dimensions into landscape-scale approaches, the important role of research and capacity building, and conclusions concerning institutions and the political-legal framework within which forestry development takes place.

24.5.1 Focus on Environmental Aspects

New approaches are needed to sustain and enhance the health of forests in changing environments. These include a large number of technical and ecological considerations that go beyond management for the sustainable production of wood and non-wood forest products, and mitigating the impact of harvesting operations. While these objectives will most likely continue to be important, threats and uncertainty associated with climate change emphasize the need for management approaches that encourage and sustain ecosystem complexity. Ecosystems that are variable in age and species structure, as well as genetically diverse, are considered to have the best chance of adapting to future changes.

Studies on the variability of forests (tropical forests, for example) have illustrated that different forest types are present to varying degrees across the landscape. These forests not only vary in size and species composition, but also in their contribution to the production of ecosystem services, such as watershed protection. Considering the importance of sustaining biological diversity and ecosystem services, efforts will be required to conserve a large spectrum of forest types across the landscape through a combination of protected areas and the application of sustainable management practices. That said, well-established and properly managed plantations will also play an important role for production and for the restoration of degraded lands.

More attention must also be given to reduction of forest fragmentation and restoration of landscape integrity through enhancing biological corridors and landscape connectivity, which are crucial for facilitating species migration. Reducing landscape fragmentation is an important consideration for efforts to conserve biodiversity and related ecosystem services.

Ecosystem-based adaptation (EBA) is an emerging multi-scale and multi-sector approach that takes into account the role of ecosystem services in reducing the vulnerability of society to climate change. For ensuring that forests will contribute to the adaptation of the broader society in the future, EBA aims to reduce current threats to ecosystem services (e.g., deforestation and forest degradation) by conserving forests or managing them sustainably. It also aims at reducing future threats by implementing adap-

Erkki Oksanen

Photo 24.1 There is need for more integrated, multi-sectoral and problem-oriented land use planning approaches that give attention to landscape-level processes.

tation to climate change. In this sense, EBA is an overarching framework to forest and adaptation in which "adaptation for forests" is needed to ensure the role of "forests for adaptation." It includes moving beyond traditional forest management models and capturing compensation for positive externalities provided by forests.

24.5.2 Focus on Economic Aspects

Policies that encourage agricultural practices and other economic activities that are detrimental to forests and the capacity of landscapes to provide ecosystem services are often implemented without taking into account their true economic costs. Much more attention should be given to determining the societal costs of negative environmental impacts in order to create a more level playing field for initiatives seeking to promote forest management and conservation. On the other hand, mechanisms to compensate those that provide environmental services should be further developed and implemented more widely to make sustainable management and conservation of forests more attractive land use options. The need to quantify and compensate for environmental services has increased with climate change and the ongoing development of mitigation mechanisms.

Many forestry development initiatives have tended to emphasize the technical dimensions of forest management and largely neglect issues relating to rural enterprise development, such as insertion into value chains, marketing and commercialization of products and services, and administration of income, among others. It is now recognized that much more attention must be devoted to these aspects. That said, innovations are required to create business organizations that while meeting the formal requirements of viable commercial enterprises, adapt to local customs, values, and practices.

24.5.3 Focus on Social and Cultural Aspects

The development of forest management and development approaches should take into consideration to a greater degree, current and changing societal values and perceptions related to forests, especially the perceptions of local communities. This is important both in the developed and developing world. For policies and strategies to gain acceptability and support, they need to reflect people's values and perceptions.

Many initiatives seeking to promote social forestry have failed to make an adequate effort to understand the social and cultural underpinnings of the proposed beneficiaries. Thus, as in the case of Amerindians in the Amazon, communal approaches

493

have been promoted when, in fact, local populations embrace land use practices that are more individualistic (family approach) in nature. These types of errors indicate that much more efforts need to be focused on understanding local realities.

Social and cultural values greatly influence the motivations underlying the involvement of people and community groups in forestry development initiatives. Caution must be exercised when assuming that profit maximization and accumulation of wealth are the primary reasons behind community participation these initiatives, when greater interest may be concentrated on enhancing livelihood strategies and means to address future uncertainties. A great challenge relates to recognition of the existence of human diversity and the need to be cognizant of the implications of this diversity to forestry development initiatives.

