

Module 10

Forestry in the North Circumpolar World

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Key Terms and Concepts

- sustainable forest management (SFM)
- criteria and indicators
- forest tenure
- forest certification
- adaptive management
- community forest
- forest estate/land
- allowable cut
- structural crisis
- vertical integration
- stumpage

Learning Objectives

Upon completion of this module, you should:

1. Understand what boreal forests are and how they are used and managed
2. Know how people think about sustainability in relation to forests
3. Be able to identify areas of recent progress in achieving forest sustainability, as well as issues still to be addressed
4. Understand the different challenges facing forestry in Russia and other areas of the Circumpolar World
5. Have a grasp of some alternative ways in which the forest sector can pursue forest sustainability more vigorously

6. Know where to start looking for more information about sustainable forest management
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Module Readings

Read the Overview and Lecture for Module 10, then read the assigned readings from the *Reading File* given below.

Reading 22: Christian Messier and Daniel Kneeshaw, “Thinking and Acting *Differently* for Sustainable Management of the Boreal Forest”

Reading 23: John Graham, “Exploring the Relationship Between Aboriginal Peoples and the Canadian Forest Industry”

Reading 24: Max Krott et al, “Russia”

Overview

The most northerly inhabitants of planet Earth do not dwell in or near forests, but most of the rest of us do. For many people, forests are incredibly important ecosystems. They provide innumerable goods (e.g., wood, paper, furs, berries and other foods, medicines, etc.) and services (e.g., carbon uptake from the atmosphere, soil stabilization, flood control, sites for recreation, among others). For many Aboriginal people, forests are their material and spiritual homes. Forests are often seen as the most natural part of our surrounding landscapes, and many people get upset when forests are misused or mismanaged.

Precisely because of the importance of forests to people for goods and services, they are under siege worldwide. Even with human population densities in the circumpolar region relatively low, the forests are still being used with such intensity and in so many different ways that people are at conflict over them. For example, loggers are pitted against preservationists, ecotourism operators against local anglers and hunters, Aboriginal communities against hydroelectric utilities, oil-and-gas companies against protected-area enthusiasts, and so on. The northern forests are not only vigorously used; they are also under intense scrutiny as countries around the Circumpolar North grapple with how to secure the long-term sustainability of these great ecosystems. In this module, we will explore a variety of sustainability issues associated with boreal forests, and will probe into the ways people might act to secure sustainability.

In the first part of this module, Peter Duinker deals with the main concepts used in this issue using primarily Canadian examples. In the second part of the module, Anatoly Petrov discusses the situation in Russia. The course authors chose to treat these two parts of the boreal ecosystem in some depth, rather than attempting to cover each of the six northern countries where the boreal forest is significant. The forest may be thought of as a single, more-or-less continuous ecosystem, starting from the shores of Norway, and sweeping through Sweden, Finland, Russia, Alaska and Canada to the shores of Labrador.

Lecture Part 1: Managing Forests for Sustainability in Canada

by Peter Duinker

Nature of Boreal Forests and Their Use and Management

The boreal forests—or taiga forests—are the world’s most northerly forests. They exist in a band between the temperate mixed wood forests to the south (or, in places like the Canadian prairies, grasslands), and the tundra to the north. We usually associate boreal forests with Russia, the Fennoscandian countries of Finland, Sweden and Norway, Canada, and the United States (in Alaska mainly). However, a few other countries also have boreal forests. Some boreal forests are capable of producing commercial timber, but in many areas, climates are currently cold enough that tree growth rates are too low to grow timber commercially.

Conceptions of Sustainable Forest Management

Forest-sector people took immediate inspiration from the Brundtland Commission (i.e., the World Commission on Environment and Development) in 1987 when it published a definition for sustainable development in the book *Our Common Future*. Accordingly, sustainable development is that which “meets the needs of the present without compromising the ability of future generations to meet their own needs” (p. 8). In Canada, for example, the forest sector took this outlook on sustainability and created first a national goal for forests and subsequently this definition for sustainable forest management: “management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social and cultural

opportunities for the benefit of present and future generations” (CSA 1996, p. 1).

