

Interim Report

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**Institutions and the Emergence of Markets —
Transition in the Krasnoyarsk Forest Sector**

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Foreword

This report is one in a series of case studies of the institutional embedding of the Russian forest sector conducted as part of the Forestry project at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria. The work on the report was mainly done while the author was a participant in IIASA's Young Scientists Summer Program in the summer of 1999. I am very grateful to Professor Sten Nilsson, leader of IIASA's Forestry project, for being given the chance to participate in the YSSP program. While at the Institute, I received valuable help and suggestions from my supervisors in the program, the researchers engaged in the project's study on the Russian institutional framework, Lars Carlsson, Mats-Olov Olsson and Nils-Gustav Lundgren. Mr. Olsson also contributed much work in editing my report.

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Institutions and the Emergence of Markets — Transition in the Krasnoyarsk Forest Sector

Nastassia Sokolova

1. Introduction

Improving forest management is a difficult challenge all over the world. It is a problem that affects all countries irrespective of their social order, political regime and level of development. In Russia, during the current period of transition, endeavors to solve these problems have been hampered by long delays in the elaboration and implementation of a new forest legislation.

The Forest Code of the Russian Federation, finally adopted in 1997, does not raise any hopes that the forest sector will show much progress in the years to come. Forest sector policies should be consistent with the state's broader environmental, economic and social objectives, and forest sector reforms should be integrated into the country's overall economic reform program. The new Forest Code largely disregards these facts.

An important task in the development of a forest policy under current market conditions is to identify an optimal unit of forest management. An effective forest management system requires incentives, which would stimulate the interests of both forest managers and forest users.

A further elaboration of the forest legislation is an essential but difficult task under the present conditions in Russia with rapidly changing social and economic relations and an ongoing constitutional process. The forest legislation has to deal with issues of forest ownership, forest management and use as well as the implementation mechanism. These complex issues require special attention and since they should be considered jointly it would probably be a good idea to approach them on the regional level.

Siberia contains 42 percent of Russia's total forest lands and 9 percent of the world's total forested areas. Two thirds of Siberia's forests are to be found on the territory of Krasnoyarsk Krai. To engage these resources in a sustainable forest exploitation is an important task for society and should not be disregarded because of the development of other natural resources in the region.

The forest sector is of great importance in Krasnoyarsk Krai. Historically, it played a vital role in the regional economy. The sector made a considerable contribution to the regional GDP, to exports, trade income and employment. However, its contribution to the regional economy has sharply decreased during the last ten years, partly as a result

of the general deterioration of the Russian economy. Nevertheless, the forest sector is still making a significant contribution to the region's economy. It has a considerable potential for reconstruction of its production and exports on the basis of a sustainable forest management. But in order to realize this potential a number of conditions should be met and profound reforms in the sector must be achieved.

In this report the institutional problems affecting the Krasnoyarsk forest sector are analyzed and a number of recommendations for improving the institutional structure of the sector are proposed with due consideration of the possible socioeconomic development of the region as well as the challenges and restrictions imposed by the environmental conditions.

The report consists of eight chapters. In the next chapter the characteristics of the forest resources of Krasnoyarsk Krai are considered. Chapter 3 focuses on institutional aspects and the environment of the regional forest sector during the transition period. It includes a description of the forest management structure and the organization of the regional forest industrial complex. The fourth chapter describes the current socioeconomic situation in Krasnoyarsk Krai through an analysis of a number of characteristics, such as population and education. In Chapter 5 the relations between the political structures and the forest sector are discussed. In Chapter 6 the focus is on institutional problems and shortcomings, such as the forest legislation, and general problems concerning the enterprises belonging to the regional forest complex. Chapter 7 discusses in more detail some of the previously described features and problems of the Krasnoyarsk forest sector based on a survey of a number of forest enterprises in the region. The final chapter of the report contains conclusions based on the performed analysis as well as recommendations on how the current situation in the Krasnoyarsk forest sector might be improved.

The descriptions and analyses of the current institutional structures contained in this report were based upon a series of interviews with representatives of twenty-six forest enterprises in Krasnoyarsk Krai and a data collection about the state of the forest resources, the socioeconomic situation in the region, the formal political and administrative structure and its relation to the forest sector as well as its formal and informal institutional configuration. These data were supplemented by information retrieved from IIASA's Forestry project database and a number of secondary sources.¹

¹ The design of the present study basically follows that of a series of studies of the institutional embedding of the forest sector in seven other Russian regions made within IIASA's Forestry Project. The questionnaire used for the enterprise interviews as well as a "case study instruction" to guide the collection of information on the regional forest sector can be found as an appendix to the IIASA case study report on Arkhangelsk (see Carlsson *et al.*, 1999). The following case study reports have already been published by IIASA: Carlsson and Olsson (1998a), Carlsson and Olsson (1998b), Carlsson, Lundgren and Olsson (1999), Carlsson *et al.*, (1999), Efremov *et al.* (1999), Fell (1999), Kleinhof, Carlsson and Olsson (1999), Piipponen (1999), and Ivanova and Nygaard (1999). Other publications from the project include: Lehbruch (1998), Malmlov (1998), Mashkina (1998), Fell (1999), Jacobsen (1999), Pappila (1999), Carlsson (2000), Carlsson, Lundgren and Olsson (2000), Nysten-Haarala (2000), Mabel (2000), and Wignall *et al.* (2000).

2. The Characteristics of the Krasnoyarsk Forest Fund

Krasnoyarsk Krai is an important forest region. More than 7 percent of Russia's growing stock (on lands belonging to the state forest fund) can be found on the territory of Krasnoyarsk Krai. According to data from the Forest Management in Krasnoyarsk the total area of the forest fund lands was 81.1 million ha as of January 1, 1998 (Table 2:1).

Table 2:1. Comparative characteristics of the Krasnoyarsk forest fund lands in 1996 (million ha).

| Forest fund area | Forest fund area of the Russian Federation | Forest fund area of Krasnoyarsk Krai | Share of Russian Federation forest fund area, % |
|----------------------|--|--------------------------------------|---|
| All land area | 1,110.5 | 81.1 | 7.3 |
| of which: | | | |
| stocked land area | 705.8 | 51.9 | 7.4 |
| non-forest land area | 336.3 | 21.6 | 6.4 |
| unstocked land area | 68.4 | 7.6 | 11.1 |
| Group I | 221.7 | 35.3 | 15.9 |
| Group II | 61.0 | 0.5 | 0.8 |
| Group III | 827.8 | 45.3 | 5.5 |

Source: Official data of the Krasnoyarsk Krai Forest Management for 1 January 1997.

The forested area is estimated to be 51.9 million ha, which corresponds to 64 percent of the total area of the forest fund lands in the Krai. In 1997, this area increased by 75,600 ha, mainly owing to reclassifying young forests to forested lands (Table 2:2).

According to Chapter 9 of the Russian Forest Code, the forest fund is divided into three groups, Group I, II and III. Group I forests include non-commercial forests with environmental functions, including water preservation and recreation qualities. Forests belonging to Group II are located in sparsely forested and densely populated areas and are protected for industrial and recreational reasons. They mostly consist of forests with a limited exploitable value. Group III includes commercial forests primarily situated in densely forested regions.

The share of forests belonging to Group I is twice as large in Krasnoyarsk as the average for the Russian Federation. This share is so large as 21.8 million ha of pre-tundra forests is included in this group. As of 1 January 1998, the total forest area of Group I reached 35.3 million ha or 43.5 percent of the total area of the region's forest fund. The share of Group II forests in Krasnoyarsk (0.6%) is very much lower than the corresponding share for the Federation (9.6%).

The annual increase of Group I forest areas as well as of specially protected nature reserves contributes to the preservation of biodiversity in the region's forests. At the

same time, the decrease of final harvesting and the drastic reduction of cutting in the whole forest fund due to economic reasons is resulting in an increase of areas with overmature stands and a decreasing forest quality. Today, some 5.1 billion m³, or 68.1 percent of the total growing stock, belong to the mature or overmature category. The overmature forests alone amount to 2.9 billion m³.

According to the Forest State Account (1 January 1998) the total growing stock in Krasnoyarsk Krai amounts to 7.47 billion m³, of which 6.08 billion m³ (81.4%) is conifers, 1.37 billion m³ (18.3%) broad-leaved species and 10.83 million m³ (0.1%) bushes.

Table 2:2. Dynamics of the state of the forest fund managed by the Krasnoyarsk Krai Forest Management 1995–1998 (1,000 ha).

| | 1995 | 1996 | 1997 | 1998 |
|---|----------|----------|----------|----------|
| Total area: | 80,734.1 | 81,033.4 | 81,069.6 | 81,109.6 |
| including stocked area | 51,439.3 | 51,774.7 | 51,871.1 | 51,946.7 |
| unstocked area | 7,764.7 | 7,688.3 | 7,641.3 | 7,771.9 |
| Group I | 54,253.4 | 34,889.7 | 35,292.4 | 35,385.1 |
| Conifers: | 36,903.7 | 31,717.1 | 37,085.2 | 37,051.7 |
| young | 2,682.7 | 2,724.5 | 2,839.3 | 2,845.2 |
| medium | 5,146.5 | 5,143.6 | 5,158.5 | 5,093.0 |
| maturing | 5,107.0 | 5,121.5 | 5,157.6 | 5,176.3 |
| mature and overmature | 23,967.5 | 24,027.5 | 23,930.3 | 23,937.2 |
| Broadleaves: | 12,510.3 | 12,713.1 | 12,723.7 | 12,838.0 |
| young | 1,876.5 | 1,891.8 | 1,896.9 | 1,950.3 |
| medium | 3,252.7 | 3,276.4 | 3,272.6 | 3,299.4 |
| maturing | 1,251.0 | 1,240.8 | 1,239.4 | 1,245.9 |
| mature and overmature | 6,130.1 | 6,304.0 | 6,314.8 | 6,342.4 |
| Forests transferred from the forest fund | 8.1 | 1.3 | 0.3 | 1.6 |
| Forests transferred to the forest fund | 3.1 | 305.0 | 36.5 | 41.6 |
| Forests accepted from other forest owners | - | 305.0 | 36.5 | - |

Source: Official data of the Krasnoyarsk Krai Forest Management.

The forests in the region periodically suffer from fires, pests, diseases and industrial pollution (Krasnoyarsk Forest Management, 1997). The damages inflicted on the forest steppe and the southern taiga in the region affect 62–85 percent of their total area. Due to a number of anthropogenic and natural factors only 5–10 percent of virgin mature and overmature stands have been preserved. The forest lands in Krasnoyarsk are among the most “fire prone” areas in Russia. During the period 1984–1997, 12,953 forest fires were registered and affected 936,400 ha of forests. Thus, on average about 65,000 ha of the forested area in the region were annually wasted by fires. 1996 was the worst year for the region in terms of forest fires. The area destroyed by fires that year amounted to

266,000 ha and the economic losses were estimated to be 500 billion rubles (in 1997 prices). Seventy to eighty-five percent of all wild fires in the Krai take place in the Priangara raion of the Angara-Yenisei area.

There are periodic outbreaks of mass reproduction of the Siberian gypsy moth, which is the main pest in the coniferous taiga forest. The last outbreak occurred in 1994–1997 and affected one million ha of forest lands with its main thrust in the Angara and Yenisei region causing forest destruction on an area of 140,000 ha containing an estimated volume of totally destroyed timber of 50 million m³. The costs of fighting this fire amounted to 35 billion rubles (in 1997 prices). The total economic loss has been estimated to be 6,179 billion rubles. The volume of wasted timber was more than six times larger than the total volume logged in 1997 and equaled the annual allowable cut (AAC) of Krasnoyarsk Krai.

Industrial pollution of the forest is a serious problem in the tundra zone. During the last 50 years the environment here has been severely disturbed by the gas and dust emissions of the Norilsk copper-nickel complex (Goskomekologiya Krasnoyarsk, 1997). Presently, some 500,000 ha of forest lands have been heavily damaged or destroyed while the area containing partly destroyed stands is several times larger. Forest stands located up to 200 km from a pollution source are greatly damaged by these emissions and at a distance of 80–100 km the forest survival ratio is close to zero.

Species Composition

Krasnoyarsk Krai is one of the richest forest resource bases in Russia. Several valuable species grow here, such as Scotch pine, Siberian pine, and Siberian larch. Pine, larch, and Siberian pine (Russian cedar) are dominating among the forest forming species (Table 2:3).

Table 2:3 Growing stock and main species distribution in 1997.

| Species | Thousand ha | Million m ³ | Percent |
|--------------------------|-----------------|------------------------|--------------|
| Pine | 9,587.0 | 1,703.17 | 25.9 |
| Spruce | 6,045.0 | 861.96 | 16.3 |
| Larch | 7,700.7 | 1,094.53 | 20.8 |
| Cedar | 8,003.7 | 1,577.63 | 21.6 |
| Fir | 5,715.0 | 847.58 | 15.4 |
| Total conifers | 37,051.4 | 6,084.87 | 100.0 |
| Birch | 10,517.1 | 1,001.34 | 82.1 |
| Aspen | 2,296.7 | 369.02 | 17.9 |
| Total broadleaves | 12,813.8 | 1,370.36 | 100.0 |

Source: Based on the State Forest Account for 1 January 1998.

Solving problems related to the efficient use and regeneration of the Krasnoyarsk forest resources are closely related to the improvement of forest accounting. This is due to the fact that the forests in the Krai have some specific characteristics, such as uneven-aged stands, a mixed species composition, widespread occurrence of hidden wood defects, and weakly developed transportation roads. All this results in a need for improving existing forest inventory methods and making inventories more precise in order to be able to produce better plans for forest utilization and regeneration.

Development of the Forest Fund

The importance of and the need for studying the forest fund has been officially recognized by the forest inventory instructions issued in 1964, 1985, and 1995. In the “Instructions on conducting forest inventories in the forest fund of Russia. Part II” from 1995 it is emphasized that analyses of forest fund dynamics shall serve as a basis for determining priorities in the planning for forest regeneration aimed at countering negative tendencies in forest use. However, forest inventory practice shows that analyses of the dynamics of the forest fund are only formally conducted and can not serve as a basis for long-term planning.

According to the methodological recommendations of A.S. Sheingauz (1986), the methods for analysis of forest fund dynamics could be divided into two groups, in accordance with practices in (a) forest fund accounting and (b) in forest management. The first group of practices allows one to make analyses at the administrative-economic units according to which the forest fund account forms are completed, that is, starting from a forestry enterprise (*leskhoz*) and summing up to the entire country. The second group of practices can suitably be used at the level of the individual forestry enterprise or its sub-units.

Table 2:4 shows the dynamics of the total and forested area as well as the growing stock for the last 37 years after the first Forest State Account of Siberian forests was conducted.

In the period 1961–1993, large changes took place. The total forested area of the Krai increased by 14.4 million ha, mainly due to the inclusion of the sparse pre-tundra forests in the forest fund. Nevertheless, the total growing stock decreased by 2.6 billion m³. The reduction of mature and overmature growing stock was 3.1 billion m³. The current forest increment could not exceed the losses of growing stock caused by natural calamities and harvesting. Coniferous stands were mainly harvested and therefore the area and stocking of deciduous species were insignificantly reduced.

Table 2:4 Changes in total area, forested area (thousand ha) and standing growing stock (million m³) of the Krasnoyarsk Forest Fund, 1961–1998.

| Year | 1961 | 1973 | 1988 | 1993 | 1998 |
|----------------------------|-------------|-------------|-------------|-------------|-------------|
| Total area | 145,360.9 | 144,940.6 | 161,760.5 | 159,759.5 | 81,109.6 |
| of which forested area | 107,154.8 | 108,271.2 | 112,355.4 | 103,624.2 | 51,946.7 |
| <i>Conifers</i> | 87,609.1 | 89,615.9 | 93,951.7 | 80,929.6 | 37,051.7 |
| Mature and overmature | 69,613.2 | 70,421.2 | 72,552.7 | 54,766.1 | 23,937.2 |
| <i>Broadleaves</i> | 18,506.6 | 17,648.1 | 17,310.6 | 15,778.0 | 12,838.0 |
| Mature and overmature | 9,981.8 | 9,318.2 | 7,876.8 | 7,804.9 | 6,342.4 |
| Total growing stock | 14,352.53 | 13,511.13 | 13,824.22 | 11,740.30 | 7,466.06 |
| <i>Conifers</i> | 12,705.70 | 11,903.36 | 12,281.85 | 10,175.19 | 6,084.87 |
| Mature and overmature | 10,612.29 | 9,946.96 | 10,051.58 | 7,417.26 | 4,155.45 |
| <i>Broadleaves</i> | 1,627.61 | 1,590.69 | 1,524.19 | 1,542.12 | 1,370.36 |
| Mature and overmature | 1,088.98 | 1,117.59 | 971.32 | 1,026.47 | 927.70 |

Source: Based on State Forest Accounts in 1961, 1973, 1978, 1993, 1998.

During the last five years the forest dynamics of the region has not changed much. According to the 1998 Forest State Account, the total forested area of the region has decreased by 78.6 million ha. This reduction in area is due to the separation of the Evenkia Autonomous Region.

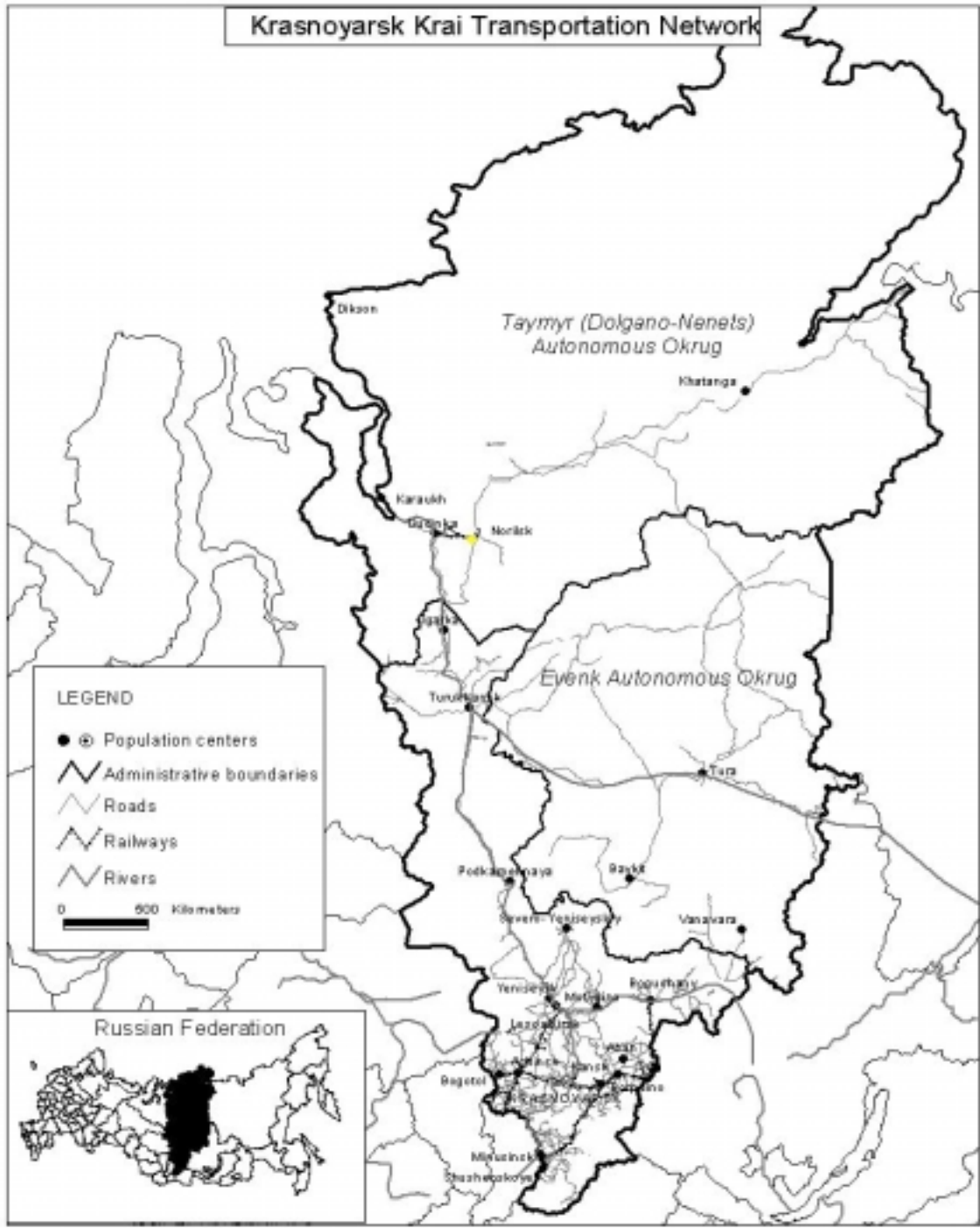


Figure 2:1 Transportation network in Krasnoyarsk Krai (Data sources: Oblast boundaries for the Russian Federation from the IIASA Russian Forest Study Database. All other data from the Digital Chart of the World, Environmental Systems Research Institute, Inc. (ESRI).

3. Institutional Structure of the Krasnoyarsk Forest Sector

Forest management and forest ownership in pre-revolutionary Russia were similar to practices in western developed countries. Beside state and communal forests, private forest ownership was widespread. Forest management was determined by the economic and technical potentials of the forests.

