
Russian Far East Forests

September 1998

Inside

Forest Resources

RFE Timber Species

Forest Harvesting

RFE Wood Industry

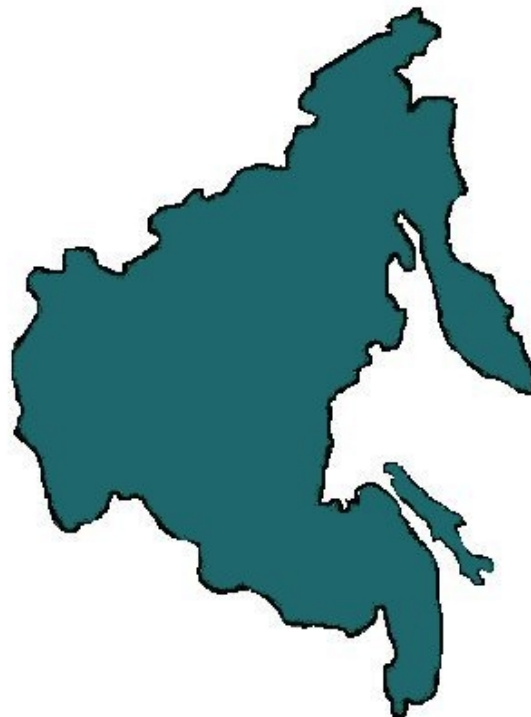
RFE Wood Exports

RFE Forest Sector Outlook

Tables

- Coniferous Wood Reserve, Russia vs. World
- Coniferous Wood Reserve by Region
- RFE Distribution of Pine
- RFE Distribution of Fir
- RFE Volume per hectare
- Annual Allowable Cut
- Roundwood Production
- Panel Production
- Pulp Production
- Primorski Krai Timber Exports
- Primorski Krai Unprocessed Timber Exports

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Russian Far East Forestry

September 1998

Russian forests comprise over one fifth of the world's timber resources, yet wood production has plummeted since the collapse of the Soviet Union. Poor infrastructure and political uncertainty have made access to these resources difficult; but there are small signs that the Russian forestry sector is starting to stabilize after years of decline.

Since 1993, Russian exports of unprocessed timber have grown by 4 million cum to nearly 18 million cum in 1997--an increase of 28%. The Russian federal government is moving to privatize forestland ownership, and new tax legislation is slated to provide tax breaks for forestry investments. The pulp and paper industry has already been largely privatized, with several European firms buying up northwestern Russian pulp mills.

Despite these developments, the need for significant structural changes within Russia's forest industry remain; but with vast quantities of mature wood—especially the Russian Far East (RFE), where harvests are 50-60% below the annual allowable cut—Russia will continue to draw interest.

The Russian Far East region consists of seven administrative units known as "oblast" or "krai":

- Primorsky Krai
- Khabarovsk Krai
- Amurskaya Oblast
- Magadanskaya Oblast
- Kamchatskaya Oblast
- Sakhalinskaya Oblast
- Sakha

Coniferous Wood Reserve Russian Far East (million cum)

Country	Total Forest Area (million hectares)	Share of global forested area %	Total wood volume (million m ³)	Share of global wood volume %	Wood production 1989-1991 (million m ³)	Share of global production %
Russia	764	22	82,110	21	375	11
Brazil	566	16	65,088	17	262	8
Canada	247	7	28,671	7	179	5
U.S.	210	6	24,730	6	508	15
China	134	4	9,789	3	281	8
Indonesia	116	3	19,609	5	167	5
Nordic Countries	53	2	4,942	1	109	3
All other	1,239	36	125,979	33	1,542	47
World	3,442	100	383,726	100	3,462	100

Source: UN Food and Agriculture Organization (FAO); World Resources Institute

Forest Resources

Forestland occupies about 69 percent of the total land area of Russia. Closed canopy forests cover 43 percent of the country, and 78 percent of these closed forests are in Siberia and the Russian Far East.