This conception points essentially to a re-balancing of priorities in forest management. Commodities are still important, but people today want to make sure that forest managers are also addressing a host of non-timber concerns. Many of these have to do with the ecological and social functions of forests. In sustainability terms, forests are seen not just as stands of timber but rather as ecosystems comprised of all types of organisms (including people!) interacting with their abiotic environment. Moreover, all the values people ascribe to forests, including so-called intrinsic values, are important in management.

For its part, management is best seen as an ongoing process of planning a set of actions and then implementing them. In planning, one sets objectives and designs action sets to meet them. A forest management plan contains a discrete set of objectives and specified action schedules. When actions are taken, managers monitor whether the actions are implemented as specified, whether the forest is responding as expected, and whether objectives are being met as specified. The cycle of planning begins again, either at a legally specified interval or whenever objectives or action schedules (or both) are clearly in need of revision (Baskerville 1986; Erdle and Sullivan 1998).

Be clear about this—management does not mean for commodities, like timber, only. Forests can be managed for commodities, ecosystem functions, and amenities. Management means choosing the values to be managed for, setting directions for those values, and designing and implementing action strategies to pursue those directions. Forest parks and other protected areas are managed, too. What makes them special is that physical interventions (as management treatments or user activities) are usually kept at low levels.

To summarize, sustainability in forest management means sustaining all the values people determine are important for a specific forest. This does not necessarily mean that the levels for all the values are kept the same year to year; indeed, that would be impractical and probably impossible. Rather, it means ensuring their continuation in a favourable way, with whatever fluctuations people would deem tolerable.

The Brighter Side: Approaches for Securing Sustainable Forest Management

What tools and approaches are being used by forest managers to do a better job of sustainable forest management? The list is long, but here we shall examine only a few key mechanisms. On this brighter side, I believe that

forest managers, at least in the west, have made great strides in the past quarter-century in improving forest management and making it more sustainable.

Criteria and Indicators of Sustainable Forest Management

If we are serious about sustainability, we must have ways of determining whether we are making progress. Sustainability indicators are used in this determination. Indicators are variables that measure the things we value in and about forests. Thus, once we determine the values, we next have to figure out how to measure progress in sustaining those values.

Identifying criteria and indicators of sustainable forest management has been a strong pre-occupation of the forest sector around the world, at all levels from local through national to international. Of relevance to the Circumpolar World is the set of criteria and indicators developed by the Montreal Process, named for an international meeting on sustainable forest management held in Montreal in 1993. This process published the *Montreal Process Working Group Criteria for Sustainable Management*. The great value of these kinds of criteria and indicator sets is that they remind everyone of all the things that are important in getting on with sustainable forest management. Thus, the Montreal Process established seven criteria as follows:

1. Conservation of biological diversity
2. Maintenance of productive capacity of forest ecosystems
3. Maintenance of forest ecosystem health and vitality
4. Conservation and maintenance of soil and water resources
5. Maintenance of forest contributions to global carbon cycles
6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies
7. Legal, institutional and economic framework for forest conservation and sustainable management

When countries report internationally on the state of their forests, they use these criteria. Each nation, for its internal sustainability reporting, has developed its own set of criteria which are consistent with those of the Montreal Process. In Canada, the six criteria developed under the auspices of the Canadian Council of Forest Ministers are being used locally and provincially as people work out their forest-sustainability programs. You may

see details of the criteria on the Web at <http://silvae.cfr.washington.edu/ecosystem-management/Montreal.html>.

Public Participation and Community Forests

Across most of the world's boreal forests, the dominant players in industrial forest management are the senior governments, as landowners, and industrial timber-using companies (e.g., pulp mills, panel mills, and lumber mills) as licensees of various sorts. It has recently become commonplace for a wide range of other forest users and people interested in forests to become involved in forest decision-making through public participation exercises (Duinker 1998). The senior governments, on behalf of their respective citizens, have a responsibility to set terms and conditions on forest use and management, including regulations, guidelines, and incentives that promote SFM. Industrial timber licensees have a responsibility to implement government requirements, and respond systematically to public input. Other stakeholders, including recreationists, trappers and environmentalists for example, are now getting involved as never before, becoming well informed so as to be able to give thoughtful input, and making inputs about managing forests for their respective values. These stakeholders are also able to show how their own forest-based activities are important in the overall considerations of ecosystem sustainability as well as the sustainability of other users' values.