The founder of forest management theory in Russia, M.M. Orlov, divided Russian forest management into two categories: the organization of management personnel and forest management methods (Giryayev, 1999). Three levels of forest management were clearly outlined and this structure prevailed during 200 years of Russian forestry history. The structure contained the following main levels:

- a central administrative organ;
- provincial, regional, republican administrative-observational units; and
- local executive units.

The main organizational issue in forest management concerned the question about which juridical person should function as the local executive organ of the State and what should be its tasks.

In the history of Russian forest management one should note three important reforms. 1826, when forest districts (so-called *lesnichestva*) were established in state forests to function as the local executive organ of forest management. 1929, when the forest districts were abolished, complex forest units called *leskhoz*y (forest enterprises) and *lespromkhoz*y (integrated forest harvesting enterprises) were established. These units functioned as local executive organs of state forest management and forest harvesting, respectively. And 1993, when *leskhoz*y, as the local executive organ of forest management, were forbidden to do final cuttings and to process wood obtained from such cuttings.

For more than 100 years (1826–1929) a unique forest management system successfully functioned in Russian state forests. It was based on forest districts (*lesnichestva*) with an average area that was 1.5–2 times larger than the area of contemporary forest districts but only 20–50 percent of the area of a contemporary *leskhoz*. This system had a market orientation, both in its forest exploitation and in forest maintenance. Until 1917, income from forest utilization in Russia largely exceeded expenses. In 1913, the expenses for forest management amounted to a mere 35 percent of the forest income obtained by the state treasury.

However, at the end of the 1930s, when the Soviet command-administrative system was substituted for the prevailing market oriented economy, a radical restructuring of the forest management system began. When *leskhoz*y were established in 1929 it only added an extra intermediary link in the forest management chain. It did not improve the forest management system at all. Forest districts were transformed into forest blocks called *uchleskhoz*y. In principle, this reorganization has remained until the present time. It is only on paper that the forester is an independent forest master. Since 1929 until the

present, the functions of state forest management has been performed by the *leskhozy* in their capacity as juridical persons.

During this period, the complex forest enterprises (*leskhozy*) received their main funding (62.6%) from the budget. Income from industrial activities also contributed a large share (20%). Simultaneously, income from wood deliveries amounted to 73 percent of the budget funds dedicated to forest management. Totally, this forest income and the profits from the *leskhozy*'s industrial activities greatly exceeded the funding that the *leskhozy* obtained from the budget. Thus, the *leskhozy* were profitable enterprises and the forest sector as a whole was positive for the State.

In their capacity as complex forest enterprises the *leskhozy* harvested wood, procured machines in a centralized fashion to perform forest work, and provided the wood supplies and forest products prescribed by the plan. Today, however, they have lost their importance in this respect. On the other hand, in accordance with the forest legislation, the *leskhozy* have maintained and even strengthened their administrative-observational functions, which are often duplicated or replaced by the Regional Forest Managements (the regional units of the Federal Forest Service) in the various subjects of the Federation. The Regional Forest Managements are, for example, granting leases of areas belonging to the state forest fund, organizing sales of growing stock through forest auctions, solving problems related to the withdrawal of forest lands, performing state control of forest management, budget distribution, coordination of forest protection against fires and pests, fighting large wild fires, determining payments for the utilization of forest fund lands as well as determining the share of such payments to the *leskhozy* for performing forest management.

It could be mentioned that only one important executive function — the harvesting and processing of wood obtained from intermediate cuttings — is still left with the *leskhozy* allowing them to earn some money of their own. However, and this is somewhat of a paradox, in reality the major part of intermediate cuttings are actually performed by the forest districts (*lesnichestva*), i.e., by the state forest protection. Moreover, as a juridical person, the *leskhozy* use the forest districts to accumulate their own resources.

Data in Table 3:1 below show that modern forestry, as a branch of the Russian economy, is unprofitable for the State. In 1997, the forest income amounted to less than 50 percent of the budget funding for forest management. The resources produced and spent by the *leskhozy* for their own needs are not taxed.

Table 3:1. Receipts and expenditures of Rosleskhoz, 1997.

| Form of income | Income mill. rubles | (%) | Form of expenditure | Expenditure mill. rubles | (%) |
|--------------------------------|---------------------|-----|--------------------------------|--------------------------|-----|
| Sum total | 2,071 | 100 | Sum total | 3,409 | 100 |
| of which timber lease charges | 913 | 44 | of which leasing | 2,017 | 59 |
| mobilization of internal funds | 1,158 | 56 | mobilization of internal funds | 1,392 | 41 |

Source: Based on Giryaev, 1999.

Today, forest management is expected to be gradually reshaped from the command-administrative system of the Soviet times, based on complex forest enterprises and centralized planning, to a market oriented system. However, a hard centralization of forest management nevertheless remains a clearly negative ingredient in the existing Russian forest management system.

The Structure of Forest Management in Krasnoyarsk Krai

The Forest Management of Krasnoyarsk Krai was founded on 1 August 1947. It represents the state (federal) forest management in the Krai (cf. Figure 3:1). The Regional Forest Management decides about the use of forest resources in the Krai and coordinates its work with the Krai departments of environmental protection, land resources, as well as hunting, fishing and water departments. Furthermore, it negotiates contracts with the Krasnoyarsk Areal Forest Fire Defense (*Avialesookhrana*), with the East-Siberian State Forest Inventory (*lesoustroistvo*), with various research institutes, and with the Siberian State University of Technology in Krasnoyarsk. The Krasnoyarsk Forest Management has eight departments:

1. Department of Forest Resources and Forest Fund Exploitation.
2. Department of Reforestation.
3. Department of Forest Protection.
4. Department of State Control.
5. Department of Especially Protected Areas.
6. Economic Department.
7. Department of Business Accounting, Finances and Control.
8. Department of Staff, Social Assistance, Labor Protection, Building and Informatics.

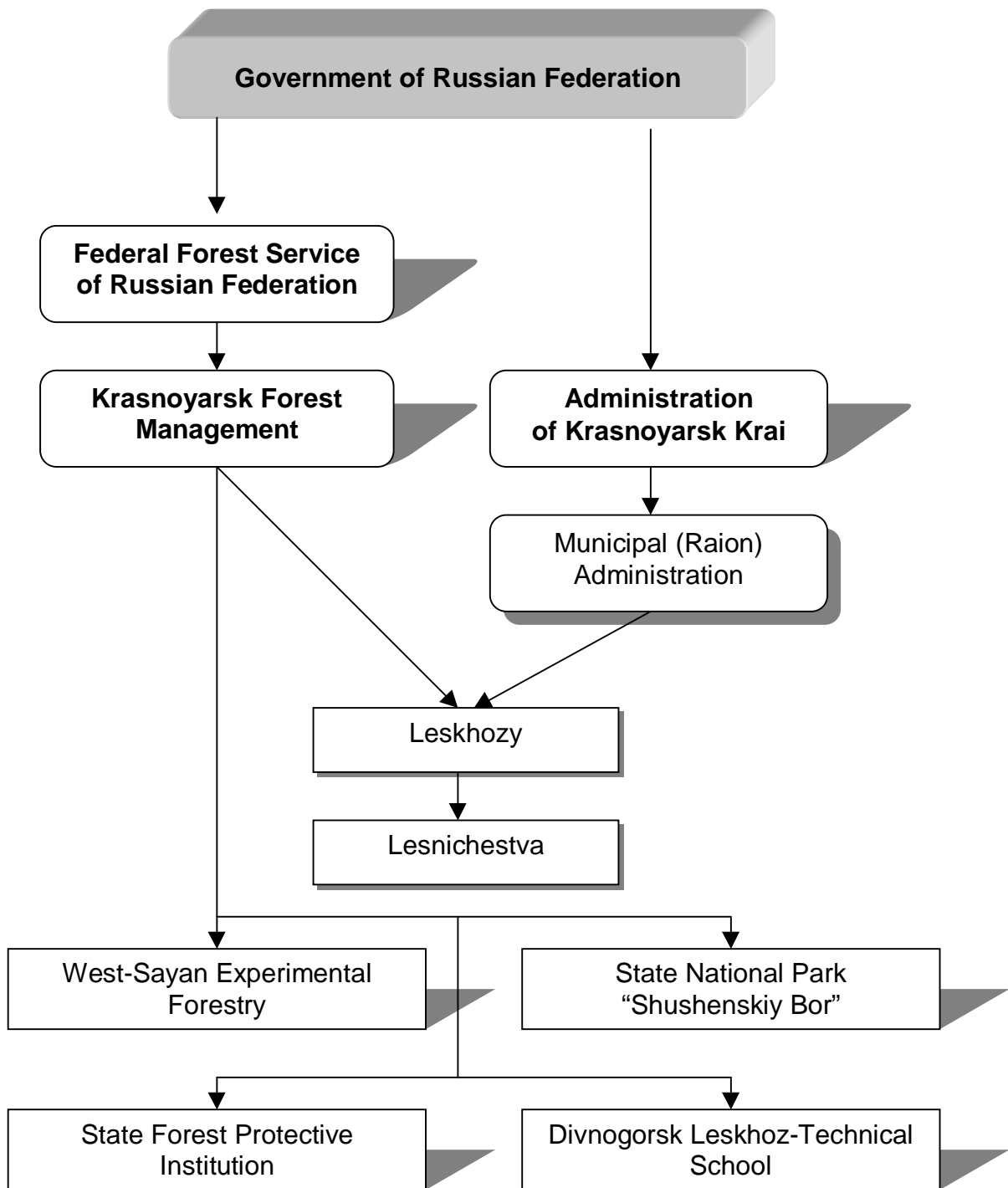


Figure 3:1. The structure of Forest Management in Krasnoyarsk Krai
 (Source: Based on information provided by the Krasnoyarsk Forest Management, 1999).

Forest inventories (*lesoustroistvo*) in Krasnoyarsk are mainly carried out by the East-Siberian State Forest Planning and Inventory (*Lesproekt*). This organization has 115 employees. Temporary seasonal workers are regularly used for field inventory work. The number of seasonal workers depends on the volume of work to be performed and available funding. The activities of Lesproekt is supervised by the Department of Forest Resources of the Krasnoyarsk Krai Forest Management.

The State Forest Protection in the region has a clear structural and territorial division. There are 56 *leskhozy* consisting of 244 forest districts (*lesnichestva*), 450 forest compartments (*uchastki*) and 1,500 forest tending plots (*obkhody*). There are 324 chief foresters (*mastera*) on the staff of the *leskhozy* and the air fire fighting brigades have 340 employees.

The basic division in this organization is the forest fire protection units of the *leskhozy* and forest users, among them 104 fire-chemical stations. During summertime forest users maintain more than 200 mechanized groups to fight forest fires. There is an intense interaction between all these units. The Krasnoyarsk Air Forest Fire Defense (*Avialesookhrana*) has 27 strategic subdivisions in Krasnoyarsk Krai, in the Evenkia, Tuva and Khakassia districts. The Krasnoyarsk Air Forest Fire Defense patrols the forests of the region from the air, and when it discovers a fire it sets out to fight it. At its disposal the *Avialesookhrana* has 650–700 parachutists and landing firemen. It also has a training center and leases up to 50 airplanes and helicopters of different types.

The state “Protection Center of Krasnoyarsk Krai” (*Tsentr zashchity Krasnoiarskogo kraia*) is responsible for the coordination and implementation of a unified forest protection policy against pests and diseases. It has departments for forest protection, soil-chemistry, expeditions, and an entomological laboratory. The center employs 46 specialists.

The Department of Forest Regeneration of the Regional Forest Management deals with reforestation problems. There are 45 permanent and 15 temporary forest nurseries in the region where plants are grown. The *leskhozy* provide for their own needs of coniferous plant materials and seeds. Attention has recently been given to the issue of establishing a forest seed supplier based on selection. To this end the Ermakovski Selective Forest Seed Center was established in 1991. It was later, in 1996, transformed into the West-Saian Experimental Forestry Unit specializing in Siberian pine selection (*Goskomekologiya Krasnoyarsk*, 1997).

Institutional Setting

As in the Russian economy as a whole the most radical reorganizations of the Krasnoyarsk forest industrial complex took place in September 1992 and in connection with the first stage of privatization in 1993–1994.

The possibility of getting access to forest resources, to be able to finance small investments in newly established enterprises, which could be registered at the regional level and obtain permission to export, all prompted a demonopolization process within the system of the former USSR Ministry of Forest Industry (Sokolov, 1998).

At the beginning of the 1990s, more than 90 percent of all enterprises in wood harvesting and processing were privatized. As a result a great number of production cooperatives and small enterprises — later also private joint-stock companies — appeared. The joint-stock companies are to a substantial part owned by top managers in the forest industry. In almost all such cases these enterprises turned out to be profitable, while the integrated harvesting companies (*lespromkhoz*y) were not able to show profits.² It could also be noted that many highly specialized enterprises were privatized, enterprises that produced goods and services which lost their market under the new conditions. Private intermediary trade organizations appeared and grew. This had a destabilizing effect on regional forest industrial production. The result was that only a small share of the new enterprises (primarily the export-oriented ones) managed to adapt to the new conditions and work independently on the market and reconstruct their production of products for which there was a real demand.

In 1995, the “privatization for money” stage began. This meant that the former state enterprises belonging to the forest industrial complex had to offer more than 51 percent of their shares for sale on the stock market. This was the start of a new redistribution of the forest enterprises.

In the course of economic reform the forest industrial complex was never at the center of interest of the federal authorities. The earlier existing state management of forest industrial branches and enterprises was decentralized. At the regional administrations offices for the reconstruction of the forest industrial complex were established to help restructure enterprises and attract investments. At the federal level the responsibility for elaborating a sector development strategy has constantly been shuffled from one authority to another during the transition period 1992–1996. Currently, the coordination of this activity rests with the Ministry of the Economy and a Deputy Minister administration controlling the forest sector and with the Ministry’s Department of Forest Sector Economics.

According to data provided by the RF Ministry of the Economy, 69 percent of all forest industrial enterprises have suffered losses during the first 11 months of 1998 in spite of privatization. Accounts payable by the forest industry amounted to 47 million rubles, while accounts receivable were only 14 million rubles. The debts of the forest sector to the State (including budget and non-budget funds) exceeded 18 billion rubles. This is equal to more than half the annual volume of forest sector production. Only 5 percent of all forest enterprises related to the forest complex were able to increase their efficiency during 1998 (*Rossiiskaia gazeta*, 17 January 1999).

At the beginning of the 1990s, Russia was the second largest commercial wood producer in the world, on average producing more than 300 million m³ round timber per year. The forest sector contributed three percent of the total national income and guaranteed work for about two million people. By the end of the 1990s, the harvesting capacity had decreased sharply to 85 million m³ in 1997 and to merely 72 million m³ in 1998. This capacity decrease was primarily caused by the economic recession, but also by the social and political instability characterizing the transition period following the collapse of the former Soviet Union. It should also be noted that the pace at which

² This information was provided by the Department of Forest Industry, Krasnoyarsk Krai Administration.

institutional structures and forest management regimes have been formed does not match the general pace of the country's economic reforms.

Organization of the Krasnoyarsk Forest Industrial Complex

The structure of the forest industrial complex of Krasnoyarsk Krai is typical of the forest raw materials regions of Russia. The region has a large forest harvesting. The forest industrial complex includes 800 forest harvesting enterprises (60 large ones), more than 100 sawmills, 2 board factories, and a pulp and paper plant. According to the Department of Forest Industry of the Krai Administration, one fifth of the Krasnoyarsk forest enterprises are considered to be large, 45 percent are middle-sized, and 35 percent are small enterprises. According to the same source, 53,330 people were working in the forest industrial complex as of 1 January 1999, 1,680 people were directly engaged in cutting, 3,400 worked the skidding tractors that transport the logs from the forest to the upper landings. Another 6,390 people were engaged as drivers of log trucks used for long-distance timber transportation. About 1,000 people operate logging terminals. More than 10,200 people work in cutting areas and at landing sites. Road construction and road maintenance engage close to 1,300 people. Some 18,000 people work with primary wood processing, mainly sawmilling. Close to 4,300 are occupied with machine repair and technical services, while about 5,500 people do subsidiary work. Only about 1,140 people are professionals, engineers or managers.

The Krasnoyarsk forest complex contains some large holding companies, five regional state enterprises, 31 federal state enterprises, as well as a number of other enterprises (cf. Figure 3:2). For example, 35 enterprises belong to the Joint-Stock Company "Yeniseyles" (see Table in the Appendix). Among these companies there are nine large forest industrial enterprises, eleven *lespromkhozy*, some investment companies, a construction firm, trade enterprises, two banks, an insurance company, a security service and a sanatorium. In 1996, total production in the region reached about 2 trillion rubles. The share of the joint stock companies noted in Figure 3:2 of this total was 1.5 trillion rubles, or 75 percent.

The formation of a united production structure, as the one depicted in Figure 3:2, is accomplished on the basis of technology and location. At the same time, the enterprises that are members of this scheme must meet several important criteria:

- They should have a stable financial base;
- They should produce a large share of the total volume of forest products in the Krai;
- They should (as a rule) be operating a "closed circle" production, including both wood harvesting and wood processing; and
- They should own a large share (more than 25%) of all establishments in the branch and be willing to follow agreed-upon financial, market and investment policies.

Since 1992, the transition in the Krasnoyarsk economy, the forming of a market infrastructure and mechanisms characteristic of a market economy, has caused problems for the region's forest industry, according to the Department of Forest Industry of the Krai Administration. At the beginning of 1993, a Committee for the Development of the Forest Industrial Complex (*Komitet po razvitiuu lesopromyshlennogo kompleksa*) was formed within the Krasnoyarsk Administration. This committee elaborated a Krai

Program for Reconstruction of the Forest Industrial Complex in order to reorganize the forest enterprise sector and to stimulate investments. However, the program was discontinued in 1997 due to lack of funding. In 1998, with the coming of the new governor (Alexander Lebed) the committee was reorganized to become the Department of Forest Industry (*Upravlenie lesnoi promyshlennosti*). An analysis of the current status in the Krasnoyarsk forest sector performed by this committee showed that the situation is critical. Accounts payable by the forest enterprises exceed their accounts receivable by three times. Seventy-five percent of all forest sector enterprises are unprofitable. Experience has shown that bankruptcy processes only cause the loss of all property, when the basic assets of the enterprise are sold out.

This problem has begun to be solved in Krasnoyarsk by a fast readjustment among the enterprises. This process often includes the establishment of new enterprises based on the old ones. The assets of the old enterprise are then transferred as an investment to the newly formed company. Thereby, the new company has no debts and a new owner. This means that the old enterprise — by owing shares in the new enterprise — now has a real source for paying off its debts. The new enterprise with no debts becomes attractive for investors. An example of this procedure is the newly founded JSC “Igarski Seaport”. Its shares belong to JSC “Igarski Forest Industrial Complex” which has lifted off the accounts payable.

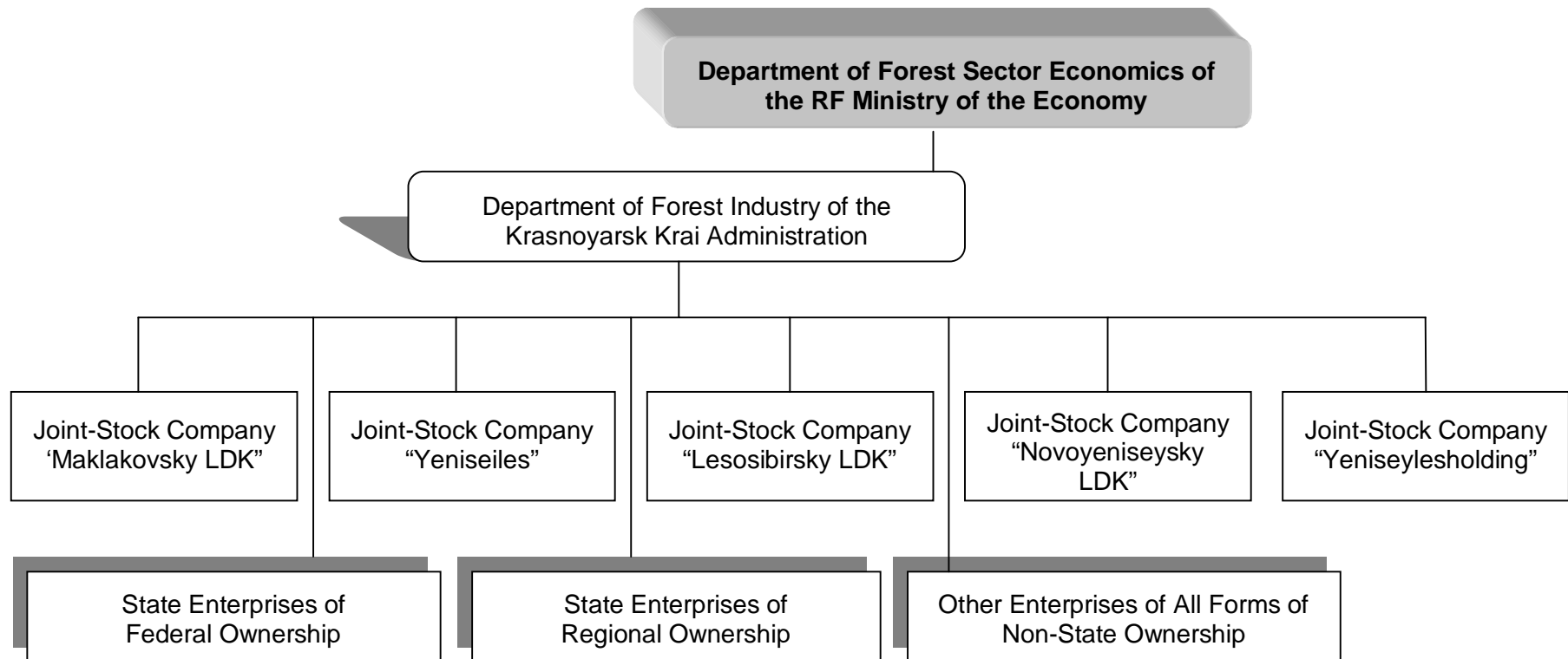


Figure 3:2. The Krasnoyarsk forest complex. (Source: The scheme of management, coordination and regulation of activity of the Krasnoyarsk forest complex enterprises, Krasnoyarsk Krai Administration, 1997).