24.5.4 Integrating Environmental, Economic and Social Aspects

Of course, it would be misleading to imply that the aforementioned environmental, economic, and social aspects can be taken separately. It is essential to move toward more integrated, multi-sectoral approaches to land use planning using a problem-oriented approach and giving attention to landscape-level processes. For this, it is necessary to develop land use and economic policies that help to reconcile divergent interests over the use of forest landscapes and eliminate perverse incentives behind land use transformation. As we have seen, these needs are accentuated with economic development, increasing demands for forest ecosystem goods and services, and climate change (mitigation and adaptation), which will induce more intensive land use and, in some areas, thereby increasing land and water related conflicts.

Conventional intra-sectoral management approaches have become obsolete. They need to align with the complexity of the socio-ecological systems and the capacity of these systems to cope with, adapt to, and shape change. Management units should be recognized as complex hierarchical eco-sociological systems with capacity for self-organization. Adaptive management provides a flexible and responsive framework to deal with uncertainty and unpredictability. Adaptive collaborative management occurs when interested persons (often communities) agree to collaboratively plan, observe, and learn from the implementation of their plans. Monitoring landscape change is one part of an adaptive management strategy for sustaining forests in a dynamic world. An understanding of the limits of the dimensions of sustainability (ecological, social, economic, and cultural processes) is also required in order to develop plan-

ning and management tools for balancing system outputs. A risk analysis and management approach applied at the systems level can provide a means for stakeholders to critically examine preferences and alternatives, promote transparency of the decision-making process and to openly make explicit the uncertainties involved in particular courses of action.

Improving forest management and development approaches require working across different scales, integrating global and regional initiatives that arise through international dialogue, with local "on the ground" responses that impact directly forests and the ecosystem services they provide, and the people who live within or adjacent to these forests. This integration across different scales encompasses institutions and stakeholders that lie between these two extremes, including small and medium forest enterprises and industrial operations.

24.6 The Fundamental Importance of Research and Monitoring of Outcomes

More resources and effort will have to be devoted to research and the monitoring of outcomes. In many parts of the world, there has been a paradoxical reduction in research capacity, precisely when the complexity of forestry is increasing and the need for information to drive decisions is greater than ever. Research must be carried out on a wide array of topics, such as the composition and development of forests, genetic diversity and regeneration, and numerous topics related to socioeconomic, governance, and policy aspects related to sustainable forest management. More research is required better to understand the impacts of climate change on forests and forest-dependent communities, and the roles of natural and planted forests on the water cycle. Special attention also needs to be given to the complex interactions among the drivers of change and their collective impacts on forests and society. Baseline data needs to be generated to track changes in forest cover and quality. This is essential for monitoring national carbon balance over time. We have also seen the importance of research into the true economic impacts of diverse land use systems, integrating data on environmental impacts and sustainability.

The prospect of available funding through REDD+ mechanisms has led to calls for the establishment of output-based compensations, since estimating the costs of achieving these outcomes provides a benchmark for deciding where to invest limited funds. The quantification of outcomes indicates the importance of research and monitoring capabilities. A recent Intergovernmental Panel on Climate Change (IPCC) study found that only three

of 99 tropical developing countries possess the necessary capacity for carrying out monitoring of forest change. Technological advances will play an important role in enhancing the capacity of different countries to address these research needs. Therefore, more financial and technical support is urgently needed for strengthening research capacity, especially in less-developed countries.

24.7 Capacity Building is Crucial

A common theme that has emerged throughout the book relates to the importance of ensuring that communities and persons involved in forest management possess the necessary knowledge and expertise to take on complex tasks in an acceptable fashion. Capacity-building needs are quite broad, and as the complexity of sustainable forest management has been better understood, the scope and diversity of necessary knowledge and skills has increased over time, encompassing, among others, the following areas: social and organizational aspects, including enhancement of leadership skills for sustainable development; ecological and technical aspects, including research and monitoring capabilities; business development and administration aspects; political-legal aspects and governance; and networking, communication and information exchange, including the important skill of negotiation.