Occasionally, local people residing in forest-based communities want to be more directly involved in the management of the surrounding forest lands. This can range from various forms of partnerships with senior governments and timber companies in co-management arrangements, to full-fledged community forests. The concept is gaining increased interest all over the world, including boreal forests. Some provinces in Canada (e.g., British Columbia) are actively experimenting with community forests. Co-management arrangements and community forests may become more important with time as Indigenous peoples increase their involvement in SFM.

Adaptive Management

Forest managers have recently come to realize that they need a new approach to dealing with the profound uncertainties they face in SFM. Adaptive management is just that new approach. In its essence, adaptive management is a process for learning about the effects of resource management from the management itself. It recognizes that ecosystems are exceedingly complex and that we can never get perfect information for managerial decision-making. Traditional forms of experimental research, usually short-term tests on small plots, can not provide reliable knowledge for application at the broad scales and long timeframes of forest management. While replication is seldom possible, forest-management actions themselves provide the best opportunity

for gaining vital knowledge about their effects on a wide range of forest ecosystem components.

Adaptive management is not simply “learning as one goes.” Trial-and-error learning is important, but it will not deliver the kinds of knowledge needed. The ecological effects of forest management usually have too much noise for a clear signal to be apparent quickly. Obviously, the sooner signals can become apparent, the faster learning can occur. Therefore, adaptive management often calls for implementation of strong experiments, with stronger interventions than those which characterize normal forest management. These experiments might range from stand-level treatments related to alternative harvest and regeneration treatments, all the way to forest-scale strategies for managing habitats of sensitive species such as woodland caribou. Fortunately, forest managers throughout the boreal zone are increasingly turning to adaptive management to reduce uncertainty.

Forest Certification

Forest certification is a process whereby an independent organization verifies that a forest is being managed sustainably. Forest managers may want to obtain certification to assure consumers that the forests supplying raw materials for the products consumed are under sustainable forest management. There are two forest-certification schemes available worldwide, and additional schemes are nationally or regionally available. Globally, forest managers may avail themselves of certification under the Forest Stewardship Council, which, since 1995, has published a set of global principles and criteria for forest stewardship, or alternatively under the ISO-14000 series of environmental management system standards. While debates rage over which certification system is the best, or even which ones are any good at all, numerous forest managers around the world are getting their forests certified, and the amount of forest products labelled as coming from sustainable forests is slowly growing.

Regulations and Codes of Forest Practice

Governments recently have been strengthening the regulations applied to forest management on both private and public lands. Notable examples in Canada are British Columbia, with its strict Code of Forest Practices, Ontario with its Crown Forest Sustainability Act and associated regulations, and Nova Scotia with its regulations on forest sustainability, wildlife habitat and watercourse protection. All these types of regulatory change are implemented to improve the sustainability elements of forest management.

Certification is one voluntary approach to improving forest management; voluntary adoption of industrial codes of forest practices is another. Timber

companies in Alberta have adopted the ForestCare system. In Ontario, the forest-products industry created its own Code of Forest Practice and made continuing membership in the industrial organization contingent upon respect for the Code in actual forest practices on the ground. In Nova Scotia, the Nova Forest Alliance created a manual of best management practices that was embraced heartily by the forest-products companies in the province.

The Darker Side: Challenges to Achievement of Sustainability

Sustainable forest management is a journey—a long one—where significant progress can be made but additional and huge improvements are always necessary. Much progress has been made in the past two decades, but continuing and new challenges loom large. Here are some of them, with small elaborations on their nature and the potential paths forward.

Forest Practices

Forest-management practices such as clear-cutting and the use of pesticides and exotic species continue to dominate forest-sector debates in Canada. While purists argue for their abolition, I believe that the right approach is to become smarter in their use. These management tools are not good or bad in and of themselves, but rather can be applied in good or bad ways. What we need to accomplish is to define improved and safe applications of these tools and get on with putting such applications on the ground.