4. The Socioeconomic Situation in the Krasnoyarsk Forest Sector

The Population and the Social Sphere

Demographic situation

In 1997, the population of Krasnoyarsk Krai (excluding autonomous regions) was slightly over 3 million people. Of these 3 million, about 2.3 million (74.1%) lived in urban areas, while close to 0.8 million (25.9%) lived in rural areas. About 88 percent of the population were Russians. The population density in the region is much lower than in European parts of the country, 4.2 inh./km².

The natural population change (the birth-mortality relation) indicates that the demographic situation in the region is problematic. Since 1993, falling birth rates and continuous high mortality have caused a natural population decrease in the region (cf. Table 4:1).

Table 4:1. Natural Population Change in Krasnoyarsk Krai, 1991–1996 (1,000 inh.).

| Coefficients | | Years | | | | | |
|------------------|-------------|-------|------|------|------|------|------|
| | | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
| Birth-rate | <i>Krai</i> | 13.0 | 11.4 | 10.0 | 10.4 | 9.8 | 9.4 |
| | Russia | 12.1 | 10.7 | 9.4 | 9.6 | 9.3 | 8.9 |
| Death-rate | <i>Krai</i> | 9.8 | 11.0 | 13.5 | 14.9 | 13.9 | 13.2 |
| | Russia | 11.4 | 12.2 | 14.5 | 15.7 | 0.5 | 14.2 |
| Natural increase | <i>Krai</i> | 3.2 | 0.4 | -3.5 | -4.5 | -4.1 | -3.8 |
| | Russia | 0.7 | -1.5 | -5.1 | -6.1 | -5.7 | -5.3 |

Source: Based on data of the Krasnoyarsk Sanitary and Epidemiological Inspectors Center.

Preceding this negative tendency, in the first half of the 1980s, favorable birth rates were reached through improved government support for families with children. In this period the highest birth rate was reached in 1986, when 56,566 children were born in the region. This is the highest number ever during the last 20 years.

The long period of birth rate decline has made the process of population aging practically irreversible. The decrease of the proportion of children under 14 years of age in the total population of the region, from 25.5 percent in 1991 to 22.4 percent in 1996, as well as the steady increase in the number of people older than 60 years — their proportion of total population increased from 12.1 percent in 1991 to 13.1 percent in 1996 — has made the age structure of the population a “far-gone process of aging” in the words of the Sverdlovsk governor E. Rossel. This will certainly lead to further population decreases (Goskomekologiya Krasnoyarsk, 1997).

Infant mortality, the level of which is often taken as an indicator of the health and social prosperity of a society, continues to increase in Krasnoyarsk Krai, exceeding the average for Russia as a whole (Goskomekologiya Krasnoyarsk, 1998).

The structure and total mortality in the region and the main causes of death are similar to the Russian averages and to those for Siberia. The main causes of death are blood circulation diseases, followed by accidents, traumatism, and poisonings. The third most common cause of death is malignant cancers, the fourth — diseases of the respiratory organs (cf. Table 4:2).

Table 4:2. Deaths in Krasnoyarsk Krai and Russia by causes, 1991–1996.

| Causes of death | Number of deaths per 100,000 inhabitants | | | | | | |
|--------------------------------------|--|--------|--------|--------|--------|--------|-------------|
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | Russia 1995 |
| Total number of deaths including: | 977.6 | 1103.8 | 1350.7 | 1485.5 | 1395.1 | 1326.8 | - |
| Diseases of blood circulation system | 458.1 | 523.4 | 623.0 | 706.2 | 649.2 | 646.6 | 790.1 |
| Accidents, traumas, poisonings: | 154.1 | 194.1 | 245.9 | 288.9 | 275.3 | 245.5 | 236.6 |
| - alcoholic poisonings | 5.7 | 10.2 | 18.5 | 42.4 | 32.9 | 32.0 | - |
| - suicides | 28.1 | 31.7 | 39.0 | 45.4 | 46.2 | 42.3 | - |
| - murders | 23.0 | 33.8 | 40.7 | 45.4 | 42.0 | 32.8 | - |
| Malignant growths | 173.2 | 171.4 | 178.5 | 181.7 | 181.2 | 179.3 | 202.8 |
| Diseases of respiration organs | 49.3 | 57.6 | 75.8 | 84.4 | 75.5 | 66.8 | 73.9 |
| Diseases of digestive organs | 28.7 | 37.3 | 48.9 | 57.6 | 58.7 | 58.8 | - |
| Infectious and parasitic diseases | 17.8 | 20.7 | 28.0 | 32.9 | 29.4 | 29.6 | - |

Source: Based on data of the Krasnoyarsk Sanitary and Epidemiological Inspectors Center.

Deaths among the population in working age cause special concern. In 1994, 44.7 percent of all who died in Krasnoyarsk belonged to this age (Goskomekologiya Krasnoyarsk, 1997).

Table 4:3. Life expectancy of the population of Krasnoyarsk Krai (years).

| Year | Sex | Krasnoyarsk Krai | Russia |
|------|------------|------------------|--------|
| 1991 | Men | 60.0 | 63.4 |
| | Women | 68.4 | 74.3 |
| | Both sexes | 64.3 | 69.0 |
| 1992 | Men | - | 62.0 |
| | Women | - | 73.7 |
| | Both sexes | - | 67.9 |
| 1993 | Men | 55.1 | 58.9 |
| | Women | 66.1 | 71.9 |
| | Both sexes | 60.3 | 65.2 |
| 1994 | Men | 53.9 | 58.9 |
| | Women | 65.4 | 72.0 |
| | Both sexes | 59.2 | 64.3 |
| 1995 | Men | 55.4 | 58.0 |
| | Women | 66.6 | 72.0 |
| | Both sexes | 60.7 | 65.0 |
| 1996 | Men | 56.0 | 58.9 |
| | Women | 68.6 | 72.1 |
| | Both sexes | 61.9 | 65.2 |

Source: Based on the State Committee of Environmental Protection of Krasnoyarsk Krai, 1997.

Due to these negative tendencies of health and demographic factors, average life expectancy, which is often seen as an indicator of the health status in a society, reached its minimum level in 1993, 59.2 years (53.9 for men). In 1996, life expectancy had improved again to 61.2 years, but it still lagged behind the Russian average by 3.3 years (Table 4:3). Thus, the negative demographic development in Krasnoyarsk Krai continues. The main way of improving the situation is to lower mortality due to infections, accidents and poisonings.

Research and development in the Krasnoyarsk forest sector

As of 1 January 1996, 64,700 people (or 4.7% of the total workforce) worked in the Krasnoyarsk forest industrial complex. As mentioned earlier, some 53,300 people work in the forest industry, including 1,440 highly qualified engineers and specialists.

The Krasnoyarsk Forest Management employs 5,183 people, including 4,462 people who are paid over the state budget. (The Krasnoyarsk Forest Management is the regional body of the Federal Forest Service of the Russian Federation — the central authority responsible for forest management and protection.) Of the total number of people employed by the Regional Forest Management 1,589 people work as managers

and specialists, including 580 people with higher education, 879 with special secondary education, and 130 people (8.2%) are workers.

Training of personnel for work in the Krasnoyarsk forest complex is offered by the following special secondary schools and universities: the Dvinogorsk Leskhoz-Technical School, the Kansk Technological School, the Krasnoyarsk College of Wood Working Industry, the Siberian State Technological University, the Institute for Further Professional Forestry Training for Siberia and the Far East (in the town of Divnogorsk), and the Krasnoyarsk Institute for Further Professional Training of Key Personnel and Specialists for the Forest and Pulp and Paper Industry.

Table 4:4. Number of graduates of various faculties of forestry and forest industrial educational establishments in Krasnoyarsk Krai, 1998.

| Name of educational establishment (faculty) | Number of graduates |
|---|----------------------------|
| Divnogorsk Leskhoz-Technical School | |
| Economics of forestry and aesthetic forestry | 60 |
| Economics, business accounting and control in the forest sector | 34 |
| Krasnoyarsk Wood Working Technical School* | |
| Processing technology, economics and planning | 23 |
| Wood working technology, economics and planning | 47 |
| Krasnoyarsk State Technological Academy** | |
| Economics of forestry and aesthetic forestry | 169 |
| Technology of chemical wood processing | 49 |
| Wood processing technology | 86 |
| Forest mechanical engineering | 79 |
| Machinery and equipment for the forest industrial complex | 29 |
| Economics and management of forest industrial enterprises | 72 |
| Business and auditing | 86 |
| Sum total | 734 |

* In 1999 transformed (renamed) to Krasnoyarsk College of Wood Working Industry.

** In 1999 transformed (renamed) into the Siberian State Technological University.

Source: Data provided Krasnoyarsk Forest Management.

Training of employees in the forest sector was traditionally focused on the production process rather than on solving market problems and business management. Of late this situation has improved owing to the introduction of specialist training in the field of market economics and management. Table 4:4 provides data on the training of forest specialists by some faculties and departments of forest technical schools in Krasnoyarsk in 1998.

The Krasnoyarsk Forest Management has elaborated a program for improving professional skills by annually training a specified number of specialists at the Institute

for Further Professional Forestry Training for Siberia and the Far East. These courses run over five years. Annual seminars for forestry specialists are arranged at the institute. In 1998, some 330 specialists participated in training at the institute.

Forest protection specialists improve their skills at the Divnogorsk Leskhoz-Technical School.

V.N. Sukachev Institute of Forest of the Siberian Branch of the Russian Academy of Sciences (SIB-RAS), well known for its forestry related research, is active in training *leskhoz* personnel in remote sensing and GIS. There are also GIS specialists at the Krasnoyarsk Technical University, the Siberian State Technological University, the Technological Center of GIS of SIB-RAS, as well as at the Inter-highschool Center of Informational Technologies for training of students.

Wages and employment in the Krasnoyarsk forest sector

The main social problems in the forest sector and other branches of the Krasnoyarsk economy are related to unemployment and wage arrears. According to data from the Krasnoyarsk Committee of State Statistics, 69,400 people were unemployed in the Krai in March 1999. According to official data of the Forest Industry Administration the existing unemployment level in different branches of the economy varied between 2.57 and 10.89 percent as of 1 April 1997. Officially, the number of unemployed in the forest sector was 245–1,973 people.

According to official data unemployment in the country reached 12.4% at the end of March (9 million people). By the year 2000 every seventh Russian may be out of job (*Rossiiskaia Gazeta*, No. 81–82, 28 April 1999).

During the last few years there was a sharp employment decrease in the forest industrial complex. But the rate of decrease was even greater in the production output of the complex, indicating an even greater decrease in productivity. The forest industrial sector has experienced the most rapid employment decrease among all branches of heavy industry (Sokolov, 1998).

The average monthly salary is the basis on which consumer budgets are formed for people working in the forest sector. Traditionally, workers in the forest sector have been underpaid and salaries in the sector have had a tendency to lag behind other branches of the economy. According to data from the Krasnoyarsk Forest Management the monthly salary in forestry was 578,000 rubles in 1997 (Table 4:5). Salaries only covered 49.5 percent of the costs of living. Compared with the average wage in industry as a whole wages in the forest industrial complex decreased from 85.3 percent of the average in 1991 to 49.1 percent in 1996. This year, average wages in the forest industrial complex was 5–700,000 rubles. Simultaneously, wage arrears are constant. Wages are often paid out in consumer goods, which are usually expensive but of low quality.

Under such circumstances the importance of other means of subsistence increases. People grow vegetables in their gardens, they fish, hunt, etc. People earning their entire living by such activities related to the forest number around 5,000.

Table 4:5. Purchasing power in Russia's regions in 1997 (Number of minimum survival product baskets per person bought with an average monthly salary).

| | |
|---------------------|------|
| City of Moscow | 9.02 |
| Murmansk Oblast | 2.61 |
| Republic of Karelia | 2.56 |
| Krasnoyarsk Krai | 2.36 |
| Tomsk Oblast | 2.14 |
| Irkutsk Oblast | 2.05 |
| Arkhangelsk Oblast | 1.65 |
| Khabarovsk Krai | 1.61 |
| Moscow Oblast | 1.56 |

Source: Balzer, 1998:175.

Sixty percent of the inhabitants in Krasnoyarsk have their own gardens or dachas. The income from activities based on these gardens and dachas was estimated to be 17 percent of total family income in the 1980s. According to a recent inquiry inhabitants of *lespromkhozy* get at least 50 percent of their means of living from the secondary economy (at least if they own a cow) (Vladyshevskii *et al.*, 1998).

The economic and judicial status of aboriginal peoples in the Krasnoyarsk forest sector

As a result of historical processes three groups of people have formed on the territory of Krasnoyarsk Krai: 1) small aboriginal peoples, 2) migrants from other parts of Russia who came to stay permanently, and 3) migrants who came for a period to work and earn money. The first of these groups has experienced a constant decrease both in absolute and relative size. According to data from the Committee on State Statistics the size of the aboriginal population in the Krai has decreased by 15 percent since 1959. Today, there are 14,800 people belonging to this group. In this period, however, the Russian population increased by 16 percent (Goskomstat Krasnoyarsk, 1996). In the competition for the use of more valuable and accessible forests the aboriginal peoples have had to cede to the Russian migrants.

Presently 219 Evenks live on the area of the Krai Forest Fund (apart from those who live in the Evenk National Okrug). There are 319 Selcupes and 734 Ketos.

According to existing legislation regulating hunting and fishing, the aboriginal peoples have some privileges, particularly concerning fishing of valuable species. According to the new Russian Forest Code, the interests of aboriginal peoples must be taken into account in forest leasing and other forms of forest utilization. The situation for aboriginal peoples has always been a declared priority for the Soviet power and it has continued to be so in the new Russia.

On 12 May 1999, the federal law “On guarantees of rights of aboriginal small peoples of the Russian Federation” was enforced. For the first time the legal regulation of problems of vital importance for aboriginal small peoples was guaranteed (*Rossiiskaia Gazeta*, No. 90, 12 May 1999).

Legislative regulations, however, never improved the conditions of life and did not help maintain the culture of the aboriginal population in the region. The unfavorable economic situation of the aborigines has further deteriorated because of their rigid social behavior. And one should keep in mind that there was always a large difference between actual and declared equality of different nationalities in the Soviet Union (Vladyshevskii *et al.*, 1998). As heads of most administrative structures, the Russian migrants guaranteed a more favorable regime for their fellow Russians, offering them better hunting areas as well as paying better for their products. Even if it was officially forbidden to offer alcohol to aborigines, drinking always played a role on one level or another when it came to cheaply acquiring high quality hunting grounds.

Presently, in order to improve their situation, land has been given for free to the aborigines: 2.5 million ha of Forest Fund lands belonging to Norilsk was allocated to the aborigines for hunting and fishing. Unfortunately, when the demand for natural products is decreasing the allocation of lands might not have any positive results.

The forest utilization by the aboriginal population cannot produce negative environmental consequences and resource exhaustion. Furthermore, increasing transportation costs have restricted the use of remote forests by all groups in society and such forests have become animal reserves.

Forestry

According to Article 19 of the Russian Forest Code the Forest Fund is federal property. However, transfer of the Forest Fund to the property of the so-called Subjects of the Federation is allowed according to federal legislation.

Forest management in Krasnoyarsk Krai is the responsibility of Krasnoyarsk Forest Management, which is subordinated both to the Federal Forest Service of Russia and to the Krasnoyarsk Krai Administration. The federal budget is the main source of expenditure on forest management. The regional budget finances reforestation measures. Land use taxes and timber lease charges go both to the federal budget and to the budget of the Subjects of the Federation. It should be noted that this way some of the forest income that goes into the federal and regional budgets is used for other purposes than forest management.

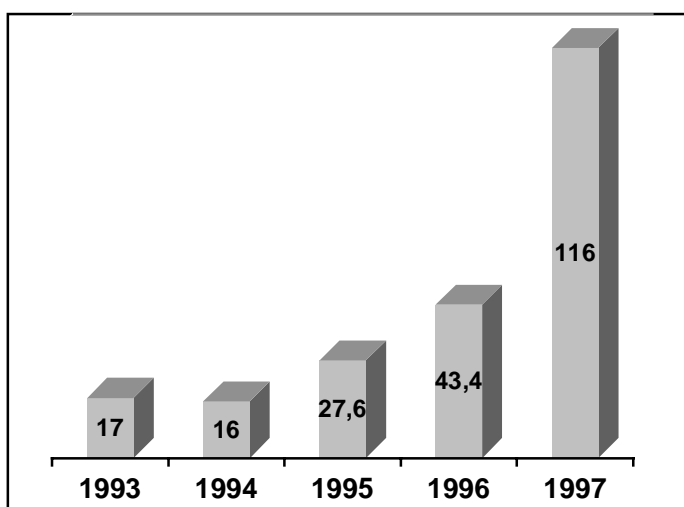


Diagram 4:1. Share of internal funds in the total expenditure of the Krasnoyarsk forest management (Source: Krasnoyarsk Forest Management, 1997).

Diagram 4:1 shows the extent to which forest management measures are funded by the revenues from the commercial activities of the *leskhozy* themselves. Obviously the *leskhozy* have learned to cope better and better with this task. In 1997 they were even left with a “profit” after all forest management activities were paid for.

In 1990, the yearly total average expenditure per hectare of forest area in East Siberia amounted to 0.212 rubles, of which 0.113 rubles were operational costs. This sum is not enough even for ordinary forest regeneration. Calculations for some of the *leskhozy* in the region have shown that one should spend between 1–10 rubles/ha (in 1990 prices) of forest area in order to maintain the forest in a satisfactory condition (Sokolov *et al.*, 1994).

As the chairman of the Krasnoyarsk Forest Management, Vladimir Vekshin, said in an interview: “Foresters have been instructed to manage the forest resources of our Krai, but neither federal nor local authorities meet their obligations and give us the necessary funds for doing so. Therefore, the harvesting capacity of the *leskhozy* has steadily increased through various cutting methods and foresters have already become the major loggers in the region. Practically half of the *leskhoz* income comes from the sales of commercial wood. Penalties and forfeits together make up the remaining quarter of total income” (*Krasnoyarskii Rabochii*, No. 4, 1999).

According to materials of the regional Forest Management harvesting sites with a total wood volume of 7.6 million m³ were examined (Goskomekologiya Krasnoyarsk, 1998). Exposed forest offences decreased compared to 1996. So, for instance, there was a 10 percent decrease in destroying growth and young forests, a more than 24 percent decrease in left areas uncleared from slash, and a 16 percent decrease in the felling of debris. The volumes of harvested wood left on the cutting sites decreased by over 40 percent, while the volumes of unbarked wood left for the summer period diminished by 35.5 percent. Forest offenders were to pay 36.1 billion rubles forfeits for revealed

offences of Wood Delivery Rules (cf. Diagram 4:2). On average in the region, total fines per cubic meter of harvested wood amounted to 4,750 rubles.

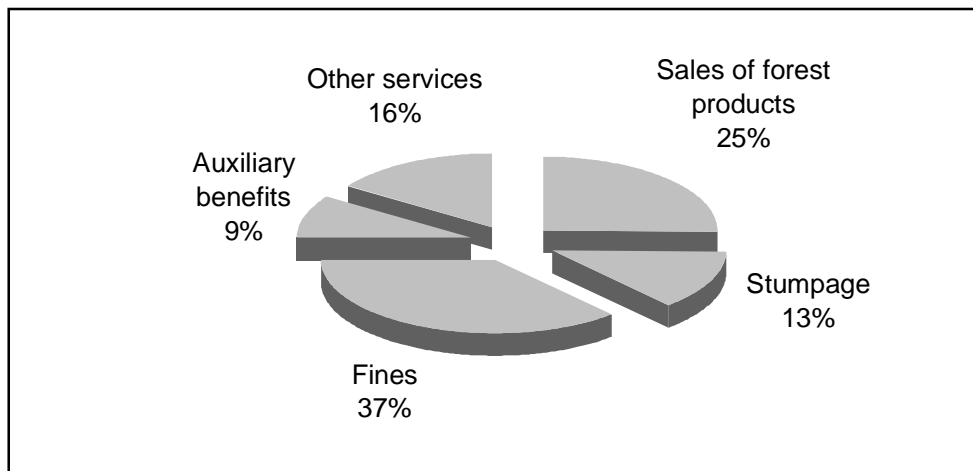


Diagram 4:2. Origin of incomes of the Krasnoyarsk Leskhoz in 1996, Percent (Source: Krasnoyarsk Forest Management, 1996).