Beyond the breadth of topics that must be addressed in capacity-building efforts, it is also important to recognize that these efforts must target different levels. A wide array of persons influences what happens in forests and protected areas and all have capacity-building needs in different moments of time.

Finally, since the experience of local actors and the institutional framework varies greatly from one setting to another, capacity-building needs also evolve and change. This reality is one of the underlying challenges of institutions involved in capacity building and technical assistance.

24.8 The Need for Institutional Integration and Broad Participation

In many parts of the world, important progress has been made in retooling institutions, including land tenure reform, decentralized government and deregulation, and the creation of incentives to support sustainable forest use, in particular the newly emerging REDD initiatives. At the same time, considerable challenges remain unsolved, since in many regions of the world policies seeking to promote sustainable forest management, sustainable development, and poverty alleviation have not been effective. One factor that has limited progress relates to the diverse array of international agreements and conventions. Although these exhibit a considerable degree of overlap in their conceptual frameworks and mandates, they often act in isolation with inevitable duplication of efforts and even competing interests. At the national and local scales, efforts to improve forest management and protection, and/or to reduce deforestation have often concentrated on developing legislation and policy instruments to regulate activities within the forest sector, while problems affecting forests often arise from pressures outside the sector. Also, in many countries, corruption and lack of political will at both local and national levels have undermined the ability of institutions to implement, enforce, and monitor forest-related policies and regulatory frameworks, contributing to deforestation and forest degradation.

It has become clear in this review that no single institution has the ability, by itself, to address the important and pressing challenges facing the planet. That said, institutions have intersected to show promise in problem amelioration, while in other cases they have led to perverse and/or negative outcomes. To achieve appropriate responses to the complex changes and challenges requires focusing on institutional intersections at and between different levels (local, national, and global). The attention should be aimed at approaches in which central authorities, local governments, and capacity-enhancing, educational and training institutions intersect for producing meaningful engagement, and progress towards strategic goals, such as poverty alleviation and sustainable forest management. A key task facing policy makers is to better understand and to nurture the most promising types of institutional configurations. Whether, when, and how this can occur will depend in large part on whether government officials, international agencies, research units, and a range of other forest stakeholders make the collective decision to focus on nurturing stable, adaptive, and problem-focused institutional intersections.

The monitoring of the impacts of institutional intersection and policy implementation is important to avoid their continuation through simple inertia, and to foster their adjustment, when required, utilizing an adaptive management approach. Attention must also be placed on the processes through which citizens, communities, and forest stakeholders come to provide long-term support for policies and institutions seeking to foster forestry development.

Inherent in appropriate institutional development is creation of opportunities for the equitable participation of those whose behaviour is affected.

495

The raising of awareness, capacity building, and empowerment of local people are paramount to achieving this participation. Furthermore, local institutional adaptation is needed to ensure that introduced policies and institutions mesh well with local practices, customs and rules, and are not difficult to comprehend and absorb, and do not conflict with local moral-economic principles.

The need to work in an integrated way in an array of diverse disciplines and across different sectors, as well as the need to develop approaches to facilitate broad stakeholder participation, have resulted in the creation of different types of partnerships and collaborative platforms and networks. The existence of these collaborative platforms at different levels (international, national, and local) in which diverse stakeholder groups are well represented and free to discuss natural resource management and related goals, can foster stakeholder participation and participatory policy making. At the local or landscape level, experiences with biological corridors in Costa Rica, and natural forest management in Honduras indicate that such platforms work if stakeholders within a landscape identify with common objectives. The National Forest Programs have been designed to encourage the creation and functionality of these types of platforms for guiding forestry development at the national level. However, few governments possess the experience, skills, financial resources, and willingness to nurture these platforms to facilitate broad participation. Nevertheless, the importance of these platforms is expected to increase over time, since the complexity of required tasks is clearly beyond the capacity of any one single organization.