Biodiversity Conservation

There are two major issues in conservation of forest biodiversity: (a) making sure that species at risk (i.e., rare, threatened and endangered species) are not put further at risk, but rather face reduced levels of risk through implementation of recovery plans; and (b) preventing the arrival and spread of exotic species that may cause serious disruptions to boreal forest ecosystems. Further expanding the system of protected areas is one approach, but a total-landscape solution is needed where all forests are managed in such a way that habitats for all native wild species are conserved.

Forest Tenure

Systems of rights and responsibilities for all the values associated with forests are poorly developed. Even our timber tenures, which spell out how private interests may manage for timber on public lands, frequently seem ill-suited to

the complex situations faced in the twenty-first century. Much more attention, with innovation and creativity, is needed to sort out what rights and responsibilities people and organizations should have as we continue to expand the array of values for which forests are managed.

Northward Exploitation of Commercial Forest

The northern limit of activity related to commercial timber management in boreal forests continues to push further north. Most of these forests are certainly not totally unexploited, but the relative rate of human intrusion into the landscape is low compared with southern boreal forests. Are we really sure that commercial exploitation of these timber resources is overall a good thing for society, both today and in the future? Some argue that, if we are looking for more timber to harvest, we should concentrate efforts at growing wood in the forest ecosystems already exploited commercially, and leave the most northern forests alone. These are questions that demand serious debate in the immediate future.

Aboriginal Peoples

Aboriginal peoples have for thousands of years been inhabitants of the world's northern forests. Are their best interests at heart as forest ecosystems continue to be used for an ever widening array of values by people from the south? In countries like Canada, Aboriginal people have special rights, embodied in the country's constitution and case law, that give them favoured status in decisions associated with the disposition of resources on their traditional lands. Non-Aboriginal people need to learn quickly how to deal with the rising power of Aboriginal peoples.

Carbon Management

Whether the Kyoto agreement on carbon emissions is ratified or not, forest managers will increasingly be looked upon to manage forests to store more carbon. Unfortunately, it is still not clear how forest managers are to do this, partly because of the huge uncertainties about how carbon cycles within forest ecosystems and between forests and the atmosphere. Major efforts are needed to discern the most promising ways for managers to intervene in the forest carbon cycle.

Climate Change

Many experts believe that northern forests will be strongly affected by the climatic repercussions of continually rising concentrations of greenhouse

gases in the atmosphere. If climate change comes as many predict it will, then boreal biota and soils will be out of step with their climate. I call this state of affairs “ecosystem confusion.” It has been postulated that, with the higher winter temperatures and concomitant dryer soils, forest fires will increase in frequency and intensity, and widespread forest declines will occur.

Should these things come to pass during the next century, which is roughly what we consider to be the lifespan of many boreal forest trees, what we believe today to be “natural” will cease to be. Emulating natural patterns and processes will not only be impractical; it will be impossible. A better strategy in view of possible global climate change would be to manage forests so that they have a higher adaptability to the potential ravages of climate change. How this is to be done has yet to be analyzed properly, although many analysts have listed out the options in a conceptual way (e.g., anticipatory plantings, shortened rotations).

Lecture Part 2: Forest Resources in the Russian Federation: Issues of Their Sustainable Management

by Anatoly Petrov

Forest Resources in the Russian Federation

In the Russian Federation, the following notions (indicators) are used in forest management practice to measure the forest capacity:

1. **Forest** means an element of the natural landscape consisting of all tree, shrub, soil cover, animals and micro-organisms, which are biologically interlinked and interacting among themselves and with their environment.
2. **Forest resources** include all timber and non-timber forest products and natural benefits.
3. The **forest estate** comprises the lands covered with growing forests and designated for growing new forests as well as non-stocked forest lands required for the needs of forest management in compliance with identified goals.