The annual decrease in the exposed forest offences is explained by the reduction of forest exploitation capacity and the strengthening of state control of the loggers' maintenance of nature protection technology used on harvesting sites.

The extent of clear cutting has been decreasing in the period 1992–1997. In fact, in 1997, intermediate cutting was only performed on an area of 12,700 ha. The only task performed in full was selective sanitary cutting, which was performed on a total area of 5,600 ha. This is related to the shrinking funding of forest preservation, the difficulty to sell small volumes of commercial wood from intermediate cutting and a deterioration of the material and technical provision of *leskhoz*.

Cluttering up forests with slash, the predominance of very fire prone coniferous stands (83% of the total forest area) and the existence of large areas of young coniferous stands result in a systematically increased danger of fire. An active forest fire defense protection covers 43 million ha, more than 38 million of which are surveyed from the air. Satellite monitoring covers 38 million ha.

During the fire danger period of 1997 there were 870 forest fires covering close to 110,000 ha of Forest Fund lands. In addition, close to 97,000 ha were damaged. The losses caused by forest fires in the region amounted to 153 billion rubles, and some 2.2 billion m³ of wood were burnt. The cost per ha of burnt area amounted to 132,800 rubles, including 66,000 rubles for fire extinction. The total costs for forest fire protection in 1997 were estimated to be close to 13 billion rubles, including almost 7.4 billion rubles to extinguish wild fires. The *leskhoz* paid 5.5 billion rubles for these fire preventing measures from their own resources. Only 7.6 billion rubles were received from the federal budget to compensate for the total costs of fire fighting.

Since forest pests and diseases are spreading in the region a forest pathological study as well as disease extinction measures are urgently needed. In 1997, forest pathological

monitoring covering 844,200 ha of forest lands was performed by the *leskhoz*. The large-scale air-chemical and air-bacteriological treatments of 554,200 ha of forest stands that were covered in 1995–1997 did not save large forest areas. About 135,800 ha of forests damaged by the Siberian gypsy moth were reclassified from stocked lands to unstocked lands (Krasnoyarsk Forest Management, 1997). Stands damaged by fires, pests and industrial pollution as well as large windfall areas and an irrational utilization of harvesting areas have caused an unsatisfactory sanitary state of the Krasnoyarsk forests. Forest users rarely take the trouble to create favorable conditions for reforestation following final harvesting (Goskomekologiya Krasnoyarsk, 1998).

According to the Forest Fund Account of 1 January 1998, there are 1.8 million ha of forest lands in need of reforestation. Of this area close to 190,000 ha should be naturally regenerated, some 400,000 ha should receive assisted natural regeneration, and close to 405,000 ha should be regenerated through planting. The forest cultural fund (the area accessible for economic use) covers 132,600 ha of this area. Forest culture production has shown a clear decreasing tendency these last few years. In 1997, actual forest regeneration capacity in the region was only 69,900 ha, including 9,300 ha for forest culture production. The capacity for forest culture work has decreased by about 40 percent compared to 1993. The main reason for the decrease these last few years is the lack of funding. Furthermore, forest cultures have been destroyed. For instance, forest cultures on an area of 2,000 ha (21.5% of their planting area) were written off. Close to 2,000 ha were damaged by fires and 100 ha were damaged by wild animals and rodents.

All in all, the volume of reforestation exceeded the volume of harvesting and destruction by 62,700 ha in 1997. The efficiency of forest regenerative work is measured by the annual increase of young coniferous stands. In Krasnoyarsk Krai the areas of such stands increased from 2.6 million ha in 1993 to 2.8 million ha in 1997. This tendency warrants some hope for an improved forest fund structure in the future.

Harvesting and Processing of Wood

Harvesting volumes in the Krai have decreased sharply during the last years. It was close to 7.4 million m³ in 1997. This is only 29.5 percent of the volumes of 1988, when about 25 million m³ were harvested (Table 4:6).

During the last six years the total harvested volume of commercial wood in the region was 55.9 million m³. The volume of harvested firewood was 14.7 million m³.

In the whole region 5.2 million ha were leased for harvesting, containing an Annual Allowable Cut (AAC) limit of 11.4 million m³. In 1996, 82 plots with a total area of 4.4 million ha were leased for harvesting. One should note that from an AAC of 9.7 million m³ only 1.2 million m³ were actually harvested by the lease holders in 1996.

Existing AAC levels are largely overestimated, since calculations are often not based on the “hard data” provided by forest accounts. The systematic error amounts to at least 10–15 percent. Less than 30 percent of the Siberian forests have been investigated with ground methods. Remaining areas were studied in the 1940s and 1950s using relatively uncertain areal methods. According to Sukhikh (1989) growing stocks were then overestimated by 1.2–1.5 times. Nevertheless, these data have been used at every periodic revision of the Forest Fund.

Table 4:6. Use of the annual allowable cut in the Krasnoyarsk in 1992–1997.

| Indexes | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---------|---------|---------|---------|---------|---------|
| Actual volume of cutting , 1,000 m ³ | 15757.8 | 12805.4 | 8420.0 | 9044.0 | 7599.3 | 7374.3 |
| of which coniferous forestry, 1,000 m ³ | 13972.5 | 11944.5 | 8063.0 | 8681.9 | 7269.1 | 7098.0 |
| Change 1992-1997, % | -5.6 | -18.7 | -34.2 | +7.7 | -16.0 | -3.0 |
| Annual allowable cut, 1,000 m ³ | 56384.0 | 56384.0 | 52085.4 | 51572.4 | 52902.8 | 53122.4 |
| Including coniferous forestry, 1,000 m ³ | 36605.4 | 36605.4 | 32073.2 | 31630.9 | 32021.4 | 32197.2 |
| Use of annual allowable cut, % | 27.9 | 22.7 | 16.2 | 17.5 | 14.4 | 13.8 |

Source: Based on data of the Krasnoyarsk Forest Management.

The Nigneye Priangara area of the Angara-Yenisei region has been the main harvesting area of the Krai for the last 10 years. This is an area of 26.8 million ha. About 65 percent of all harvesting in Krasnoyarsk is made in this area. In 1993, when total harvesting in the Krai was 12.8 million m³, it was 8.3 million m³ in the Nigneye Priangara area. The AAC in the area is 32.8 million m³ or 63 percent of the total AAC in the Krai. However, recently the AAC of the Nigneye Priangara area has been used to only 17 percent on average. For coniferous forests the share is 24 percent.

Harvesting methods depend on natural conditions. In most cases tree-length harvesting is used rather than the so-called assortment method. Analyses show that crosscutting at the upper landing as well as handmade assortment methods are the most efficient at clear-cutting. Waste volumes then averages 5 percent (according to data provided by the Krasnoyarsk Forest Management).

The main harvested tree species are pine, fir, spruce and larch. In 1996, the share of various species in total harvesting is shown in Diagram 4:3.

Production in the forest industrial complex of Krasnoyarsk Krai began to fall in 1990. Since 1992, the transition towards a market economy has resulted in a deterioration of enterprise performance and most of the enterprises in the region went into an economic crisis. Due to the general economic situation in the country timber and paper production volumes decreased by 50–66 percent in the period 1989–1995, sawn timber volumes were reduced below the level of 1950, paper and paperboard to the level of 1965 (Table 4:7).

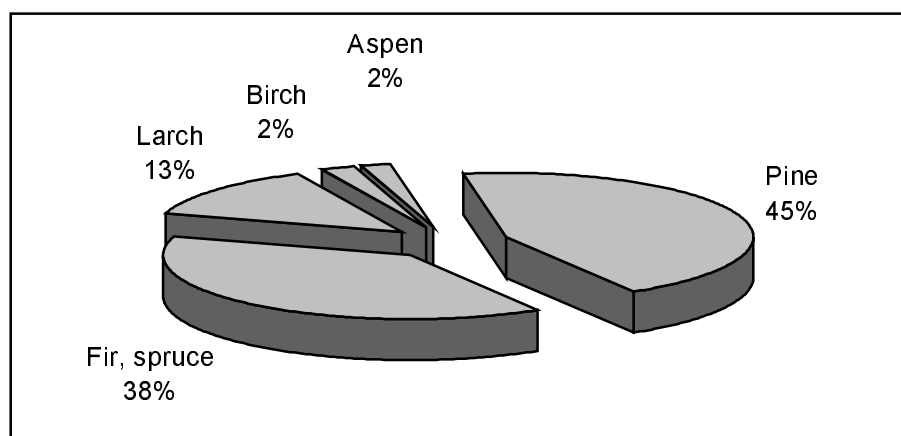


Diagram 4.3. Distribution of main harvested tree species, Percent (Source: Based on data of the Department of Forest Industry of Krasnoyarsk Krai).

Table 4.7. Forest commodity output in Krasnoyarsk Krai, 1991–1996 (Current Prices).

| Product | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 |
|--------------------------------------|-------|-------|-------|-------|-------|-------|
| Round timber, million m ³ | 14.0 | 11.6 | 8.8 | 6.4 | 6.4 | 5.4 |
| Billion rubles | 1.1 | 10.4 | 72.5 | 194.9 | 558.7 | 760.3 |
| Lumber, million m ³ | 4.0 | 3.1 | 2.5 | 1.9 | 1.9 | 1.6 |
| Billion rubles | 1.0 | 15.7 | 97.6 | 195.8 | 629.8 | 660.0 |
| Market cellulose, 1,000 tons | 13.6 | 11.3 | 8.9 | 4.8 | 5.4 | - |
| Billion rubles | 0.02 | 0.2 | 0.9 | 3.5 | 14.1 | 18.0 |
| Paper, 1,000 tons | 99.4 | 77 | 55.9 | 41.9 | 52.4 | 50.2 |
| Billion rubles | 0.2 | 1.1 | 5.5 | 30.9 | 136.3 | 173.1 |
| Cardboard, million m ² | 823.2 | 654.4 | 432.2 | 334.3 | 575.9 | 394.2 |
| Billion rubles | 0.2 | 1.4 | 6.3 | 36.5 | 207.6 | 201.1 |
| Fiberboard, million m ² | 26.5 | 26.0 | 27.3 | 28.0 | 37.4 | 37.5 |
| Billion rubles | 0.02 | 0.4 | 2.3 | 10.7 | 63.3 | 65.9 |
| Furniture, billion rubles | 0.2 | 2.4 | 18.1 | 43.1 | 100.5 | 174.8 |

Source: Data provided by the Department of Forest Industry of Krasnoyarsk Krai.

According to data from the Krasnoyarsk Committee of State Statistics for the period January–March 1999, sleeper production decreased by 60 percent, while roundwood and sawn timber production decreased by 8.8 and 19.4 percent respectively, compared to the same period in 1998.

Total furniture and fiberboard production increased somewhat due to increases in production capacities. A new technique to produce lumber and furniture boards from massive wood was introduced. This production was competitive on the world market. For example, the largest wood processing plant in the region, “Lesosibirskiy LDK”, which produces sawn timber and board, is exporting 73 percent of its products to

countries in Western Europe and North Africa.³ Small private enterprises have also appeared that are mainly specializing in meeting demands from the population.

After a long drop, culminating in September 1998, life has again come back to the Russian industry. In March 1999, production volumes in the forest, wood processing and pulp and paper industry increased by 7.5 percent. The increase in exports of pulp, paper, paperboard, and plywood as well as the development of furniture production, wallpaper, and paper products replacing imports have played a decisive role here (*Rossiiskaia gazeta*, No. 18, 8 May 1999).

But still, the state of the market, the systematic rise of railway and sea transport tariffs, and the cost of electric energy make the situation serious and renders even the most competitive forest export production unprofitable.

Transportation

Historical analysis of the forest exploitation in Krasnoyarsk Krai, which has the largest forest reserves in the country, reveals that, depending on accessibility, it is only about 40 percent of the forests that can be considered as an economic resource.⁴ Vast areas of natural ecosystems in the north of the region remain untapped to this day. However, huge forest areas along railways in the southern parts of the region suffered severely from clear-cutting in the 1950–1970s. In the future, the areas suitable for harvesting will undoubtedly become smaller, due to the tendency to use only the best forests, due to ecological restrictions, but also due to the weakly developed regional transport infrastructure. (See map of Krasnoyarsk Krai on page 8.)

The total length of all kinds of ground transport roads in Krasnoyarsk is 36,701 km. This number includes 763 km railways, 6,054 km automobile roads with hard surface, 24,557 km dirt roads. Roads used all year round have a total length of 9,689 km, while there are 5,327 km winter roads (according to data provided by the Department of Forest Industry of Krasnoyarsk Krai Administration).

The density of roads suitable for transporting wood is 0.047 km/km². On average wood is transported about 100 km from the harvesting sites to the industrial processing plants.⁵

During the ice-free period the largest rivers in the Krai (the Yenisei and Angara and their tributaries) are used for floating of large volumes of wood. Harvesting and rafting is performed by *lespromkhozy* in the Boguchany, Motygino and Yeniseisk districts. The total volume of wood transported by rafting in 1997 was 1.7 million m³ and the total length of rivers used for floating was 3,739 km (Goskomekologiya Krasnoyarsk, 1998).

³ Information given in the author's interview with the enterprise management on 19 November 1998.

⁴ The analysis was provided by the Department of Forest Industry, Krasnoyarsk Krai Administration.

⁵ Figure given by the Department of Forest Industry of Krasnoyarsk Krai Administration.

The main floating methods used are rafting and bag booms. Despite a government decision (No. 384 of 25 September 1997) “On stopping drift floating in rivers and other water reservoirs of the Russian Federation” and the RSFSR Water Code some forest harvesting enterprises still exercise drift floating. Such rule violations present a serious problem, especially in small rivers in the region (Goskomekologiya Krasnoyarsk, 1998).

There are four seaports located in the north of the region — Dixon, Dudinka, Igarka and Khatanga. The capacity of these ports has drastically decreased during the last few years. For instance, at the end of the 1980s, around 2 million m³ of export sawn timber was transported through Dudinka Seaport out via the North Sea Route. Today, the volume has decreased to about 100,000 m³. The situation is similar in other seaports. Until 1991, the Dixon Seaport belonged to the Murmansk Shipping Company, but recently the company got rid of the port to decrease its losses. Although the port became part of the Norilsk metallurgical group in 1994, the situation remains as difficult as it used to be. Ten years ago the goods turnover at this port was 133,000 tons, presently it is only about 20,000 tons (*Krasnoyarskii rabochii*, No. 74, 12 May 1999).

Transportation of forest products via the North Sea Route is not profitable due to the extremely high ice-breaker charges, which may be up to USD 18 per ton of transported goods.

“Earlier river transport workers used to transport up to 0.5–1 million m³, mainly from mills belonging to Lesosibirsk,” says the general director of the Joint-Stock Company “Yeniseysk River Steamship Line,” Ivan Bulava. “Until now we have only promises from the Lesosibirsk LDK-1 about the transportation of 150,000 m³ sawn timber through the seaport Igarka” (*Krasnoyarskii Rabochii*, No. 111, 19 June 1997).

The analysis of the future accessibility of forests in the region is complicated by the fact that the sector is currently being radically restructured. The regimes under which enterprises have so far been operating (input prices, transport costs, wage levels, solvency requirements, etc.) are currently changing, resulting in an increase of unit production costs. Between 1990 and 1995 (Diagram 4.4), the railway tariff, for example, increased 15,910 times, the price of round timber increased 5,530 times, sleepers 5,567 times (Sokolov, 1998).

In connection with the Decision of the Ministry of Communications in January 1999 to cancel discounts for long-distance transportation, the Legislative Krai Assembly [the regional Duma] has made a request to the Chairman of the Russian Federation Government, Evgeny Primakov, to introduce acceptable tariffs for railway transportation of sawn timber for export and to abolish custom duties for enterprises of the region (*Krasnoyarskii Rabochii*, No. 65, 9 April 1999).

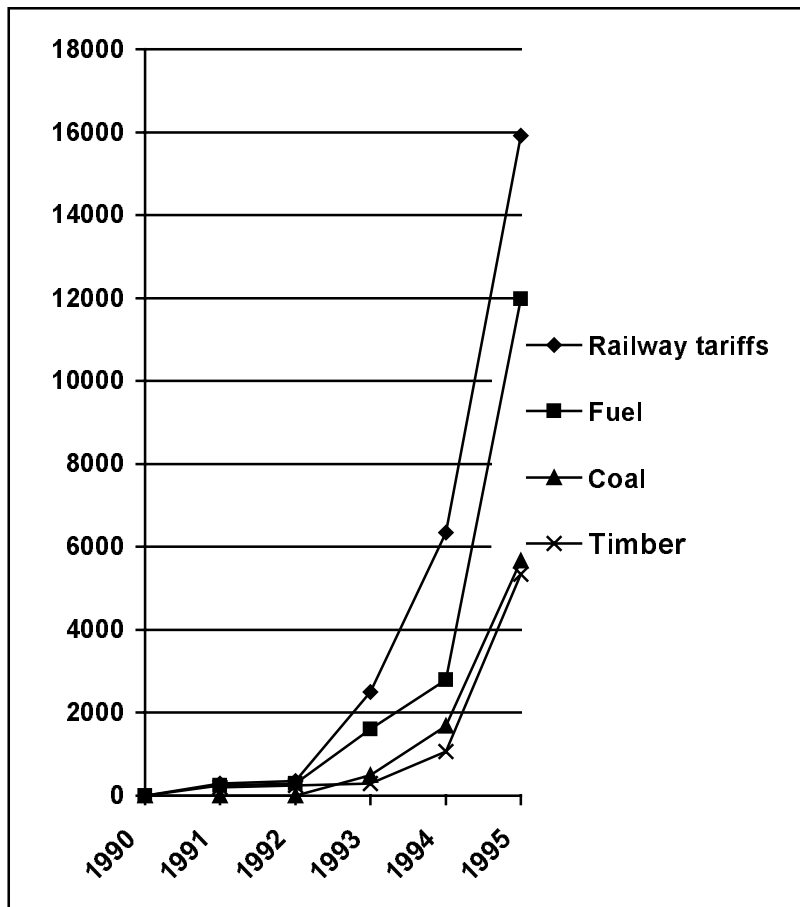


Diagram 4:4. Growth of railway tariffs and energy resources costs as compared with timber costs (Source: Based on Sokolov, 1998).

The Minister of Communications, Nikolai Aksenenko, stated that price increases for railway transportation would simply be “a blasphemous step” taking into account the current solvency of the Russian population. Nevertheless, there are 24 federal laws instituting 40 categories of people with special privileges, affecting more than 75 million people (about 50% of the whole Russian population). This solution to the problem is closely connected to the goods transport tariffs, since incomes from goods transportation compensate the expenses at all levels (*Izvestiia*, No. 22, 22 April 1999).

The introduction of new high transport tariffs caused a rise of transport costs of forest industrial enterprises selling their production to traditional customers in the central part of Russia and on European markets. Many forest harvesting companies were not able to obtain raw materials and went bankrupt.

Forest Product Markets

One of the main reasons for the crisis of the forest industrial complex in Krasnoyarsk Krai is the practically complete loss of traditional markets for the saw milling and wood processing industry (Middle Asia, Kazakhstan, Transcaucasus, Northern Caucasus) as well as the loss of the export market for sawn wood to the East European countries and Cuba. The wood supply to these countries was regulated by the state on the basis of clearing and barter (Diagram 4:5).

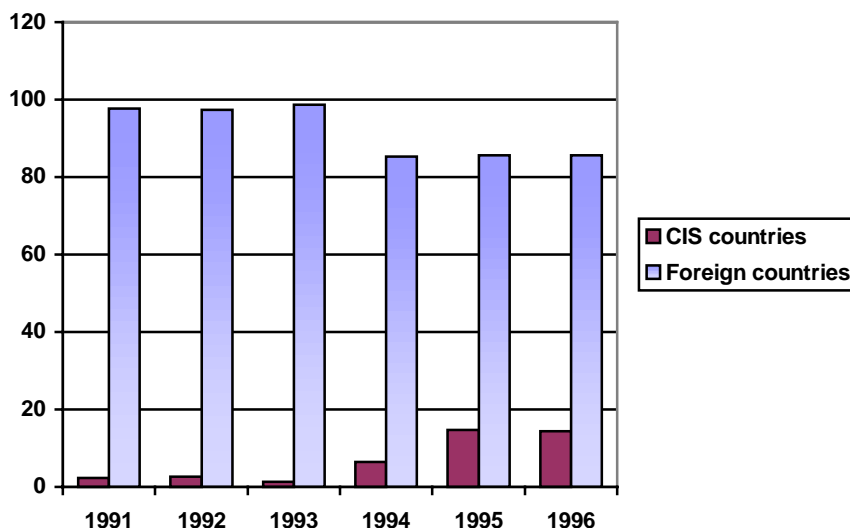


Diagram 4:5. Structure and dynamics of forest product exports, Percent. (Source: Based on data of the Department of Forest Industry of Krasnoyarsk Krai).

As was demonstrated at an OECD workshop on “Industrial Restructuring of the Krasnoyarsk Krai” (held in Krasnoyarsk, 12–13 October 1995) regionally based industries should have a tremendous opportunity to exploit a market of 3 million consumers, who remain largely inaccessible for outside competitors because of huge distances and high transportation costs (OECD/CCET, 1996).