There is synergistic potential between national governmental institutions that produce prescriptive requirements, and knowledge- and capacity-building institutions that can make meaningful contributions to their "on the ground" implementation through constructive engagement with forest officials, rural communities, indigenous groups, etc. The harnessing of this potential is essential to ameliorate the perceived failures of many national policies, such as those related to forest tenure and benefit-sharing. Even if and when widespread stakeholder and societal support for forest law and governance can be achieved, successful implementation requires that countries also have the resources, training, and technological assistance for monitoring outputs and results on the ground. When these conditions exist, the institutional environment is more likely to embrace learning and adaptive management.

When two similarly effective instruments are being considered, the one most likely to garner support of those whose behaviour it seeks to address should be favoured. Experience has shown that establishment of unlikely coalitions among stakeholders who support the same institutions but for very different reasons ("bootleggers and Baptists") is appealing, since resulting institutions can be expected to be much more durable than those in which a key constituency was vehemently opposed (e.g., US environmental groups and the US forest products industry jointly lobbied Congress to amend the Lacey Act to limit the importing of illegally harvested wood products). Experience also indicates that promoting incremental but unidirectional support may yield paradigmatic results, and reflects more accurately processes of effective institutional change in the "real world".

Attention to these principles should encourage strategists to promote efforts that have, or might have, the support of domestic governments and a range of key stakeholders, including unlikely coalitions. This would also focus attention on developing the knowledge, training, and expertise sorely needed in developing countries where strong commitments have been made but in which compliance challenges continue to be immense.

An important role of governmental institutions is the explicit intent to contribute to the creation of an enabling environment that facilitates responsible forest management and conservation, and favours the development and consolidation of small and medium forest enterprises. As was pointed out in several chapters, existing regulatory frameworks often discourage responsible stewardship of forests by converting forest management and the commercialization of forest products into unattractive alternatives. Governments can foster the creation of enabling environment by granting and enforcing legal access to forest resources, curbing illegal logging, simplifying bureaucratic procedures for small and medium forest enterprises, and by providing financial incentives for start-ups, to name some of the options. In many cases, the rules of the game have been developed for corporate actors, not small-scale community-based operations, indicating that adequate adjustment of standards and regulations are often wanting.

Another important element is the relatively stability of the policy and regulatory environment. Constantly changing policies create uncertainty and prevent investments in sustainable resource management. This is accentuated by the long-term nature of wood production.

Institutions can, taken together, adapt to new and accelerating challenges. Such an approach requires a much greater integration of scholarly knowledge and practices. Nurturing durable, authoritative, and appropriate governance institutions that are considered legitimate by all whose actions and livelihoods are affected by these institutions is fundamentally important. But so, too, is ensuring that these governance institutions develop and adapt policies in ways that intersect in synergistic ways with knowledge and administrative institutions so that all stakeholders,

including local communities, possess the skills and knowledge necessary for enduring and meaningful "on the ground" impacts.

24.9 Climate Change and Forests: a Source of Opportunities and Risks

The global focus on climate change has brought forests to the forefront in global policy processes and deliberations. Forests have a crucial role in climate change mitigation; they provide a unique opportunity for emission reductions at relatively low cost. Linking forestry to climate change presents opportunities and challenges as various countries and stakeholders, motivated by a range of concerns and interests, attempt to shape responses and policy options.

Recent research results indicate the need for urgent action to help avoid deleterious and dangerous impacts of this global phenomenon. Even if effective mitigation efforts are achieved, forests will be affected by climate change and associated disturbances. As a result, the forest sector and forest-dependent people in both developed and developing countries will most likely be adversely affected. Adaptation to climate change represents a daunting new challenge for forest stakeholders and decision-makers that compound current economic, social, and political challenges. These new challenges are related to assessing vulnerability, identifying adaptation measures, and implementing adaptation. At the same time, adaptation to climate change also represents opportunities for better management or conservation of forests because forests provide essential ecosystem services that contribute to reducing the vulnerability of the society beyond the forest.

Despite its importance, forest adaptation is far from being implemented and mainstreamed into decision making. Indeed, in many countries forest conversion is a more pressing issue than climate change. If non-climatic threats are not addressed, adaptation to climate change may become irrelevant. National policies should promote forest adaptation into the framework of sustainable forest management and promote inter-sectoral coordination to link forest and other sectors in adaptation policies. International policies also have a role to play by fostering the integration of processes related to forests, climate change adaptation and mitigation, and biodiversity conservation.