The lands of the forest estate are further classified into:

- **forest lands** (stocked and non-stocked), and

- **non-forest lands** which are either not designated for forest growing or suitable for this purpose without special treatment (arable land, hay-making grounds, grazing lands, waters, roads, bogs, sands, etc.).

Stocked forest lands are the areas that are actually covered with forests. Non-stocked forest lands are those areas which are designated for forest growing but temporarily are not covered with forest (non-forested cutover areas, burnt areas, open lands, dead stands, etc.).

Since 1943, all forests have been classified into three groups depending upon priorities in their economic (wood supply) and environmental (environment protection) functions:

First group forests are designated for social and environmental purposes and include: forests used for water conservation for protective and sanitary and hygienic purposes; nature reserves, national and nature parks, forest parks; forests of scientific and historical value; and pre-tundra and sub-alpine forests. Final cutting is forbidden in the first group forests.

Second group forests are managed for both protection and limited wood supply. In these forests, final cutting is allowed but restricted.

Third group forests are used primarily for wood supply. These forests are located in forest-rich areas with low population densities. Cutting volumes are defined largely in view of economic considerations, and namely, their resource economic accessibility. The third group includes also so-called “reserved forests,” that is, forests that are currently physically and economically inaccessible and therefore unreasonable to exploit them for the time being.

Territorially, Russian forests are divided into the European and Ural part and the Asian part and into 12 economic regions. Based on the this classification, a forest inventory was conducted as of January 1, 1998. Its results are summarised in Table 10. 1.

Table 10.1

Forest Resources in the Russian Federation (as of January 1, 1998)				
Territories	Forest estate area (millions ha)			
	Total	By forest group		
		I	II	III
Russian Federation (total)	1172	269	89	814
European and Ural Part (total)	206	75	53	78
Including the Baltic Region	0.4	0.35	0.05	-
Northern Region	104.4	36.1	9.1	59.2
North-Western Region	12.1	4.0	8.1	-
Central	22.3	9.0	12.1	1.2
Volga-Vyatka	14.6	3.7	7.0	3.9
Central Cherozem	1.6	1.6	-	-
Volga	5.8	4.4	1.4	-
North Caucasus	4.6	4.4	0.2	-
Ural	41.0	12.1	15.6	13.3
Asian Part (total)	966.0	193.2	35.3	737.5
Western Siberia	150.0	32.1	10.5	107.4
Eastern Siberia	312.3	91.3	17.2	203.8
Far East	503.7	69.8	7.6	426.3

Forest Yield and Limiting Factors

An analysis of the forest data shows that the Asian part accounts for 80 per cent of the entire commercial growing stock, with only 12 per cent of the total population and about 15 per cent of the gross product. The forest is made up of a significant proportion of commercially valuable species (by volume, 78 % of the total stand and 80 per cent in the commercial stand).

The overall species composition is:

pine – 20 per cent

spruce, fir – 17 per cent

larch – 31 per cent

Siberian/Korean pine – 10 per cent

birch – 12 per cent

aspen – 4 per cent

other hardwoods – 6 per cent

Larch stands prevail in the Asian part where their share reached over 40 per cent of the total growing stock. Larch forest harvesting is difficult due to the absence of railways and roads. Water transportation (floating) of larch timber is not feasible. In European Russia, over-mature aspen and birch stands dominate the growing stock due to lack of demand.

The average forest yield is low (1.2 m³/ha) because 75 per cent of the forests are in the taiga and tundra zones, and over 60 per cent of them grow on permafrost soils and in areas with excessive humidity. Under these conditions, logging may cause irreversible environmental damage such as erosion, extensive swamp formation, and so on.

Low-yield forests (i.e., with growing stock below 50 m³/ha) occupy over 25 per cent of the forest land and serve as an environmental buffer in the north of European and Asian Russia to protect southern areas of the mainland against cold Arctic winds. The belt of pre-tundra and low class taiga forests is 300 to 500 km wide and stretches along the entire Arctic coast from Murmansk on the frontier with Finland to Chukotka on the frontier with the United States.