The export share of the forest industry in the value of the region’s total export was only 4.7 percent as of 2 March 1999 (according to data of the Department of Forest Industry, Krasnoyarsk Krai Administration).

Since 1994, there has been a steady increase in product supplies in the region. The volume of saw timber export had increased by more than 3 times in 1995 compared to 1993 (from 54,400 to 168,000 m³), sawn timber by 30 percent (from 592,000 to 774,000 m³). The increased exports in 1994–1995 did not compensate for the decrease in sawn timber exports (which is the main forest export product in the Krai) in the period 1991–1993 (Diagram 4:6). In 1995, sawn timber exports reached only 50 percent of its volume in 1990 (Benderskii *et al.*, 1998c).

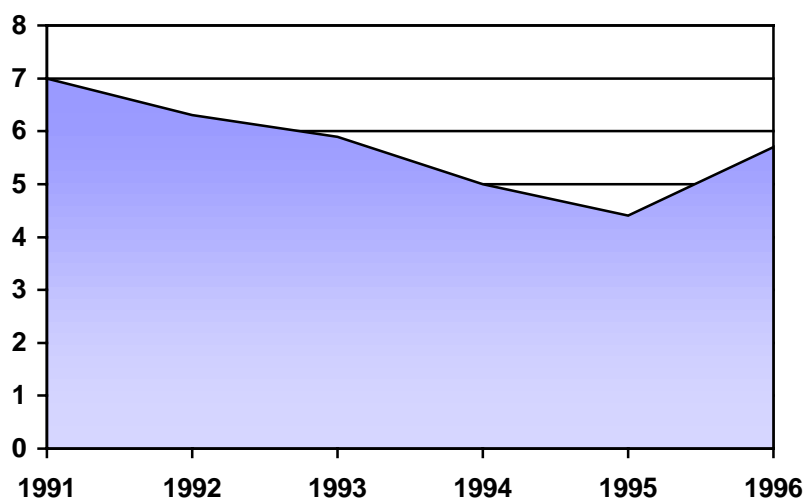


Diagram 4:6. The region's share in Russia's gross output of the forest complex, Percent
 (Source: Based on data of the Department of Forest Industry of Krasnoyarsk Krai).

The regional economy is heavily dependent upon raw materials exports. The region exports up to USD 2.5 billion worth of goods per year. Little is reinvested in Siberia, however, causing a general degradation of the regional economy (Governors Sample, 1999).

Taking the vast area of the region and the high transportation costs into account, one easily realizes that the orientation towards a complex processing of wood, producing value added in the forest industry is of fundamental importance. The enterprises in the region do not make the best use of their potential capacities for forest industrial exports.

Outmoded equipment in the wood processing enterprises precludes any quality improvements. Therefore, one can conclude that reconstruction is advisable for forest exporting enterprises, since they have to extend their markets due to the fact that round timber exports is getting less profitable. Transportation of round timber and sawn timber to the borders of Russia and the Far Eastern seaports increases their production costs by 150 to 200 percent and more, which drastically reduces their competitiveness on the world market.

According to forecasts made before the August 1998 crisis the total wood demand in Krasnoyarsk will increase by 2.8 percent per year until 2010. The demand for pulpwood will increase by 4.6 percent per year, the demand for paper by 4.3 percent, and for veneer by 4.4 percent. The demand for sawn timber will only increase by 1.6 percent per year (Department of Forest Industry, Krasnoyarsk Krai Administration).

Due to the sharp decrease in traditional wood markets Krasnoyarsk Krai will have to develop a new regional market for forest products. Enlarging and modernizing the transport network needed for wood export might play a vital role. This could be done in many ways:

- through the introduction of all-year-round navigation via the Northern Sea Route which might open additional perspectives for exports from the Krai;
- through the establishment of new transport routes to China and Mongolia; and
- through a modernization of the Transsiberian Railway.

It is quite possible that the future main forest product markets of Krasnoyarsk Krai might be located in the forest-poor regions of West Siberia. When Kazakhstan's economy picks up again it will probably have to import forest products from Krasnoyarsk as it did earlier. Wood export via the Northern Sea Route and sales of forest products to China and other countries in the Pacific region is quite feasible given the potential competition from the Far East.

According to data of the Russian Federal government, Russia loses about 26 billion US dollars per year due to imperfect expert assessments of the quantity, quality, and costs for goods and raw materials to be exported. In a resolution by the Russian Federal government "On the introduction of an expert assessment system for the quantity and quality of exported materials" [the so-called *ekspertiza*], which was adopted this year, the Central-Siberian Chamber of Commerce and Industry is given the right to perform this task in Krasnoyarsk Krai. According to data provided by the experts (there are about 600 such experts in the Krai) only 5 percent of the forest products exported has been assessed by experts. Around 80–90 percent of the export currency earned is "lost"⁶ in China, Japan, South Korea (*Krasnoiarskii Rabochii*, No. 63, 6 April 1999).

Investments

Krasnoyarsk is a region rich in natural resources (non-ferrous metals, mineral energy and wood). With its well-educated workforce, it is a region of great economic potential.

Investments in the region are determined, first of all, by the general political and economic situation in Russia. Despite the "Complex Program of Stimulating Domestic and Foreign Investments," which was initiated on 13 October 1995 by the Russian government, the situation still remains as unfavorable as before. The disintegration of the banking system has drained cash from the economy: the regional economics minister, Svyatoslav Petrushko, has estimated that, all in all, the August 1998 crash cost the region USD 150 million. Any foreign investment that still trickles into Russia is devoted to producing goods in the richer parts of the country, not in sparsely populated Siberia (Russia..., 1999).

The Krasnoyarsk governor energetically seeks foreign investments for his region, and often travels abroad to meet with potential partners. To make the region more attractive, he is trying to impose more discipline on the region's budget.

⁶ In 1999, some 80–90 percent of the net proceeds from this trade was never accounted for in Russia. This is done through a systematic underreporting of the price of exported goods, something that might be avoided (or at least made more difficult) if the goods had to be subjected to expertiza, i.e., if the value of export goods had to be assessed by experts. Evidently, illegal export from Russia to certain countries is widespread.

However, the results have been meager so far. Japan's Marubeni, which has long been active in Krasnoyarsk, was the only major company to participate in Lebed's inauguration festivities. Moreover, at the end of 1998, Fitch ICBA gave the region a worst rating, putting it on the red list. Presently, the Krai does not obtain any direct investments from abroad (Governors Sample, 1999).

The problem of investment involving the forest industrial complex of the Krai is determined by three different groups of reasons:

- **National (federal) factors:**

All the macroeconomic factors, domestic and foreign political conditions (such as inflation level, budget deficit, tax legislation, export-import balance, authority, stability, etc.) are here.

- **Industry-wide factors (specific for the forest industrial complex as a whole):**

The most important problem in this field is the absence of a clear and generally used mechanism for obtaining lands of the forest fund for long-term utilization (long term lease and concession). No less than 10 acts are needed to be approved at the federal level in order to establish a long term lease or concession.

- **Regional factors specific for the forest industrial complex of the Krai:**

- (a) remoteness from foreign (both western and eastern) markets;
- (b) weakly developed transport and technological infrastructure; and
- (c) small number of forest sector enterprises that possess a sufficient capital, staff, and infrastructure to attract serious investments.

A majority of the forest industrial enterprises in Krasnoyarsk already meet these problems at the stage of preparing business plans. The problems of giving investor guarantees are hardest to solve today.

An imperfect system of managing forest industrial enterprises in the region causes problems hampering capital formation and the efficient use of capital. These problems mainly consist in the absence of real economic monitoring and planning at the enterprise level, as well as insufficiently developed marketing which might promote sales in the market.

A financial analysis of the Krasnoyarsk forest sector shows the following (Benderskii *et al.*, 1998b). For the period 1992–1996 investments in the regional forest sector declined both relatively and absolutely. This was reflected in the decreased number of workers, in poor financial results, etc., for the sector. The “barterization” of all financial relations both within the forest complex and with partners outside the complex is of special importance. This resulted in a narrowing of the active market and a reduction of the financial relations. Calculations of the Institute of Economics and the Organization of Industrial Production of SB RAS indicate that the amount of money channeled through banks to regional budgets decreases by 0.4 percent when the number of barter agreements increases by 1 percent. The direct financing of harvesting enterprises by wood processing companies constitutes a new approach to the settlement of economic relations in the sector. This can be seen as an example of “backward integration” as a

solution to the problem of input procurement in the forest industry (Carlsson, Lundgren and Olsson, 2000).

Analyses of the distribution of incomes and costs between the forest sector enterprises seem to indicate that the use of relatively low raw material prices leads to a redistribution of a value added to the processing branches (Benderskii *et al.*, 1998b) Such practice distorts the structure of value creation and hampers the reproductive possibilities of the harvesting enterprises, that constitute the initial stage of the forest industrial cycle.

Thus, in order to achieve a sustainable forest utilization in the Krai one has to pay special attention to the allocation of investments to profitable processing enterprises that produce a high value added and have a stable and solvent demand. This would mean a concentration on woodworking products, such as particle board and furniture, products of the pulp and paper and forest chemical industries, etc. Otherwise, the forest complex will not be able to fully finance forest regenerative and productivity increasing measures. It is also necessary to approve a regional legislation that might facilitate the formation of an efficient and stable basis for financial, taxation and tariff regulation to the benefit of forest investors.

Taxation System

Statistics tells us that the quantity of natural resources used per unit of production is between 2 and 8 times larger in Russia compared to developed countries. This is not only decreasing the competitiveness of Russian products — it causes irreparable damages for the economy. The “Plan for Russian Natural Resource Use” approved by the government on 2 August 1997 (*Rossiiskaia gazeta*, 2 August 1997) envisages the establishment of a natural resource management system, the stimulation of modern technologies, the regulation of raw materials export, provisions for resource reproduction, changes in the forest legislation and other key regulations. Improving economic methods, including the tax system, is of the highest priority for an efficient nature management aiming at a sustainable forest utilization.

Compared to world averages, stumpage in Russia is too low. The cost of one cubic meter of growing stock was 6,000 rubles in 1996–1997. This is less than 2–3 percent of the average output value realized in the forest industry (Benderskii *et al.*, 1998a)

Profits from leasing forest lands for different use were not fully realized (Table 4:8). Leaseholders — this primarily concerns harvesting — could not pay the rent for the annual allowable cut, since this greatly exceeds the total stumpage fees for the wood that might actually be harvested (Department of Forest Industry, Krasnoyarsk Krai Administration).

Table 4:8 Information about leasing.

| Forms of forest fund use | Number of leased parcels | Area 1,000 ha | Annual allowable cut 1,000 m ³ | Volume of harvested timber in 1999, 1,000 m ³ | |
|------------------------------|--------------------------|---------------|---|--|------------------------------|
| | | | | Sum total | Including coniferous forests |
| Harvesting | 95 | 5211.2 | 11387.6 | 1152.8 | 1082.8 |
| Minor forest products | 1 | 0.006 | - | - | - |
| Hunting | 330 | 36904.8 | - | - | - |
| Research aims | 1 | 42.3 | - | - | - |
| Cultural and recreation aims | 4 | 0.5 | - | - | - |
| Total | 431 | 42158.8 | 11387.6 | 1152.8 | 1082.8 |

Source: Provided by the Department of Forest Industry of the Krasnoyarsk Krai.

The current Russian taxation system gives large privileges to forestry compared to the forest industry. According to the changes and supplements to the tax legislation approved by the government on April 27, 1994, No. 8 of instruction No. 4 "On the procedure of calculating and paying profit tax to the budget by enterprises and organizations" the following incomes by the *leskhozy* are not subject to taxation:

- income obtained from processing and utilization of low-grade and small commercial wood;
- income obtained from intermediate cutting; and
- income obtained from the realization of non-wood forest products on condition that this income be used for forest management.

Overall, there are 26,000 enterprises in Krasnoyarsk, yet 80 percent of the region's income comes from taxes assessed on only 9 percent of them (Avramov, 1998).

In the economic program before the election the Krasnoyarsk governor Lebed stressed that the Krai's key problems are: a shrinking tax base, real money tax income that comprises only 38.6 percent of the Krai's overall income, regionally set taxes that are too high. To remedy these problems he called for bringing the region's large enterprises back to life, developing medium and small business, and increasing the flow of real money into the budget. (*Economicheskaja programma kandidata na dolzhnost' gubernatora Krasnoyarskogo Kraia Aleksandra Ivanovicha Lebedia*,

URL: <http://www.alebed.org/win/index.htm/ELPROG/>)

According to a presidential decree (of 1 January 1995) *leskhozy* are exempt from profit tax if profits are used for financing forestry activities. In addition, no tax is levied on:

- The fixed assets of the *leskhoz*;
- The use of motor roads;
- The purchase of forest maintenance machinery (transport fund);
- Sale of forestry services (from the value-added tax); and
- The sales turnover of sanitary cuttings (for wood used as input in processing and for other needs in the enterprise performing the cutting).

The *leskhozy* pay the following taxes:

- Social taxes based on the wage fund (38.5%);
- Transportation tax; and
- Income tax (12%).

Official registration of the tax base in Russia began in 1998. One should note the “non-ecological” profile of the Russian tax system. Thus, if the aggregate profit tax rate was 35 percent, payment for the utilization of natural resources was only 2.8 percent (Benderskii *et al.*, 1998a).

The State Duma has approved the Federal law “Changes and supplements to the Federal Law on ‘Profit tax of enterprises and organizations’.” This law envisages a five percent decrease of profit tax from enterprises and organizations. As Sergey Shtorgin from the Duma Budget Committee said: “According to the law the rate of profit tax from enterprises and organizations, being enlisted to the Federal Budget, is set at 11 percent” (the law will come into effect on 1 April 1999). He also said that profit taxes (including tax paid by foreign juridical persons) are included into the budgets of the Subjects of the Russian Federation according to rates set by the legislative organs of these subjects, at maximum 19 percent (*Krasnoiarskii rabochii*, No. 48, 16 March 1999).

A number of payments, which are obligatory in the production of other raw materials, do not apply to the forest sector. About 40 percent of state taxes collected in Krasnoyarsk originate from producers of forest products. All in all, taxes constitute slightly over 20 percent of the primary cost of forest products (Table 4:9). This way, through the transfer of taxes, the regions become donors to the federal budget. Furthermore, the current taxation system significantly affects the economy of the sector (*Nash krai*, No. 1, 15 April 1999).

Vladimir Pashkov, auditor at the Russian Federation Accounting chamber, said that 28 taxes would remain in Russia when the Tax Code had come into full effect. He also said that there are 48 taxes in Russia today. Four of them are taxes to non-budget funds and in some Russian regions there are in fact up to 100 different taxes (*Krasnoiarskii rabochii*, No. 38, 4 March 1999).

Table 4:9 Structure of taxation in cost price of forest processing in Krasnoyarsk Krai, Percent.

| Type of tax | Amount and collector | Tax base | % of unit price |
|---|--|--------------|------------------------------|
| Forest tax | 5% of commercial forest: <i>federal budget – 2%, regional budget – 1%, local budget – 2%</i> | Gross output | 7.2 3.0 1.2 3.0 |
| Transport tax | 3.1% of commercial forest: <i>federal budget – 0.4%, local budget – 2.7%</i> | Gross output | 4.29 0.29 4.00 |
| Payments to the pension fund | 28% of the wage fund: <i>local budget – 28%</i> | Wage fund | 6.6 6.6 |
| Payments to the social security fund | 5.4% of wage fund: <i>federal budget – 0.324% regional budget – 0.216% local budget – 4.86%</i> | Wage fund | 1.26 0.08 0.05 1.14 |
| Payments to the employment fund | 1.5% of wage fund: <i>federal budget – 0.09% regional budget – 0.06% local budget – 1.05%</i> | Wage fund | 0.35 0.02 0.08 0.25 |
| Payments to the obligatory medical insurance fund | 3.6% of wage fund: <i>federal budget – 0.2% regional budget – 0.16% local budget – 3.24%</i> | Wage fund | 0.84 0.05 0.04 0.76 |
| Transport tax | 1% of wage fund: <i>local budget – 1%</i> | Wage fund | 0.23 0.23 |
| Total share of taxes in the cost price of commercial forest | | | 20.7 |
| Input costs | | | 45.5 |
| Wage fund | | | 23.4 |
| Amortization | | | 10.4 |
| Total cost price | | | 100.0 |

Source: Based on Benderskii *et al.*, 1998a.

Measures to introduce tax reductions in cases when contributions are made for improvements of degraded habitats or for regenerating resources for endangered species deserve attention. So does the issue of equating income from forest regenerating work with income from capital growth, and the study of the possibilities to use credits for nature protection purposes as a market mechanism for environmental protection.

The privileges of exporters compensating them for value-added tax is kept. In sawmills, costs of materials and overhead expenses amount to 68.6 percent of total production costs. Consequently, the value-added tax actually paid by such enterprises will amount to 6.9 percent of their total production costs (taking into account a value-added tax of 22 percent according to the draft Tax Code), and in relation to the price of the product it will amount to 6.46 percent.

Proposals envisaging a growth in labor productivity also remain privileged from a taxation point of view.

Apparently the tax privileges of small business enterprises will also remain.

In essence, it seems that the Tax Code stipulates that the forest management organs should take responsibility for the growth of income from forest use. This will stimulate development, economic growth and investments in the forest sector.

5. Political Profile and the Forest Sector

Regional Politics

Only 41 percent of the population took part in the last election to the Legislative Assembly of Krasnoyarsk Krai in December 1997. The following “voting blocks” received more than the five percent of the votes which gives them a mandate in the assembly:

- Communists and Agrarians for People’s Power (*Kommunisty i agrarii za vlast’ naroda*);
- Honor and Motherland. A. Lebed (*Chest’ i rodina*);
- Union of the Cause and Order — the Future of the Krai (*Soiuz dela i poriadka — budushchee kraia*); and
- *Yabloko* Union (*Ob’edinenie “Iabloko”*).

It could also be noted that around 6 percent of the votes were against the whole list.

The Communist Party received the most votes (21.1%) compared to the “Honor and Motherland” block (13.6%). The “Yabloko” Union candidates were only given a small share of the votes (7.5%). It can also be observed that the voting block “Union of the Cause and Order” consisting of independent candidates with no affiliation to any political party received 12.9 percent of the votes (*Krasnoyarskii rabochii*, No. 237, 9 December 1997). A number of well-known and respectable people in the region belonged to this voting block, such as the mayor of the City of Krasnoyarsk, the general director of the Norilsk metallurgical holding, the editor-in-chief of the TV company “Afontovo”, the chief producer of the Krasnoyarsk Dramatic Theater, the head physician of the Krasnoyarsk Emergency Hospital, the coach of the well-known sports team “Yenisei” (multiple winner of the Russian hockey tournaments), and others. The candidates of this block presented their own programs — strategies for a regional development in Krasnoyarsk Krai containing proposals for regional laws and state programs. Election results from one-mandate districts show that the “Union of the Cause and Order” candidates took 10 of 41 seats. One of the candidates belonging to this block was elected chairman of the regional legislative assembly.

The Communist Party candidates got nine seats in the legislative assembly. This made the communists the largest group in the regional duma. The “Honor and Motherland” got eight representatives elected. Four businessmen were elected as independent candidates. The Yabloko Union got two deputies in the assembly, one candidate of the voting block “World War II Veterans” as well as a candidate of the union “Doctors and

Teachers for Social Guarantees and Justice” were both elected members of the legislative assembly (*Krasnoiarskii rabochii*, No. 246, 26 December 1997).

Thus, about half of the elected deputies represent non-party social and economic structures. Only one deputy, a communist, the former head of the Siberian Academy of Technology, Vladislav Sevostianov, represents the interests of the forest sector. This demonstrates the virtual non-existence of a forest lobby in the region.

The election of governor in April 1998 displayed the weak position of the Communist Party. The communist candidate did not get to the second election round. He only received around 13 percent of the votes.

The first election round immediately showed that there were only two serious contenders for the post of governor — the acting governor, the democrat Valery Zubov, and the former secretary of the Russian Security Council, the leader of the “Honor and Motherland” party, general Alexander Lebed. The latter eventually received 10 percent more votes than his rival.

More than 60 percent of the population participated in the elections for a new governor. Close to 3 percent of the votes were not given to any candidate. Most people, especially in the countryside, preferred a change in power. This decision shows the people’s discontent — a discontent aimed against Moscow’s predatory policy. People understood that a strong political power was needed in addition to — and even instead of — the economic doctrines of the former governor Valery Zubov (*Krasnoiarskii rabochii*, No. 80, 28 April 1998).

In the second round of the elections in May 1998, Lebed was elected governor of Krasnoyarsk Krai by 57.2 percent of the voters. Some 3.4 percent voted against both candidates.

The beginning of May 1999 saw a fierce struggle among the regional politicians. The most spectacular “bargain” during the current electoral period was an agreement between Alexander Lebed and the leaders of the local Communist Party about a strategic partnership in the December State Duma elections. Thus, the formal political leaders of the region combined their efforts to meet the real opposition — the candidates of the party “*Otchizna*”, the “*Yabloko* Union” and independent candidates (*Krasnoiarskii rabochii*, No. 92, 19 May 1998).

Impeachment for Governor Lebed?