A first logical approach would be to utilize available funding to progress in sustainable forest management, a kind of precursor to management for forest adaptation. This approach indicates taking into account the lessons learned, building on success to date and fostering the intersection of policies and

institutions that seem to hold the best promise. Under no circumstance should adaptation efforts and efforts to implement REDD+ initiatives start from scratch. In a parallel fashion, the principles of SFM should be developed to encompass elements that are crucial for enhancing forest adaptation and mitigation.

As we have seen, forests are affected by institutions that operate on a regional, national and even a global level and this linkage to different scales will also apply to forest adaptation. Because of the susceptibility of forests to a wide range of policies and institutions and to extra-sectoral drivers, it is particularly important to aim for consistency among policies across different scales and sectors. Efforts to foster forest adaptation or even sustainable forest management are for naught, if other policies promote forest conversion to other land uses.

Industry, the private sector, and communities will all have to adapt to climate change, while having differing perceptions of the risks and levels of responsibility. Although motivations may vary, shared concerns for the impacts of climate change may create opportunities to foster unlikely coalitions to address this complex problem in a more comprehensive fashion.

Any efforts to construct a credible REDD+ scheme must incorporate long term efforts to create and reform institutions, strengthen processes of governance, and build capacity to implement new models of forest management. REDD+, as a climate change mitigation instrument, will only progress at a pace that allows meaningful participation of all relevant stakeholders through consensus-building. When financial resources from REDD+ enter the markets, rights of local communities to forest land and carbon will need to be clarified and secured. While tenure reform has made strides in many countries, problems resulting from communities lacking land ownership and/or legal rights to manage and utilize natural resources continue to undermine attempts to promote SFM and conservation in many regions of the world. Unless considerable progress is made in securing the rights of local people to access, manage, and benefit from forests (including emerging carbon markets and other funding schemes), it is unlikely that deforestation and illegal logging will be curbed. Governments will need to examine and reform their institutions and adopt new approaches to respond to these challenges. Of particular importance will be the explicit recognition of the role of forests in climate change mitigation, as an integral part of development plans and policies.

A serious constraint that will limit options, at least in the near term, is deficiencies in knowledge and research capacity. It is widely recognized that both science-based and local knowledge will need to be considered in managing forests for adaptation (vulnerability assessments should be participatory,

497

not just carried out by scientists), preferably utilizing an adaptive management approach. Since decision-makers and scientists proposing policies for the implementation of REDD+ are strongly endorsing an output-based approach linking funding opportunities to demonstrable results, research and monitoring will perhaps finally receive the attention they deserve.

The fact that many efforts to promote SFM have been far less successful than desired suggests that caution must be exercised in the use of REDD+ funding mechanisms. As one author points out, the widespread use of REDD+ incentives could be like throwing money into a black hole unless serious efforts are made to address many of the technical, socioeconomic, political and institutional issues discussed in this book. While high level decision-makers view forests as a relatively easy way for achieving reductions in carbon emissions, practitioners who have struggled to progress in SFM know how difficult it has been to implement SFM on a broader scale. Clearly, business as usual will not suffice to accomplish the desired results.

A crucial challenge for global initiatives is to ensure that an increasing proportion of financial resources becomes available for local initiatives in participating countries. For success, initiatives like REDD+ will have to gain ownership in less-developed countries; in other words that they identify with and embrace the mechanisms envisioned and the "rules of the game". Furthermore, efforts will be needed to reduce transaction costs and the role of intermediaries in the process.

24.10 The Need for New Professionals

The forestry profession has undergone, and will continue to undergo, a profound transformation. The complex challenges facing forests and society indicate the need for new professionals with a broader, multidisciplinary understanding of the forestry sector and its role in meeting humanity´s needs for ecosystem services, in fostering rural development, and in ameliorating the impacts of climate change.