Abundant forests dominated by mature and over-mature stands are exposed to frequent pest and fire outbreaks because of lack of roads and low population density. Over 30 per cent of the total area of the forest estate is considered to be high fire class forest. Aerial fire management is the only practised fire control method for over 70 per cent of the forest estate area due to lack of appropriate ground services. Forest fires kill about 300,000 ha of forests per year, primarily in Asian Russia. Forest pest and disease outbreaks affect over 3 million ha, or 4.5 ha per 1,000 ha of forest stocked land.

The wood supply capacity of the forests is measured by the annual allowable cut for final cutting which is currently estimated at 544 million m³, including 310 million m³ of conifers (as of 2000).

Geographically, annual allowable cut is distributed between the Asian and European parts as 60 per cent and 40 per cent, respectively. The overall wood supply capacity of Russian forests may be estimated at about 600 million m³, which makes Russia the richest country in the world in terms forest resources.

Forest Management and Arrangements for Forest Use, Renewal and Protection

Forest management underwent significant changes in the course of the political and economic reforms in the Russian Federation from 1992–2001. In 1993, the Basic Principles of the Forest Legislation were adopted as federal law. According to that law, key forest allocation functions were delegated to local (municipal) entities, and forestry governance was separated from the timber business through the introduction of mechanisms for forest lease and forest auctions.

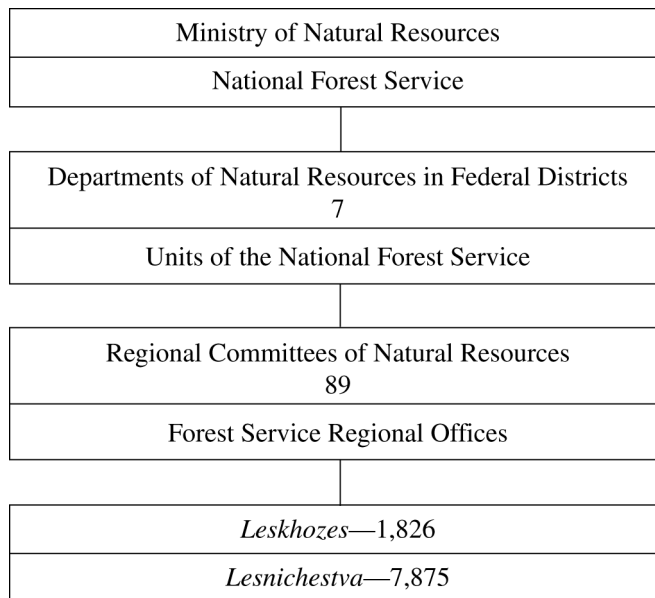
Currently, forest relations are governed by the Forest Code of the Russian Federation as adopted in 1997. The Forest Code declares federal ownership of all forests, and divides forest management and administration responsibilities among three levels: the Federation, subjects of the Russian Federation (regional governments or regions), and municipal entities.

Responsibility for the state of forests is also distributed among these levels, respectively, which leads to some negative consequences because, in spite of the declared federal ownership, the financial responsibility for forest renewal is imposed on the regions. Under the current division of responsibilities between the Federation and regions, key forest use decisions are made by regional authorities, that is, by governors and managers in 89 regions, rather than by federal authorities. In Russia, there is no national forest policy to define strategic goals for the country's forest sector development, investment, or sectoral and regional priorities, which leads to numerous variations in systems of forest management.

Until 2000, the central forest administration management agency was the Federal Forest Service with the status of an separate federal executive body. Since May, 2000, governance in the area of forestry has been under the jurisdiction of the Ministry of Natural Resources, which is also responsible for the governance of mineral resources, water resources, and environmental protection.

Figure 10.1 shows the structure of forest administration and management in the Russian Federation, as of 2002.

Figure 10.1: Forest Administration Entities in the Russian Federation



(Numbers are the number of corresponding entities)

The basic forest management bodies are forest management units (*leskhoz*es) established in the Soviet period to combine both economic (thinning, reforestation, forest protection) and management functions. Though referred to as state forest administration entities, in 2001, they harvested more than 30 million m³ timber from thinning and completed above 90 per cent of the total volume of silvicultural operations. Due to integration of economic functions into *leskhoz*es' responsibilities, they have come to be unable to ensure efficient regulation of forest use and to confront illegal logging, which is estimated by different sources to reach from 10 to 20 million m³ per year. Structurally, *leskhoz*es consist of *lesnichestva* (forest ranges).