It should be noted that Alexander Lebed was elected governor of Krasnoyarsk Krai with the help of financial support from magnates of the Russian aluminum business and the bank “*Rossiiskii kredit*”. Some claim that the most active financial support for Lebed was provided by the chairman of the Board of Directors of the Krasnoyarsk Aluminum Plant, the independent deputy of the Krasnoyarsk Legislative Assembly, Anatoly Bykov (*Rossiiskaia gazeta*, 26 January 1999). The former governor Valery Zubov was not a suitable political figure from the aluminum business’ point of view. With his support the Moscow based financial group “Alfa” began to operate more actively in the region. In particular, Alfa gained control over the Achinsk Alum Earth Plant, which is a part of

the technological chain of the Krasnoyarsk Aluminum Plant. This meant that resources were diverted from the region.

Some months after the governor election an intensive discussion about the conflict between the governor and representatives of the regional production elite began in mass media. In March 1999, during consultations with Prime Minister Evgeny Primakov and the Secretary of the Security Council of the Russian Federation, Alexander Lebed asked for help in his “fight against the Krai criminal structures”, which, according to Lebed, are led by Anatoly Bykov, the chairman of the Board of Directors of the Krasnoyarsk Aluminum Plant. Some days later a special commission of the Ministry of Internal Affairs headed by the first Deputy Minister, general-colonel Vladimir Kolesnikov arrived in Krasnoyarsk.

Answering the questions of journalists about the goals of the federal commission sent to Krasnoyarsk, the head of the Russian Federation presidential administration, Nikolay Bordyuzha, said that, according to information known to him, a very complicated and intricate criminal situation had arisen in Krasnoyarsk Krai, and this situation should be investigated. However, according to many observers, the level of specialists in the commission was too high. Possibly, the real goals of the control were wider and more serious (*Rossiiskaia gazeta*, 12 March 1999).

The reasons for the conflict is reported differently in Krasnoyarsk and in Moscow. In Krasnoyarsk people are displeased with the “strange general-governor” during whose term in power life has become harder. As the former Representative of the Russian President in Krasnoyarsk Krai, Yuri Mokvich, said: “When the ex-governor Valery Zubov went from his post the budget sector wage arrears were 2.5 months. After the August crisis profits of the local enterprises increased sharply since 43 percent of their production was exported. But why have the wage arrears become larger, up to 4.5 months at present?”

In Moscow, Lebed’s version of the events is given more attention. According to this version the opposition against the governor from “the Krai criminal structures” is constantly growing. The governor tries to get some regional enterprises in the coal and energy complex to be managed by the Krai administration.

At a meeting of the Siberian Accord interregional association on 15 January 1999, Lebed said that the federal government should transfer ownership of factories, electricity generators and coal mines to the regions, giving the regional leadership significantly greater freedom from Moscow. Lebed proposed to subordinate the “approximately 90” regional branches of federal ministries working in the Krai to both the governor and the federal government. They are currently only subordinated to the federal government. Lebed warned that attempts by the center to strengthen its ties to the regions would only increase separatist tendencies. Prime Minister Evgeny Primakov responded, saying “we lost the Soviet Union, we are not going to lose Russia,” and warned against such separatism (*Nezavisimaia gazeta*, 16 January 1999).

As opposed to his idea, there is a proposal from regional industrialists suggesting the foundation of a united power-metallurgical corporation integrating the production chain “coal–energy resources–metallurgy”. In their opinion this would greatly reduce production costs.

Lately, both sides in the conflict made several harsh statements. According to Lebed the Krasnoyarsk Aluminum Plant gets energy at highly “understated tariffs.” “Bykov’s people” from the Krasnoyarsk energy complex do not wish to raise the energy tariff. The local power specialists, in their turn, add the argument that all relations with the Krasnoyarsk Aluminum Plant are based on agreements which corresponded to existing legislation and the tariff was determined by decisions of the regional energy commission.

In Krasnoyarsk Krai the average tariff for electrical energy is 16.17 kopeks per 1 kwh. It is set at 17.32 kopeks for industrial enterprises and 8 kopeks for the Krai population. It is a rather low tariff in Russia, since a lower tariff is only to be found in Khakassia (90% hydropower) and in Irkutsk (70% hydropower). For example, in St. Petersburg the average tariff for electric energy is 29 kopeks, in Moscow and Volgograd it is 28 kopeks. Despite the low tariff in the Krai the debts to the power system reached 2,387 million rubles as of 19 October 1998 (*Krasnoiarskii rabochii*, No. 151, 22 October 1998).

Nevertheless, the regional Public Prosecutor’s Office has started a criminal process against the illegal agreement between the Krasnoyarsk Aluminum Plant and the Krasnoyarsk energy complex. According to preliminary estimates the damage caused would amount to 2,859 billion rubles. According to the latest opinion polls the support for the Krasnoyarsk governor has decreased by almost 50 percent compared with the summer of 1998. Under these circumstances the decision by the Legislative Assembly to start an impeachment procedure against the governor is understandable (*Krasnoiarski rabochii*, No. 55, 26 March 1999).

To evaluate the situation in the region it is necessary to take the many different economic and political interests of the governor into account. General Lebed is a very tough politician with the specific goal of strengthening his economic and political influence. Many believe that he has presidential ambitions. Surely the possession of the region’s energy complex will allow him to control many neighboring regions that get their coal and electricity from Krasnoyarsk. The events which currently take place in the Krai seem to be a further step towards the forming of Lebed’s political and economic initiative.

6. Institutional Problems and Shortcomings

Forest Legislation and Forest Management Strategy

According to Article 1 of the Forest Code of the Russian Federation, the forest legislation of Russia consists of the Forest Code, federal laws and other normative acts of the Russian Federation. The regulation given in other normative acts must not contradict the Russian forest legislation.

More than 100 laws and acts concerning forest resources, their protection, regeneration and utilization were in effect before the Russian Forest Code was adopted in 1997, and they are still in effect today. At the same time, the number of forest enterprises has grown dramatically (Sokolov *et al.*, 1998).

The “Principles of Forest Legislation of the Russian Federation” were adopted on 6 March 1993. Here there was some progress compared to the forest legislation of 1978. For instance, it was recognized that the forest fund is under the joint authority of the Russian Federation and its subjects. The competence of the Russian Federation, its subjects, and the institutions of local government in regulating forest relations is determined in a more rigid way. A non-budget fund for reforestation and forest protection was founded to improve forestry financing. Some new items were included, such as antimonopoly demands, lease of forest fund parcels, forest monitoring (Principles, 1993).

The new forest legislation adopted in 1997 (Forest Code, 1997) did not improve on the earlier Principles of Forest Legislation. For instance, the Forest Code does not consider the following factors:

- Different forms of forest ownership;
- The organization of state forest management;
- The character of relations between the federation and its subjects and regions;
- The financing of forestry measures; and
- The strategy of forest utilization and the economic relations between forest owners and forest users.

According to the Forest Code all Russian forests are federal property. Thus, the Forest Code contradicts what is said about forest ownership in the Constitution of the Russian Federation. It also contradicts the Law on Natural Resources, where various forms of ownership of land and natural resources are foreseen.

The uncertainty concerning forest ownership has led to an irresponsible adoption and implementation of state policies and strategies in the recent past. It has also meant that higher state organs has not always been following the forest legislation, leading to large-scale plundering of forest resources and a lack of interest among forest workers in increasing the profits from forest use. Since the forests are national property, the property of all people, they belong to everybody and no one.

In recent years, due to the state forest ownership monopoly, a paradoxical situation has appeared where mature, exploitable forests, which should contain the maximum volume growing stock, be of high quality and of large economic value, are in a worse condition in every respect than younger forests. Forests, which have been submitted to intensive “tending” measures, have been destroyed through cleaning and sanitary cutting when the most valuable trees were cut rather than the least valuable, diseased and damaged trees. This wood was given away free of charge as worthless wood in exchange for consumer goods. Our interviews with *leskhoz* representatives confirm this behavior. Wood obtained through sanitary cutting provided major incomes for most *leskhoz*.

As the deputy governor of Krasnoyarsk Krai, Alexandra Kulenkova, said: “We have a federal structure — the Forest Management. This Management has tens of *leskhoz*. And these *leskhoz* cut the best export wood under the pretence of sanitary felling, they sell it and try not to pay taxes under various pretexts. The existing hard line of management from Moscow to the ordinary enterprise makes appropriation of forest incomes from the region possible” (*Nash krai*, No. 1, 15 April 1999).

Unqualified forest planting causes great economic losses. In many cases forest management is only simulated. In reality, however, there is no — or only an unsystematic — improvement of the forest composition, the age structure of stands, productivity increases, the marketability and profitability of forestry (Karpov, 1991; 1992).

Our interviews show that the practice of insufficient budget funding does not allow any normal forestry measures but forces the State Forest Protection workers out to other subsidiary works in order to procure money for financing the prescribed forestry measures.

To develop a finance mechanism that could procure sufficient funds for reforestation, forest tending and protection, forest regulation, forest science, the maintenance of forest management and forestry organizations based on the forest income is a most challenging task. Here it is essential not to infringe upon anybody’s interests. It is a concern for subordinate forestry organizations (such as the *leskhoz*), for the regional/local authorities as well as of federal state interest. One *leskhoz* director said in our interview that one cannot expect a mutual interest and care for the State Forest Production without increased forest utilization. Correspondingly, forest organizations and local/regional authorities should be interested in raising forest incomes, in intensifying forest utilization and reforestation.

There is a need for a compromise allowing forest income to be used not only for local/regional non-forest needs, but also for forestry purposes, to regenerate forests, to found a state non-budget fund for regeneration, to protect forests at the federal level and in the Subjects of the Federation.

It should be noted that forestry planning as well as forest accounting and management in Siberia are performed within the boundaries of economic-administrative units (*leskhoz*) and not in accordance with requirements raised by the inherent order of forestry work. This has created conditions that allow the existing variation between different forestry organizations and types of management to be ignored. Furthermore, the age class

method of forest management leads to an overcentralization in forestry planning. This method is based on the principle “from the general to the particular,” which has already come into conflict with contemporary demands on forest organization and management in Siberia. Therefore, even with normal functioning funding, all defects in the existing forest management system could not be eliminated.

The problem of cutting age and allowable cut is an example of the above. Forestry incurs great losses due to the fact that the term “cutting age” has been substituted for “cutting cycle,” where “cutting age” is equal to mature stand age. Moreover, cutting ages are determined by order from above for the whole Siberian territory, without any consideration for variations in specific conditions and economic purposes. All of this, together with the imperfect method for calculating annual allowable cut (AAC), as well as ignoring the environmental and economic accessibility of the forest resources, inevitably results in an overestimation of reserves and a risk for exhaustion of the forests (Sokolov, 1997).

Isaev *et al.* (1995) have noted that the changes occurring in Russia open unprecedented possibilities for developing production capacities and, at the same time, these changes present a danger for the preservation of the natural environment and the forest cover. With the existing system of forest organization and management the forester is not allowed to become the thrifty master who knows the nature of the forest. On the contrary, he is likely to become an insignificant part in a cumbersome and rigid forest management system.

A System of Forest Relations

What might be called the “system of forest relations” significantly influences the sustainability of forest exploitation. It radically influences the protection of the forests, forest utilization and reforestation. According to the Forest Code of the Russian Federation (mainly through the Federal Forest Service), the Subjects of the Federation, municipal administrations, and juridical persons are all agents in this system of forest relations.

Analyzing problems related to the system of forest relations one has to discriminate between at least three major categories of actors, which influence processes taking place in the forest sector:

- organs of forest management;
- forest users; and
- agents operating on the market and providing services to the forest complex.

Such an approach will facilitate efficient decisions about investments, since the forest complex will only function and develop well if the work of these three agents is coordinated.

The specific conditions of most forest areas are such that an efficient exploitation can, as a rule, only be realized within territorial areas under a united forest complex combining the natural resource (the forest), industrial and social objects (settlements,

roads, communications, productive capacities, etc.), and the people living and working in the areas.

A forest area can only be a basis for a sustainable combination of enterprises, organizations and individuals if there is a unified complex plan for the exploitation of the area, which is elaborated with a view to keep and regenerate the available resources. Such an approach might solve the problem of varying cost-effectiveness in forest utilization between different forest plots within the same forest area, since both high and low productivity plots should be offered for long-term lease (Koropachinskii and Sokolov, 1998).

The problem of forest lease is of central importance. The present practice of forest lease does not sufficiently reflect the interests of the leaseholders and it does not serve economic development, neither in harvesting nor in forest management. One negative feature of the current lease regulations in Russia is its bias in favor of potentially large harvesting capacities that supports an extensive forest management (where quantity dominates over quality requirements). Ideally, there should be a logical, economic relation between product costs, rent values, growing stock price and stumpage fees. A decisive factor for determining the economy of forest lease is to offer the forest fund parcel to the disposal of the leaseholder as private property, giving the leaseholder the possibility to use his leased lands as security for loans, have it officially registered and using it in support of contracts for sales of output. Such leasing arrangements would give the enterprise an opportunity to obtain circulating assets which are very important for its economic development.

The absence of such rules has already resulted in a situation where large quantities of the best wood goes to the market, primarily to the export market, in the form of raw materials, while at the same time, processing plants in the region cannot find a sufficient amount of wood due to the regional enterprises' insufficient ability to pay (World Bank, 1997).

These current processes do not promote further wood processing at the local level, since resource losses at harvesting and processing sites do not stimulate the establishment of new workplaces, do not help solving social problems and protecting the interests of indigenous peoples.

Furthermore, adequate leasing rules would provide better conditions for developing small private enterprises, creating a competitive regime actively stimulating increased labor productivity. Such conditions would entail the provision of basic production services, such as:

- the leasing and servicing of machinery;
- the establishment of functioning input and output markets;
- provision of transport and communication services;
- provision of engineering and consultancy services; and
- the building of infrastructure, such as roads, communication links, etc., or the establishment of appropriate branch organizations.

General Problems Besetting the Krasnoyarsk Forest Enterprises

The forest sector — the forestries, the harvesting and processing industries — is significantly influencing living standards and promoting the functioning and development of the most important branches of industry, construction, and transportation. The share of the forest industrial complex in the total Russian industrial production was 5.1 percent in 1995. The forest industrial complex contains more than 30,000 enterprises with a total number of 2.2 million workers. Like the Russian economy in general the forest industrial complex is in a difficult economic, technical and social crisis, and it has been so for a long time already. Production of the main kinds of paper products decreased in the period 1988–1995 by 50–65 percent on the average, wood harvesting and transporting decreased to the level of 1935, sawn wood volumes are lower than in 1950, paper and paperboard was reduced to the level of 1965 (Goskomstat Rossii, 1995).

According to calculations by the World Bank the fall of the Russian economy will reach 8.3 percent, and inflation will be 60 percent in 1999 (*Rossiiskaia gazeta*, No. 16, 24 April 1999).

The forest industrial enterprises in Russia are currently in a critical financial situation. There is an increasing number of unprofitable enterprises likely to go bankrupt. There have been no large investments made in the Russian forest sector since the end of the 1980s (World Bank, 1997). The absence of investments has caused a sharp reduction in the number of operating harvesting enterprises in recent years. It has also led to an underutilization and aging of wood processing enterprises. The depreciation of main capital assets in the complex as a whole has exceeded 50 percent (Sokolov, 1998). In combination with poor technical service (or no service at all) the depreciation has resulted in decreased quality of the main capital with simultaneously increased negative environmental effects due to sewage spills and decreased labor safety. The dismantling of the state social security system has left the employees of the forest complex with weak occupational protection.

There are large unused resources in intermediary forest utilization due to the low intensity of cleaning and sanitary cuttings. Only 12 percent have been used of the 140 million m³ that is allowed by the forest inventory (*lesoustroistvo*) for intermediary forest utilization in accordance with silvicultural requirements.

Only during the last few years has a market infrastructure begun to be formed for the forest industrial complex of the country. The first signs of true competition have appeared, the mechanism of demand and supply has begun to operate. At the same time, the crisis keeps causing a deterioration in the work of enterprises. In 1994, enterprises belonging to the forest industrial complex produced a total output worth 13.3 trillion rubles. The production volume decreased by 31.2 percent in comparison with 1993 (Goskomstat Rossii, 1994).

This situation depends on many factors. Most forest industrial enterprises have a social responsibility and the work has a seasonal character, which puts great strains on their financial situation, especially under the current economic conditions with its increasing prices for fuel, energy resources and transportation.

The enterprises' financial situation is negatively affected by inflation, payment arrears and also by the extremely imperfect taxation policy. Taxes have been sizably increased (mainly due to the introduction of new forest taxes) and there are a number of branch-specific circumstances, such as the technological need for large log storages due to the seasonality of harvesting, the interdependence of forestry related subindustries, and the geographical location of the forests that play a significant role in this context. Currency gains from the export of paper products have been reduced. Russia has lost forest markets and prestige on the world arena.

The management of the forest industrial complex has practically been destroyed at all levels. Technological, production, cooperative links and relations, which were developed over many years, have now been broken. The present structure of the Russian forest industrial production is imperfect and does not match the level of developed countries. Products of mechanical wood processing dominate and the level of chemical and chemical-mechanical wood processing is far from satisfactory: in Russia it amounts to 33 percent of total forest production, compared with 60–65 percent in progressive developed countries (World Bank, 1997).

In leading forest countries the export of paper products contributes a large part of the national income. For example, in Finland, 87 percent of all paper and paperboard produced is exported, as is 80 percent of all veneer produced, 56 percent of sawn wood, and some 33 percent of wooden boards. Similarly, in Sweden, Canada and the USA, large shares of produced wood products are exported. In Russia, only 3–5 percent of produced paper is sold abroad (Sokolov, 1998).

A profitably working forest industrial complex constitutes the economic basis for sustainable forest use, for performing complex regenerative, protective, and ecological measures as well as research activities. Without going into any detail of the concepts and models of sustainable forest utilization that exist in industrially developed countries of the world one can easily identify some of the specific features of the Russian conditions.

The forest industrial complex of Russia was built in the period of centralized economic management and its recent rapid production fall and the break-down of all supply and demand links are due to the fact that:

- the main forests are found far away (in Siberia, the Far East) from facilities for further wood processing (pulp and paper factories, wood board and furniture manufacturers), which were located in sparsely forested areas (like the Central European part of Russia, Middle Asia) for the purpose of developing these areas and the artificial cooperation of the Soviet republics;
- the scale and type of investments made by the State was dictated not by the market, but by the plan; and
- the forest industrial complex suffered greatly from the fast privatization, the collapse of the Soviet Union, the introduction of market-set prices, and the price increases of transportation.

The socioeconomic standard of life of employees in the forest industrial complex has deteriorated. Before 1993, the average salary in the forest industry was more or less on the same level as other branches of the economy. In 1994, the average monthly salary in the forest industrial complex was more than 73 percent below that of the gas industry

and almost 55 percent below the level of the coal industry. Today this difference is even larger (Vladyshevskii *et al.*, 1998).

The provision of housing for the people working in the forest industry is poor. Moreover, living conditions are poor, especially in small forest settlements. All industrial enterprises, and especially forest enterprises, are heavily burdened by the social sphere since they are the sole supporters of forest settlements and their infrastructure.

If this negative process is not stopped then production will continue to drop by 50–60 percent compared to the present level during the next 2–3 years. Then the Russian forest industrial complex will be practically destroyed with very problematic consequences for a large number of industries and people in the country (Sokolov, 1998).

Most pulp and paper and wood processing plants as well as harvesting companies (*lespromkhoz*y) have social responsibilities. When production falls or the enterprises are closed down unemployment inevitably appears. According to estimates, unemployment in the forest industry may reach 500,000 people (or about 30% of total employment) in the next 2–3 years if no counter-measures are taken. In this case, government expenditure for unemployment alone would amount to 1.5 billion rubles. Expenditures will rise even further if people have to move to other places. When the floating enterprises were closed down, some 1.3 billion rubles were needed to move people from the floater settlements. The close-down of large pulp and paper industries with its town infrastructure can have unforeseen consequences.

The rich renewable forest resources, the high level of research, the production and technical potential of the forest sector, the large domestic and foreign markets together open great opportunities for Russia to develop an advanced forest industrial complex with a potential to lift the national economy to its proper level of socioeconomic development.

All of what has been said above about the Russian forest sector is entirely relevant also for Krasnoyarsk Krai. Here, the situation is furthermore aggravated by the fact that the total value of commodity output per ha of forest land for the region's wood production is only 33–56 percent of corresponding value in the forest regions of the European part of Russia and as much as 50–80 percent lower than in Finland.