The integration across different scales, disciplines, and sectors calls for skill sets not fostered in many existing forestry educational programs, although changes are in evidence. New professionals need to be educated to understand the broad implications of the drivers of change and to be capable of taking part in and leading interdisciplinary efforts to promote and consolidate SFM. Professionals who devote themselves to international processes and global policies must have an adequate understanding of the factors and conditions that are important for SFM. At the same time, professionals engaged with producers, including community-based forestry enterprises and indigenous groups, must understand the implications and opportunities of global dialogues in order to take advantage of the opportunities they create.

Although no professional can be expected to manage all the complex dimensions of forestry and its role in society, the new professional should have the capability of recognizing the importance of bringing different competencies together to address problems in a more comprehensive fashion. They should also understand the need for and be able to facilitate wide participation both in relation to national level policy development and local level initiatives.

In the light of the "new" challenges, it is of immense importance that new scientific and political find expression in forestry praxis and that timely feedback from the praxis be utilized to orient and enrich scientific and political forums. Concerted efforts must be made to put scientific findings into easily understood terms to facilitate their use in practical implementation.

'New' professionals must gain a broader understanding of forestry beyond that commonly obtained from traditional forestry education. Many of the challenges presented in this book characterize this growing need to better address complexity and diversity in forestry education. A more integral or holistic understanding of forestry should enable the "new" professionals to provide leadership in processes of institutional development and adaptation.

Finally, a major attribute of the "new" professional will be his/her ability to access, process, and synthesize information being generated in a continuous fashion. In a parallel fashion, the "new" professional should proactively provide feedback to information providers and keep them abreast of users' evolving demands for information and methodologies.

Key messages

According to the authors of this concluding chapter, the following issues are essential for responding to challenges brought about by changing natural and social circumstances as well as for capturing the opportunities they create:

1) SFM continues to be a strategic goal, encompassing social, economic, and environmental dimensions. Its implementation needs to be strengthened and more attention needs to be devoted to the decision-making processes, benefit-sharing, and environmental issues involving a wide host of stakeholders, including actors outside the forest sector. Greater attention must also be devoted to effective policy and institutional configurations that favour progress towards SFM, to territorial approaches and to measures that enhance the adaptation of forests and forest-dependent people to climate change.

2) Further the adoption of adaptive management approaches that integrate research and monitoring of outcomes to improve the effectiveness of management interventions.

3) Expand the development and implementation of mechanisms to compensate those who provide ecosystem services to make sustainable management of forests a more attractive land use option.

4) Secure rights of local people to access, manage, and benefit from forests – including opportunities created by REDD+ and other funding schemes – for curbing deforestation and fostering SFM.

5) Increasing demand for forest products and forest-based biomass energy create new production and employment opportunities. Capturing these opportunities requires inter-sectoral coordination and landscape-scale planning and development approaches that simultaneously focus on different economic activities and social and environmental values.

6) For appropriate institutional development, institutional intersections within and between different levels (local, national and global) should be fostered. Special attention should be given to approaches in which central authorities, local governments, and capacity enhancing, educational, and training institutions intersect for producing meaningful engagement, and progress towards strategic goals such as poverty alleviation and SFM. Equitable participation of those whose behaviour is affected is also essential. Awareness raising, capacity building, and empowerment of local people are of paramount importance for enhancing participation.

7) Encourage international, national, and local partnerships, collaborative platforms and networks that can foster stakeholder participation and participatory policy making, and thus promote consensus building on common objectives and strategies.

8) Support efforts to integrate international processes related to forests, biodiversity conservation, and climate change for creating synergies that can favour the success of these processes over time.

9) Educate new professionals with a broader, multidisciplinary understanding of the forestry sector and its role in meeting humanity's needs for ecosystem services, in fostering rural development and in ameliorating the impacts of climate change. The new professionals need to take part in and provide leadership to interdisciplinary efforts to promote and consolidate SFM.

10) Strengthen research to enhance the understanding of the impacts of climate change on forests and forest dependent communities. Baseline data is needed to track changes in forest cover and quality and for monitoring national carbon balances over time. Additional research is also necessary to determine the influences of natural and planted forests on the hydrological cycle in areas with different climatic and topographic conditions. Special research attention needs to be focused on the complex interactions among the drivers of change and their collective impacts on forests and society.

499