Final cutting is to be effected on a basis of agreements designed for two forest use arrangements; long-term forest lease for a period from 1 to 49 years, and forest auctions for a period of up to one year. In 2001, the total timber harvested by forest use arrangement was 60 per cent logged under forest lease agreements, 20 per cent through forest auctions, and the remaining 20 per cent from forest areas that had been allocated by decree. Regional authorities make all decisions on granting rights for the use of the forest estate, be it on the lease basis or through forest auctions.

Figure 10.2 illustrates the decision-making process. It contains numerous bureaucratic stages that contribute to corruption and a shadow economy that includes illegal logging.

Forest use related financial transactions lack openness and transparency. Payments for forest use are established by the state and have a tax status. Parties to forest lease agreements do not participate in negotiations on the rates. Forest use payments are channelled into the federal and regional budgets and are not controlled by the *leskhoz*s who act as lessors. Rigid centralization of forest use payment management is coupled with a lack of competition in forest markets. This lack of competition accounts for low public revenues from forest use as expressed in low stumpage fees (Rbl 40 or US\$ 1.3 per m³ on the average in 2001).

In its turn, low public revenues from forest use means insufficient financing from the budget for forest management operations, such as reforestation, silvicultural treatments, and forest protection.

Figure 10.2: Decision-making Process to Grant the Rights for Forest Use



In 2001, *leskhoz*s (who are to conduct the operations) actually received only 15 to 20 per cent of the funds needed for the forest management operations according to forest management plans. Insufficient funding for forest management operations leads to unsatisfactory regeneration of forest on cut-over areas, particularly in forest-rich northern areas. Due to low pay, well-trained and experienced forestry staff are leaving for other sectors.

Forest Industries: Current Situation and Prospects for Development

Economic reforms have resulted in drastic changes in the forest sector of the country. As of 2001, 95 per cent of forest industries were privately owned, mainly by joint stock companies, with and without government shares. In the forest sector, the process of privatization was accompanied by severe structural and financial crisis that ultimately led to decreased outputs in all sub-sectors (Table 2).

The crisis was preconditioned by the following four factors.

1. Grave mistakes were made during the Soviet period when major logging and processing capacities were located in remote areas of Siberia, far from domestic and export markets.
2. Because low, per-capita domestic incomes (about US\$ 1,800 per year in 2001), there was a significant decline in consumption of end-use forest products in domestic markets.
3. Secondary manufacturing and processing was inefficient with only 15 per cent of the total harvest processed by chemical and chemical-mechanical methods.
4. There was a lack of investment in construction of new enterprises and retrofitting of the existing ones at a time when average depreciation of capital assets was over 60 per cent.

Though in the 1990s, forest sector development was not as high a priority as oil and gas extraction. Forestry's share in the country's gross product and exports ranked fifth, compared to first for oil and gas in 2001. Under the structural crisis, the economics of the forest sector largely depend on export opportunities. In 2001, export earnings from the forest sector reached US\$ 4.3 billion, or over 60 per cent of the total cost of sold products.

Forestry exports in 2001 included: round wood (unprocessed logs), 30.8 million m³; sawn lumber, 7.8 million m³; plywood, 970,000 m³; pulp, 1,660,000 tons; and paper and paper board, 2,300,000 tons. These data show that round wood accounts for a significant portion of exports to the detriment of the domestic economy.

Since 1998, forest sector production has grown, triggered by the 1998 devaluation of the rouble. However, the total logging output of 150 million m³ (including illegal logging and intermediate cutting) is still much lower than the allowable cut of 600 million m³.

To ensure sustainable development in the forest sector, there is need for significant investment, primarily in the development of new pulp and paper capacities to produce 3.5 million to 4.8 million tonnes of craft pulp from hardwoods in European Russia. Harvesting of economically accessible hardwood resources would allow an increase in the environmental value of forests in these areas with prevailing over-mature hardwood stands.