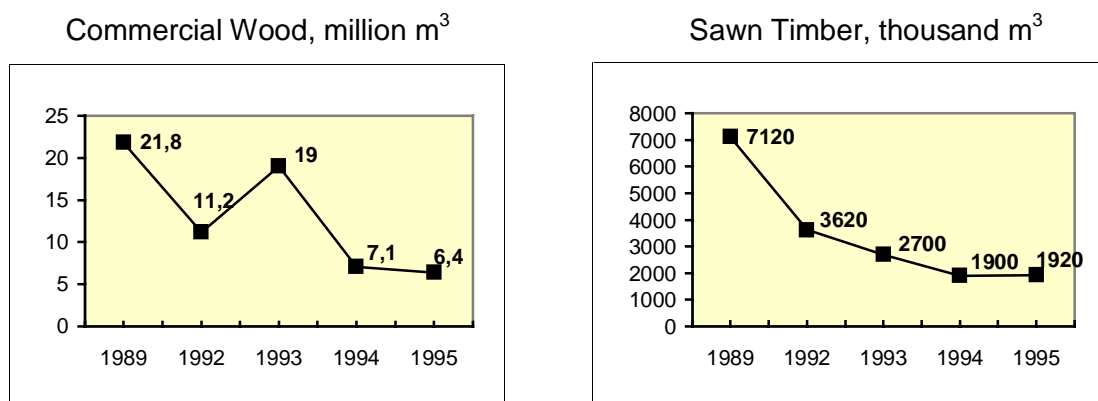


Diagram 6:1. Production of commercial wood and sawn timber in Krasnoyarsk Krai 1989–1995 (Source: based on Sokolov, 1998).

The forest products shipped out of the region are mainly sawn goods (the most valuable product) and round timber (the least valuable product) which have a low value added in relation to raw material costs. This leads to a diminishing source of incomes for reforestation, forest protective and other measures guaranteeing a sustainable forest utilization (which is not depending on the size of forest taxes levied by the State).

Total costs per ruble of commodity output increases constantly as do the wage arrears. The average monthly wages in the forest industrial complex in the Krai is only 55 percent of that of the whole industry as of 1 January 1996 (according to information provided by the Department of Forest Industry of the Krasnoyarsk Administration).

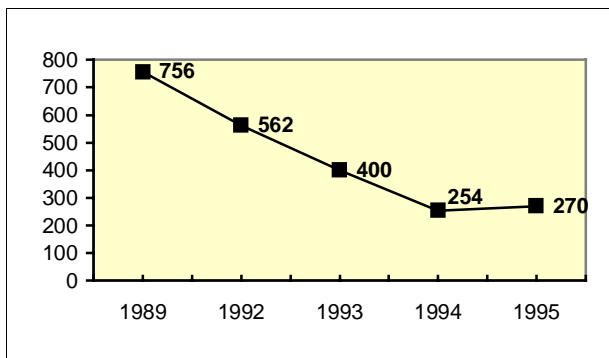


Diagram 6:2. Labor productivity in the Krasnoyarsk forest industry, m^3 per employee (Source: Based on Sokolov, 1998).

The crisis in the forest sector has appreciably affected other segments of the forest industrial complex as well as all other linked branches of the national economy. The supply of sawn wood to the regional wood processing plants decreased due to exports from the region. Many loggers wish to found their own sawmilling enterprise and this causes a loss of efficiency in the sector. As a result, sawn wood production in the Krai has been reduced by about two thirds, including a decrease of sawn wood for export of about 60 percent (*Nash krai*, No. 3, 14 May 1999).

In 1995 and early 1996, the production decrease slowed down, some stabilization began due to the stable working of some enterprises and plants. Consequently, there seems to be a chance that the situation in the regional forest industrial complex could stabilize and even recover.

The main reasons for the current crisis in the Krasnoyarsk forest industrial complex are:

1. The badly premeditated and hasty privatization and the complete loss of state management of enterprises belonging to the forest industrial complex both at the federal and the regional level.
2. The reduced construction activities in the region (resulting in a decreased demand for sawn wood, semi-finished products, etc.).
3. The almost complete loss of traditional markets for sawn wood and processed wood products from the region (reduced demand from Middle Asia, Kazakhstan, Transcaucasus, North Caucasus).

4. The loss of the export market for sawn wood in the East-European countries and Cuba, to which deliveries used to be regulated by the State on a barter clearing base.
5. Enterprise leaders' lack of experience of working under the new market conditions (assessing the market situation, knowledge of contractual relations, basic juridical knowledge, pricing, banking, etc.). Such functions were earlier always performed by state organs without any participation of the enterprise management.
6. The organization of the enterprises' work under barter conditions, with many mediators and "false firms" inside the enterprises themselves during the first reform stage (1989–1994). This caused great losses for the enterprises due to asset stripping. Income was spent on welfare for workers and other organizations rather than on the development of production. During this period money could be obtained on good conditions through the banks (which was also done by many "clever" intermediary actors at the expense of the enterprises) and production could have been modernized (Information provided by the Department of Forest Industry, Krasnoyarsk Krai Administration). For example, an enterprise in the town of Lesosibirsk installed new capacities for the production of fiberboard, furniture, and furniture board from revenues of its barter trade.
7. Due to the government's policy an irrepressible price increase on all goods and services began, leading to artificial cost increases in forest enterprises when they reduced production while at the same time keeping all workers and increasing material costs. This process has not yet been brought under control by the Russian government, the Krai Administration or the legislative bodies. Prices on most forest products exceed world market prices. Therefore, even forest exporting enterprises work at a loss, while low priced forest products are imported and sold on the regional market.
8. Most forest enterprises are insolvent, due to the government's policy of mutual offsets, the great discount credit rates provided by the state and the imperfect tax system.
9. There is a lack of management competence in most traditional forest enterprises (whatever their ownership) under the new market conditions. Privatization in the forest sector resulted in an uncontrolled situation, which gradually became almost absurd. Most forest industrial leaders, especially leaders of closed joint-stock companies (ZAOs), and of associations of limited responsibility (OOOs), did not know how to stabilize production. Some enterprise leaders (owners) were conservative. They thought that working well is not profitable because of the high taxes. At the same time they founded new subsidiaries and strengthened in every possible way the commercial structures that they had established earlier. They often supported production and supplied these organizations with wood for export. Sizable profits based on the work of the forest industry were accumulated in just these subsidiary structures.

The Forest Code, through its provisions on long-term lease and concession, offered a possibility for private forest users to take over several functions normally performed by the Federal Forest Service. However, this process is only at an early stage of development and the conditions for implementing it have not yet been elaborated. The serious management problems still remain and have been further aggravated by the economic crisis.

Still only high quality and economically accessible raw materials are mainly used. This strategy contradicts the long-term development goals of the forest industrial complex as well as environmental requirements. As in other Russian regions the economic crisis damaged the Krai's forest sector earlier and more severely than it did other sectors of the economy. Apart from the common reasons for the crisis a number of Krai specific reasons for the fall in forest industrial production can be observed:

- industrial development was pursued only in the most accessible and productive forests in the southern, central and eastern parts of the Krai;
- the environmental restrictions were more strict in Krasnoyarsk than elsewhere;
- there was a loss of real management of the forest sector (both in joint-stock companies and in state enterprises);
- the fast inflation and the decreased competitiveness of forest products associated with it causing sharp cost increases;
- the sharp reduction of the regional and all-Russian forest markets; and
- the region lost its position on the foreign market because of an inconsistent policy regulating forest exports (currency corridor, extremely high transport tariffs, electric energy tariffs, etc.).

7. Business Behavior

In this chapter an analysis of the behavior of a sample of forest firms in Krasnoyarsk is presented. It is based on data collected through interviews with representatives of 25 forest enterprises in Krasnoyarsk Krai. The data on the Krasnoyarsk firms is compared with data on 136 forest firms from six other Russian regions as well as 25 forest enterprises in northern Sweden, which were part of the IIASA study.⁷

The Krasnoyarsk interviews were conducted in the period October 1998–March 1999. It should be noted that we have tried to cover, at least partly, the whole territory of region. Thus, our sample includes some interviews with harvesting companies in remote areas of the Krai.

All interviewed enterprises were established long before the beginning of the transition to the market. Our sample consists of 13 privatized firms, 11 state owned enterprises and 1 municipal enterprise.

Classified according to type of activity we find the following groups of firms in our sample: 8 forest owners/managers (*leskhozy*), 9 harvesting enterprises (*lespromkhozy*), 3 wood processing enterprises, and 3 firms engaged in combined activities, such as harvesting/processing. The sample includes one wood rosin mill and one interview was conducted with a representative of a research organization.

The selected firms can also be classified according to their size (number employees). Table 7:1 shows the firms grouped into three categories, small enterprises having less than 100 employees (8 firms), middle sized enterprises having up to 500 employees (12

⁷ Cf. footnote 1.

firms), and large enterprises, which are oriented towards wood processing and have more than 500 employees (3 firms). The largest enterprise in our sample has 3,231 employees. It should be noted that middle sized and large old state enterprises dominate our sample.

Table 7:1. The sample of Krasnoyarsk forest enterprises by number of employees.

| Type of activity | Size of enterprises (number of employees) | | |
|-----------------------------------|---|---------|---------------|
| | less than 100 | 101–500 | more than 500 |
| Forest owner (<i>leskhoz</i>) | 6 | 2 | |
| Harvesting (<i>lespromkhoz</i>) | 1 | 6 | 1 |
| Processing | | | 4 |
| Harvesting/processing | | 3 | |
| Turpentine production | | 1 | |
| Research | 1 | | |

Productivity and Employment

As can be seen in Diagram 7:1, about half of the enterprises in our sample have had a productivity decrease of more than 40 percent during the last five years, while “only” around 20 percent of the 136 firms in the six other Russian regions experienced such large productivity decreases. However, it should be noted that a rather large share of the Krasnoyarsk firms (30%) increased their productivity compared with the rest of the Russian firms in the study. In Diagram 7:2 the corresponding changes in employment is depicted. During the last five years, 67 percent of the enterprises have drastically reduced their number of employees and 29 percent of the enterprises in our sample report a moderate decrease in employment. One interviewed firm reports that it has increased its workforce.

However, about 33 percent of the Krasnoyarsk firms have been able to retain their workforce and increase their productivity. Thus, it seems that these firms are demonstrating a more market oriented behavior.

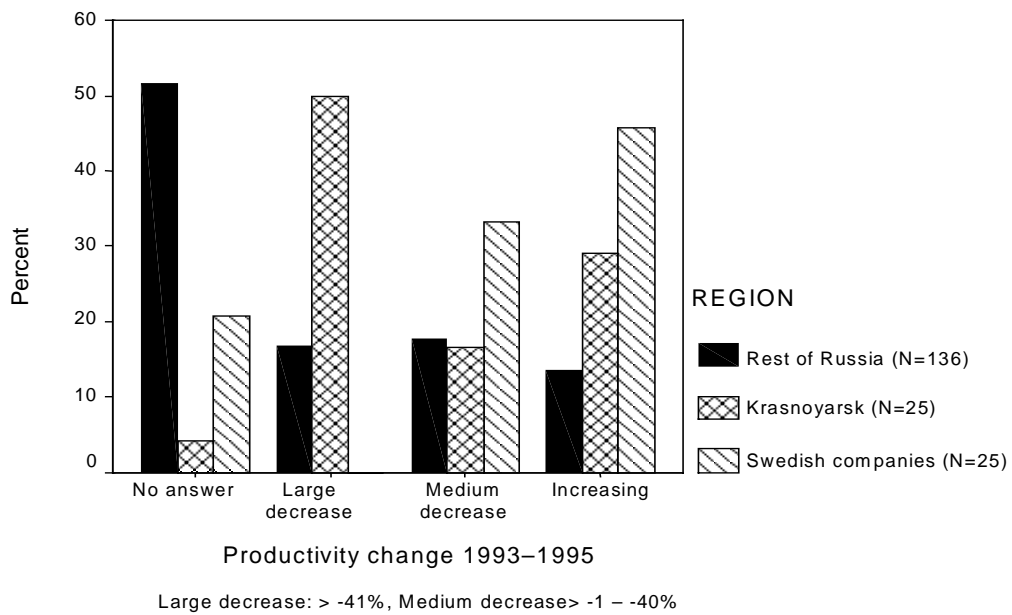


Diagram 7:1. Productivity change in forest enterprises in Krasnoyarsk Krai, Russia, and Sweden, 1993-1998.

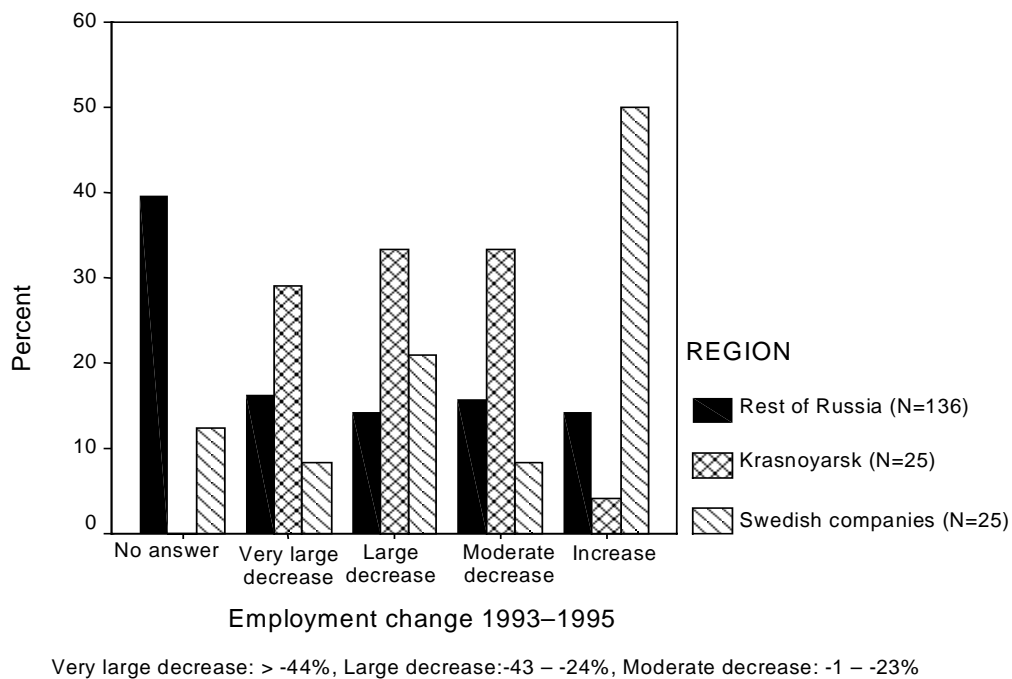


Diagram 7:2. Employment change in forest enterprises in Krasnoyarsk Krai, Russia, and Sweden, 1993-1995.

The Input Side of the Enterprise

There are 16 forest industrial enterprises in our sample. The majority of them (69%) get their wood from the *leskhozy*, except for the wood rosin plant, which acquires its raw materials from chemical *leskhozy*.⁸ Half of these enterprises lease their forest lands, another part acquires the timber through purchases at preset stumpage fees. Only one company uses both ways to acquire timber. Accordingly, the remaining enterprises, which are large processing plants, acquire wood directly from harvesting companies based on annual contracts. It can be noted that another special type of agreement also exists: for one of these plants 65 percent of all inputs are processed on commission, since the plant lacks funds to purchase their own wood.

As can be seen in Diagram 7:3, most of the firms (9 out of 16) cannot obtain a sufficient amount of wood. When asked for the reason most of the respondents blamed the financial situation, they simply did not have money enough to buy timber. One large company reports that the harvesting enterprises had reduced their harvesting volume. Our data also indicate that only 19 percent of the companies have alternative wood suppliers. It is notable that these are large processing companies exporting their products and making investments.

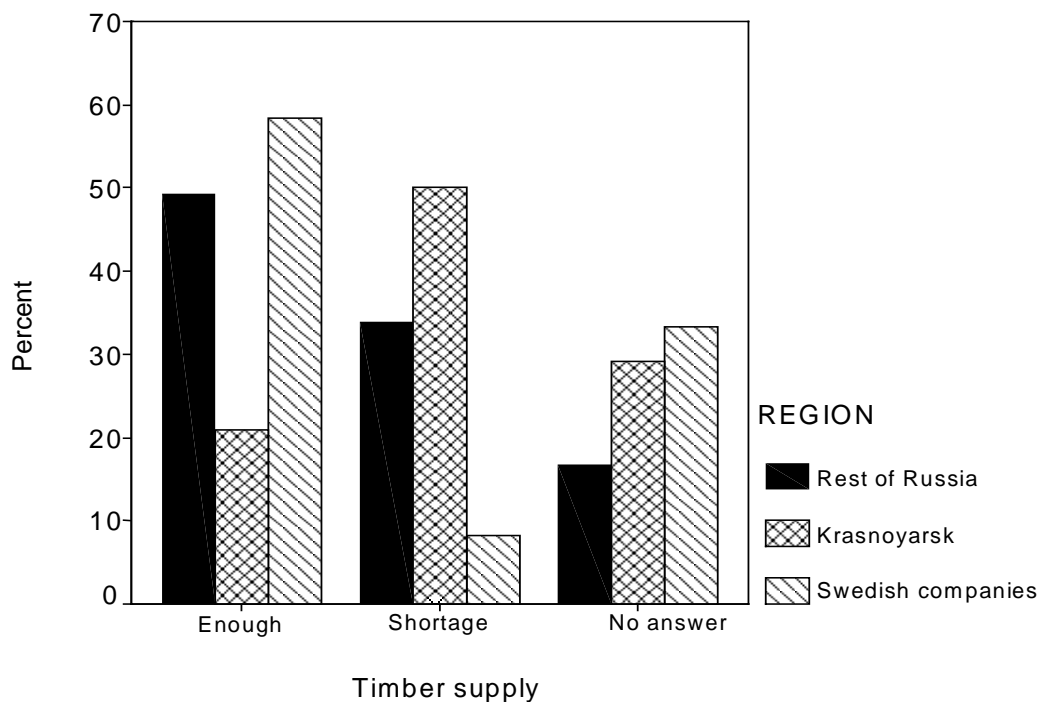


Diagram 7:3. Wood supply.

⁸ *Khimleskhozy* are chemical forestry enterprises that are engaged in resin boxing.

More than half of the companies (56%) pay (at least to some extent) for their wood supply before delivery (one respondent did not answer this question), while 75 percent state that they pay on delivery. What is interesting here is that the same number (75%) arrange their payments through the banks and 75 percent of all firms say that they are engaged in barter. This indicates that a majority of the enterprises in Krasnoyarsk arrange their financial transactions in several different ways. They also regard broken agreements as a big problem when purchasing wood.

The Output Side of the Enterprise

As was already noted in the previous chapter one of the major problems of the Krasnoyarsk forest sector is the lack of investments in production. In Diagram 7:4 it can be seen that only about 30 percent of the interviewed firms invest. One could also note that only three of these enterprises have commercial relations with a bank, and this is mainly due to the fact that one enterprise exports its products and one is owned by the business bank “SBS-AGRO”. A majority of the enterprises used their own funds for investments. Respondents maintain that it is not possible to use the banking system due to unacceptable lending terms.

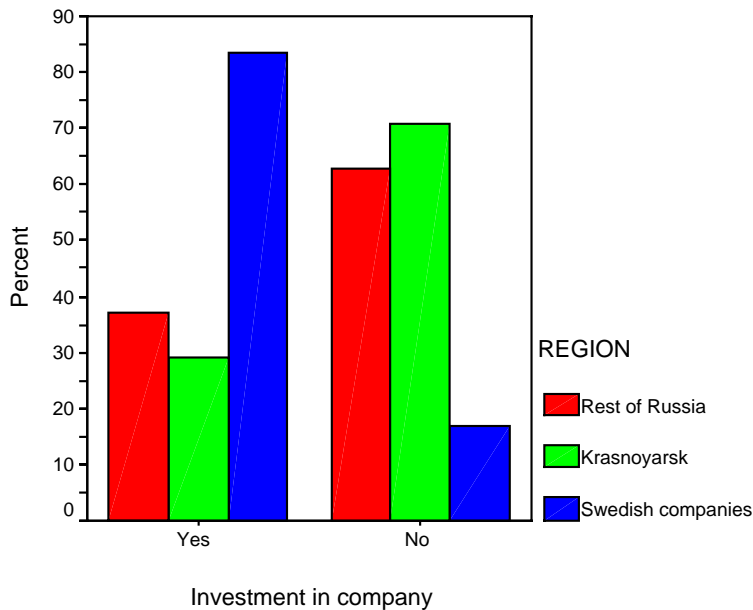


Diagram 7:4. Enterprises making investments.

As is shown in Diagram 7:5 only about 20 percent of the interviewed enterprises export their products abroad, including the so-called “near-abroad countries”.

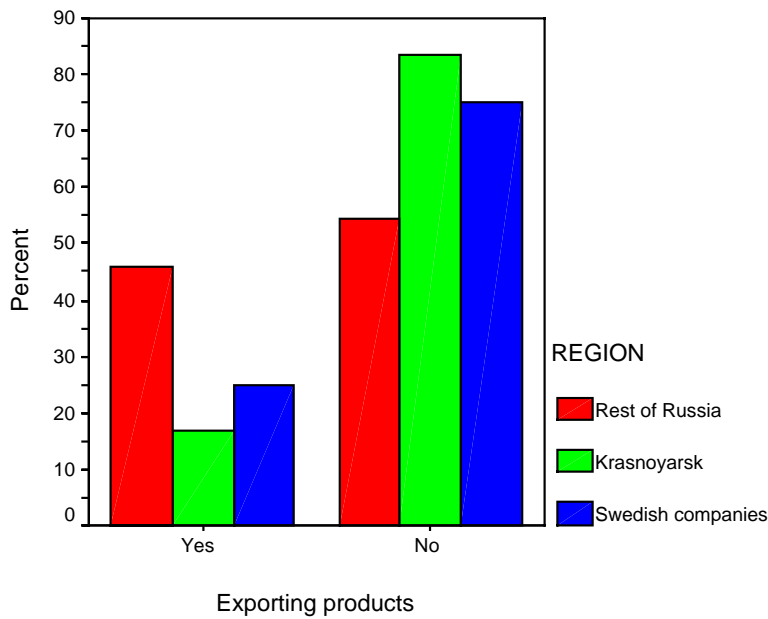


Diagram 7:5. Enterprises exporting their products.