In forest-rich areas of the European North, where coniferous stands are dominating, it is planned to be established sawn wood capacities for 8 to 10 million m³ per year. To implement the forest sector development program aimed at increasing the actual cut to 200 to 220 million m³ of competitive products, there is a need to invest US\$ 18 to 25 billion over five years while currently, only about US\$ 600 million is annually invested in the forest sector, with just 2 per cent from foreign investors. Foreign investment is hindered by non-transparent financial flows and unstable legislative and tax regimes.

Along with forest industry development in European Russia (including northern taiga areas), there are good conditions high growth rates in logging and milling in the far east for Asian markets. As for Siberia, its forest sector looks rather pessimistic because of remoteness from markets.

Achieving Sustainability in the Russian Forest Sector

To achieve and maintain sustainability in the Russian forest industry will require key policy changes in the next five to ten years.

The first is to reform tenure rights for the forest estate. Pursuant to the Constitution of the Russian Federation, the forest ownership pattern consists of federal, state or regional, municipal, and private ownership. A strategic goal would be to implement all these ownership arrangements in forest management, leading to decentralization and increased private ownership. It is possible that, in the future, some forests will be owned by regions.

In 2001, the Land Code was adopted to provide a legal framework for forest privatization. However, the process will be long and complicated because there are no professional owners even among forest industry companies and no tradition of ownership. One plan to create private owners is through long-term forest leases. The first forests to be privatized would be those managed by agricultural enterprises (rural forests).

The second policy change needed is to separate the function of public administration in forestry from those of practical forest management (silvicultural and other operations), at the lower (i.e., *leskhoz*) level. This

separation would lead to enhanced control over flows of both funds and timber harvested by private companies.

Third, the entire system of forest use should be market-driven and based on concession agreements. Under long-term concessions, rights of forest users would be significantly expanded to allow for their participation in forest planning and maintenance. A market economy in forestry, coupled with long-term concessions, would also attract badly needed investment. All currently existing authorization procedures (Figure 10.2) would be replaced by agreements between federal forest authorities (acting as the owners of forests) and forest users, including foreign companies.

A fourth policy change, current methods of establishing forest use charges would be replaced by market-based pricing where stumpage rates are established through negotiation with due regard to timber market demand and supply. Market-based timber pricing arrangements would allow the average stumpage charge to increase to US\$ 8 to 10 per m³, within the next five years.

Fifth, there is a need to create vertically integrated forest industry companies that combine logging, processing, and manufacturing. The sale of round wood is little more than resource extraction. The jobs and economic activity created by processing and manufacturing represent the most significant economic potential of forests. Such companies should enjoy preferences in acquisition of rights for forest harvesting on the basis of concession agreements and thereby assume the responsibility for reforestation.

Finally, a legislative framework for voluntary certification of forest companies is required.

The above policy initiatives would help ensure forest sector sustainability in Russia. They would encourage modernization, inflow of capital, and secondary industries, and would give forest companies the incentives to ensure that forests are protected and used in a sustainable manner. The changes should be implemented under a national forest policy and new forest legislation that would create a setting for the new stage in the management of Russian forests, which account for one quarter of global forest wealth.

Study Questions

1. What are some promising ways to think about sustainability in the management of northern forests?
2. In what different ways are northern forests important to people? How should forest managers ensure that people's values associated with northern forests are sustained?

3. What approaches is the forest sector taking to implement sustainable forest management?
4. What are some major challenges in achieving forest sustainability? How might forest managers rise above these challenges?
5. What are the economic and environmental peculiarities of forests in the Russian Federation?

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Glossary of Terms

Allowable cut: permitted volume of timber harvesting established on the basis of economic and environmental goals.

Region: a subject of the Russian Federation—a republic, oblast, or kray—which is a constituent of the Federation. According to the Russian Constitution, the Russian Federation consists of 89 regions.

Municipal entities: administrative districts which constitute a region.

Federal district: a territory where functions of the President's authority are implemented. There are 7 federal district in the Russian Federation