Most of the region’s forest exports to European countries originates in large enterprises. Asked how a typical sales transaction is performed, the representative of such an enterprise answered that all relations in foreign markets that the company had established before *Perestroika* still worked. One should also note that the Krai has an unfavorable location very far away from foreign markets.

Gaddy and Ickes (1998) characterize the current Russian crisis as “the notorious ‘nonpayment’ or ‘payment arrears’ crisis”. They have advanced a theory, according to which a large number of Russian enterprises operate in a “virtual economy”. Citing a report by P.A. Karpov, chairman of the Inter-Agency Balance-Sheet Commission (issued in December 1997) Gaddy and Ickes claim that “[a]n economy is emerging where prices are charged which no one pays in cash; where no one pays anything on time; where huge mutual debts are created that also can’t be paid off in reasonable periods of time; where wages are declared and not paid; and so on. [...] [This creates] illusory, or virtual earnings, which in turn lead to unpaid, or virtual fiscal obligations, [with business conducted at] nonmarket, or virtual prices” (Gaddy and Ickes, 1998).

As can be seen in Diagram 7:6, a majority of the enterprises sell their products through barter. About 23 percent of the firms are paid in cash upon delivery, while 3 enterprises get paid in cash before delivery. It should also be noted that none of them are paid after delivery. It is evident that the arrangement of payments reflects a great lack of trust. Accordingly, about 90 percent of all enterprises in Krasnoyarsk Krai regard broken agreements as a big problem (two respondents did not answer this question).

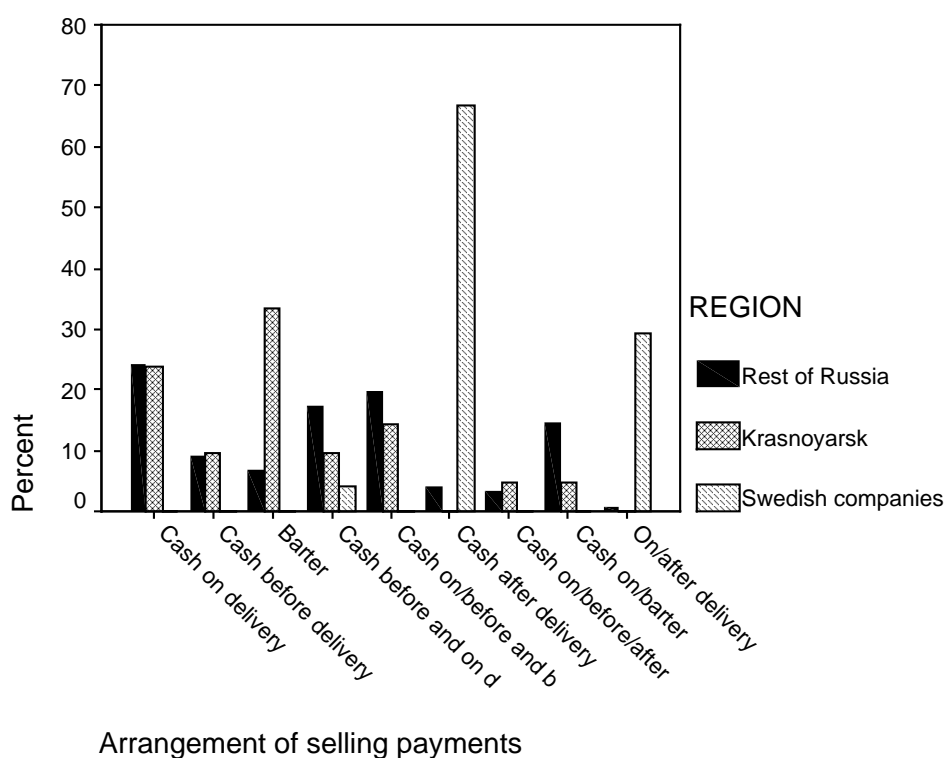


Diagram 7:6. Arrangement of selling payments among the Krasnoyarsk forest enterprises.

Problems and Institutional Features

As was mentioned in the previous chapter, one of the most common problems for the Krasnoyarsk forest enterprises is related to the provision of social services. Our data shows that about 80 percent of the forest enterprises in the region are engaged in the provision of social services in one form or another (cf. Diagram 7:7). This could be compared to the situation for the forest enterprises in six other Russian regions, where 45 percent of the enterprises have this obligation.

It should be noted that our sample mainly consists of middle sized and old large enterprises. Such enterprises could also be expected to be more engaged in the provision of social services, such as housing or consumer goods, to their employees.

To the question “Are there rules or regulations which are regarded as an obstacle for the activities of the enterprises?” 15 enterprise representatives answered affirmatively (two did not answer the question). The tax legislation, the financing system, barter, and investment policy were most frequently mentioned by the enterprises as obstacles for their business activities. It is evident that a majority of the Krasnoyarsk enterprises are faced with a whole set of interrelated problems.

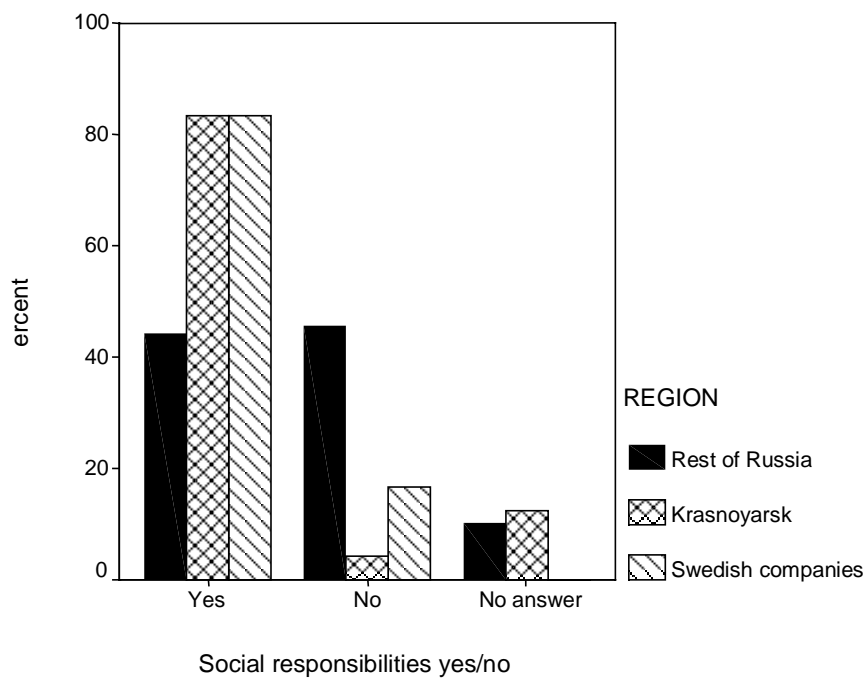


Diagram 7:7. Engagements and responsibilities related to the provision of social services.

In our questionnaire enterprise representatives were asked about the single most binding “restriction” on the activity of the enterprise. Table 7:2 shows their answers.

Table 7:2. Problems perceived as the most binding restriction for operating forest enterprises in Krasnoyarsk Krai.

| The most binding restriction for operating the enterprises | Number of enterprises |
|---|------------------------------|
| The general economic situation | 8 |
| The financial crisis | 10 |
| Transport costs and energy tariffs | 5 |
| Tax legislation | 1 |
| Other | 1 |
| No answer | 1 |
| Total | 26 |

As can be seen in Table 7:2, most respondents regard the financial crisis and the general economic situation as the main problem. Other answers concerning transport and energy tariffs should probably also be seen as a reflection of the lack of financing.

The enterprises managers were also asked about what other factors they could identify as obstacles for a successful business (cf. Diagram 7:8). Thirty-five percent of all

Krasnoyarsk enterprises noted the problem of machinery/technology, while the Swedish companies did not mention this issue at all. Moreover, it could be mentioned that skill and competence, while regarded as a problem by 35 percent of the Swedish companies, was considered a problem by only 5 percent of the Krasnoyarsk enterprises. Thus, it is evident that problems often reflect the need of production re-equipment as well as investments in general.

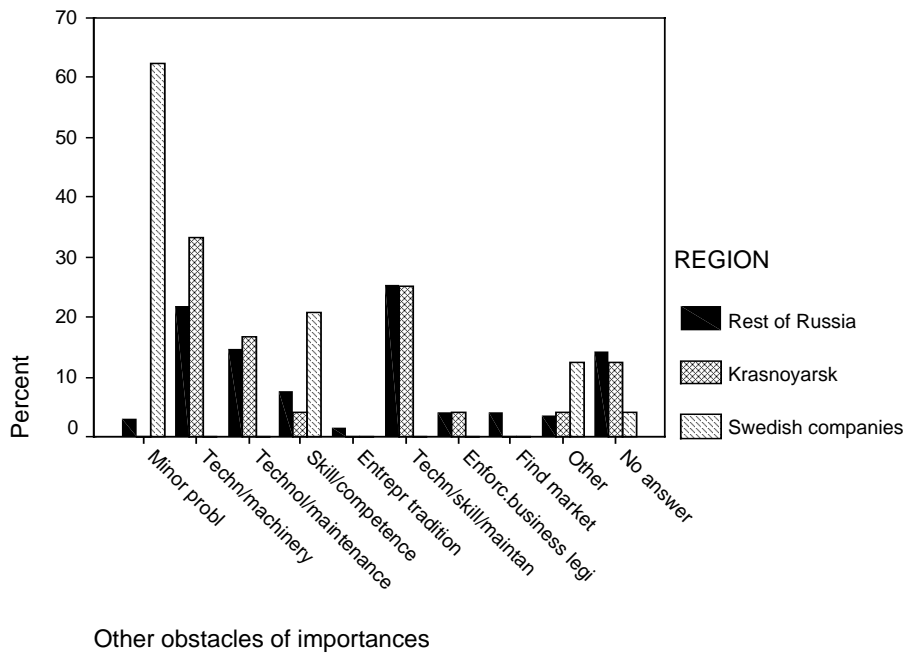


Diagram 7:8. Other problems which enterprises regard as obstacles for a successful business.

Asked about whether it would be possible to change anything in the Russian forest sector, the forest enterprise representatives of Krasnoyarsk frequently mentioned the problems of financing, banking, taxation, social responsibility, technology and equipment. Two of the respondents would like to see changes in the forest policy and an introduction of different forms of forest ownership. In our sample there was also a proposal concerning the organization of the forest sector, suggesting the establishment of complex forest management and harvesting enterprises. Finally, it should be noted that three forest industrial leaders advocated the return to the system of state enterprise management that existed before the transition to a market economy started. According to Gaddy and Ickes (1998) “it is important to understand the continuity with the past. [...] The Soviet economy appeared to be a large industrial economy. In fact, industry in the Soviet economy was subsidized by under-priced raw materials and insufficient charges for capital”.

Obviously, the different opinions of the forest enterprise representatives interviewed in our survey on the transformation of the Russian forest sector reflect the complexity of the general problems besetting the forest sector as well as the Russian economy as a whole.

8. Conclusions and Recommendations

Crisis Paradox

The instability of Russian forest policy negatively affects the state of the forest sector in Krasnoyarsk Krai. No unified conception of structural reforms in the forest sector existed at the beginning of the economic reform process. All structural changes were influenced by the reduction of state investments, the break of existing economic links between producers and consumers and other factors.

The forest raw material base of Siberia is seriously overestimated today. Most forests have already been exploited resulting in large transformations — many primary forests have been turned into secondary forests. However, on the whole, the forest resources are still able to guarantee a sustainable multi-purpose forest exploitation in the region.

The fast decentralization of management in the Krasnoyarsk forest industrial complex and the privatization of enterprises, which did not take the specific character of production into account, led to serious negative results: a huge production fall and large related socioeconomic losses. Furthermore, in connection with the general economic crisis in the country the forest industrial sector of Krasnoyarsk Krai has experienced a deep economic crisis.

To overcome the current problems it is first of all necessary to solve a number of issues relating to:

- capital investments;
- the high tariffs for transporting finished forest products;
- the high costs of energy and energy carriers; and
- the organization of enterprise management.

These and other problems affecting the forest complex can only be solved in a process of general economic and financial stabilization. On the other hand, the forest industrial complex can greatly contribute to the economic development of Siberia and provide a favorable regime for the solution of these problems.

Today, attracting investments is one of the most important components of an effective forest policy. The frequent changes in the investment legislation, which, as a rule, were poorly considered, do not promote an efficient investment regime. In a situation where government activities do not play any important role for improving the investment climate, there is an increased role and responsibility of the various subjects of the Federation to attract investments, including foreign capital.

It may seem paradoxical, but the ongoing economic crisis also creates opportunities for a radical change of forest exploitation methods, which will be needed in the future, since the emergence from the crisis will inevitably be followed by a renovation of production capacities. Thus, it will be possible to bring production in correspondence with the environmental requirements of a sustainable forest management.

The current organization of Siberian forestry and forest management is far from optimal. This is due to a number of factors, such as the overcentralization of forest management, outdated forest inventory methods, deficient forestry financing, the

peculiar character of forest relations related to current socioeconomic conditions and the imperfect forest legislation.

In order to improve the organization of forestry and forest management it is necessary to:

- thoroughly elaborate concrete silvicultural, economic, and technological tasks on the basis of a careful analysis and assessment of the real forest resources, the rules for forest utilization, the harvesting technologies and machinery that are required by modern natural resource management, available transport modes, processing technologies, sales opportunities, and the regeneration of forest resources;
- take the relation between federal, regional and local level partners in the forest system into account, including the aboriginal populations;
- invent a mechanism for financing forestry, forest management, and research, which is mainly based on forest income and reflects the interests of the regions; and
- take the interests of different forest users and leaseholders into account.

Forestry can only become efficient when the forest income increases, and this goal cannot be reached without a multi-purpose sustainable forest utilization.

Recommendations

In this report we have presented our understanding of the problems facing the Krasnoyarsk forest sector. Based on our analysis we would like to offer the following recommendations for solving the problems discussed in previous parts of the report.

- It is necessary to elaborate an organizational structure for the regional forest sector that meets contemporary requirements and that can help the sector out of its crisis and facilitate efficient functioning under the new market relations.
- Project proposals should be developed and be applied in all parts of the region. Projects should be aimed at technical re-equipment and modernization of the sector's enterprises in order to obtain new wood processing technologies to stimulate the production of high quality products for the domestic and foreign markets. The projects should change the existing production capacities through a renewal and a reconstruction of existing wood processing enterprises and the establishment of new small enterprises based on highly efficient, resource saving technology.
- Projects should be initiated to build new large and middle-sized enterprises based on existing joint-stock companies, including foreign firms, and with efficient support from the state.
- One of the most important measures for pulling the regional forest industrial complex out of the crisis is a revision of the region's investment policy which should also be attractive for foreign capital. Priorities should be set for attracting foreign capital with a view to solving problems of restructuring the forest industrial complex and increase its competitiveness. Hereby the policy should make use of a wide array of measures (not only taxes) in order to stimulate investments (foreign and domestic) in specific projects. These projects should also be geared to developing the export potential, to introducing new technology, to increasing labor productivity, to increasing employment, etc.

- The methods of industrial forest exploitation should gradually be changed so that harvesting technologies and used machinery better agree with the forest nature and make use of its regenerative potential. This would really mean a transition to sustainable forest use and it should be one of the most important directions in which to go in the future to come to grips with economic, social and environmental problems of the forest industrial complex.
- A supportive regime should be elaborated with the purpose of developing the forest industrial complex further. This regime should:
 - improve the legislation regulating forest utilization, and first of all, elaborate regional rules for final harvesting and a procedure for inventory and environmental-economic assessment of forest resources;
 - come up with suggestions on how to secure future forest areas for forest industrial enterprises — large wood consumers should be assigned special forest raw material areas;
 - institute a system of payments for forest resources which can be used for regulating rational forest utilization;
 - create legal privileges and a financial regime favoring investments braced by guarantees and state support;
 - support efficient functioning of all enterprises that achieve financial recovery;
 - ensure a decrease of the tariffs for railway and sea transport, for energy and energy carriers;
 - thoroughly study the technical, economic, and organizational feasibility of developing energy from wood based on low value forests and forest waste;
 - investigate the feasibility of transferring the enterprise owned social structures of forest settlements into municipal property; and
 - strive to restore the scientific and technical capacities of the forest sector.
- Measures should be taken to raise the qualifications of employees in the forest industrial complex.
- Legislators should strive to improve the forest legislation. The current forest legislation is based upon the strategically mistaken notion of federal (state) property for forests and a centralization of forest incomes in the state budget. Thereby the monopoly of the center is strengthened resulting in deficient financing of forestry measures.

Different forms of property of forests are needed: state property (federal property and property of the Subjects of the Federation), municipal and private property. World practice and the Russian practice before 1917 has shown the advantages of the coexistence of competitive property forms for forests. The Forest Code gives the functions of the state forest management and of direct management to one organization only, the Federal Forest Service of the Russian Federation and its regional subdivisions. The functions of state control and direct management should be divided.

Some of the recommendations above, especially concerning the Forest Code and forest policy, are intended as food for discussion. A well-considered discussion will be of help in establishing a strategy of institutional restructuring of the Krasnoyarsk forest sector.

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Appendix: Structure of the Joint-Stock Complex “Yeniseyles” (1997)

I. Parent enterprise

| No. | Name of Enterprise | Basic Activity |
|-----|---|--|
| 1. | Joint-Stock Company “ <i>Yeniseyles</i> ” | Coordination of the activity in the complex, investment and engineering activity |

II. Branch companies in whose capital a share fraction of the parent enterprise and/or its affiliated persons amounts to 25 percent

| No. | Name of Enterprise | Basic Activity |
|-----|---|---------------------------|
| 1. | Joint-Stock Company “ <i>Krasnoyarsk Sawing and Wood Processing Plant</i> ” | Sawing |
| 2. | Joint-Stock Company “ <i>Krasnoyarsk Timber-Handling Plant</i> ” | Sawing, sleeper sawing |
| 3. | Joint-Stock Company “ <i>Krasnoyarsk Pulp and Paper Mill</i> ” | Pulp and paper production |
| 4. | “ <i>Yeniseylesozavod</i> ” Ltd.* | Sawing |
| 5. | “ <i>Yeniseylesdrev</i> ” Ltd.* | Wood processing |
| 6. | “ <i>Yeniseylesstroï</i> ” Ltd.* | Construction |
| 7. | Joint-Stock Company “ <i>Ordzhonikidzevskoe lesozagotovitelnoe predpriyatie</i> ” | Harvesting |
| 8. | “ <i>Ordzhonikidzevsky LPK</i> ” Ltd.* | Sawing, wood processing |
| 9. | Joint-Stock Company “ <i>Badzheysky LPKh</i> ” | Harvesting |

* Enterprises established after privatization.

Financial Group

| No. | Name of Enterprise | Basic Activity |
|-----|---|------------------|
| 1. | Business Bank “ <i>Stromkombank</i> ” * | Banking activity |
| 2. | Investment Company “ <i>Azhio</i> ” Ltd * | Investing |

* Enterprises established after privatization.

Trade Group

| No. | Name of Enterprise | Basic Activity |
|-----|---|---|
| 1. | Joint-Stock Company “ <i>Yeniseylesinvest</i> ” * | Trade and export of forest products |
| 2. | Joint-Stock Company “Commercial Center <i>Yenisey</i> ” | Maintenance supply |
| 3. | Joint-Stock Company “ <i>Kraslestorg</i> ” | Wholesale and retail trade of foodstuff as well as consumer goods |

* Enterprises established after privatization.

Service Group

| No. | Name of Enterprise | Basic Activity |
|-----|--|------------------|
| 1. | “ <i>Yeniseyles Security</i> ” Ltd.* | Security |
| 2. | “Sanatorium <i>Roev Ruchey</i> ” Ltd.* | Medical services |

* Enterprises established after privatization.

III. Enterprises in whose capital a share fraction of the parent enterprise and/or its affiliated persons amounts to 5 percent

| No. | Name of Enterprise | Basic Activity |
|-----|---|----------------------|
| 1. | Joint-Stock Business Bank “ <i>Yenisey</i> ” | Banking activity |
| 2. | Joint-Stock Company “Forest Industrial Holding Company <i>Yenisey</i> — Holding”* | Investing |
| 3. | Siberian Insurance Company “ <i>Astrovaz</i> ”* | Insurance activities |
| 4. | Joint-Stock Company “ <i>Strelkovskaya Lesoperevalochnaya Baza</i> ” | Sawing |
| 5. | Joint-Stock Company “ <i>Bolshemurtinskiy LPKh</i> ” | Harvesting |

* Enterprises established after privatization.

Source: Appendix to “*Skhema upravleniya, koordinatsii i regulyatsii deyatel'nosti predpriyatii lesnogo kompleksa Krasnoyarskogo Kraia*” (The scheme of management, coordination and regulation of activity of the Krasnoyarsk forest complex enterprises), Krasnoyarsk Krai Administration, 1997.