Compared to other countries, Russia's forest resources per capita is high, at 5.1 ha per person. This compares with 3.4 ha for Nordic countries, 3.4 for North America, and 0.5 for Europe (without Russia, the figure for Europe would be 0.25 ha).

The average timber volume per hectare of coniferous stands is 170 cum., of deciduous hardwoods 130 cum., and of deciduous softwoods 80 cum. The average age of coniferous timber species is more than 150 years, of deciduous hardwoods 100 years, and of deciduous softwoods 40 years.

Russia's timberland is mainly owned by the Federal Office of Forestry, which holds 94% of forested land. Within this, 95% is old-growth forest. 84% of wood stock is found in Siberia and

the Russian Far East (RFE).

Foreign companies have been primarily interested in the vast amount of forest resources in Eastern Siberia and the Russian Far East. With 273.7 million hectares, and 20.4 billion cum of forest stock, the RFE contains 80.6% of Russia's wooded land, 76.8% of growing stock and 80.2% of old-growth.

RFE Timber Species

Total land mass of the RFE is 6.2 million square kilometers—almost seven times the area of British Columbia. Furthermore, the RFE contains 12.3 billion cubic meters of mature timber compared with British Columbia's 8.6 billion cubic meters. However, the land area and total forest fund can be misleading in terms of the potential growth in the forest industry, because of geographical limitations. Like Canada, Eastern Russia's southern border runs approximately along 50 latitude and reaches far north into areas with climatic conditions too severe for forestry development.

Coniferous Wood Reserve Russian Far East (million cum)

Territory	European Red Pine	Spruce	Fir	Larch	Korean Pine	Total
Sakha	1038.9	47.0	3.8	7788.3	74.2	8952.2
Primorsky	0.2	515.0	44.6	176.9	503.4	1240.1
Khabarovsky	116.6	1378.9	85.8	2620.4	154.6	4356.3
Amurskaya	58.0	74.0	8.3	1433.5	1.1	1574.9
Kamchatskaya	0.1	38.1	---	73.6	---	111.8
Magadanskaya	---	---	---	286.1	---	286.1
Sakhalinskaya	0.8	239.0	149.8	192.7	---	582.3
Total Russian Far East	1214.6	2292.0	292.3	12571.5	733.3	17103.7
%	7.1%	13.4%	1.7%	73.5%	4.3%	100%

Source: Valentine Chjolyshev, RFE Forestry Data. Unpublished report. Far Eastern Forestry Research Institute, Khabarovski Krai, August 1995.

The majority of forest lands are covered in coniferous species (71.9 %, 196.9 million hectares) and for the most part are pure, rather than mixed stands. Larch is the most broadly distributed species (60.9 % of all stands, 166.7 million hectares); larch increases in share of forest cover from the south to the north. After larch is white and stone birch (7.6%, 20.7 million hectares). Fir and spruce forests come in third (5.5%, 15.0 million hectares) and their share in forest cover increases from the northwest to the southeast.

The most valuable forestlands in the region are composed of Korean pine (*Pinus koraiensis* Sieb. et Zucc.), also known as Russian cedar. This highly valued species is mostly found in the southern regions of Primorsky and Khabarovsk. Broadleaf deciduous forests contain Korean pine and ten or twenty other tree species. Korean pine forests grow only in southern RFE area (1.2% of total forest lands, 3.3 million hectares). Intensively harvested, their structure has been dramatically changed. In 1991 legislation was passed to protect Korean pine; these restrictions are expected to continue, limiting any significant amount of Korean pine from being harvested in the future.

Mixed forests, dominated by oak (1.1%, 3.1 million hectares), linden (0.3%, 0.8 million hectares)

Some resource information for RFE:

- Average timber stock for all forests is 75 cum. per hectare
- Annual allowable cut is 101.1 mill. cum
- Actual annual logging is 19.3 mil.cum

Stand age, in percentage:

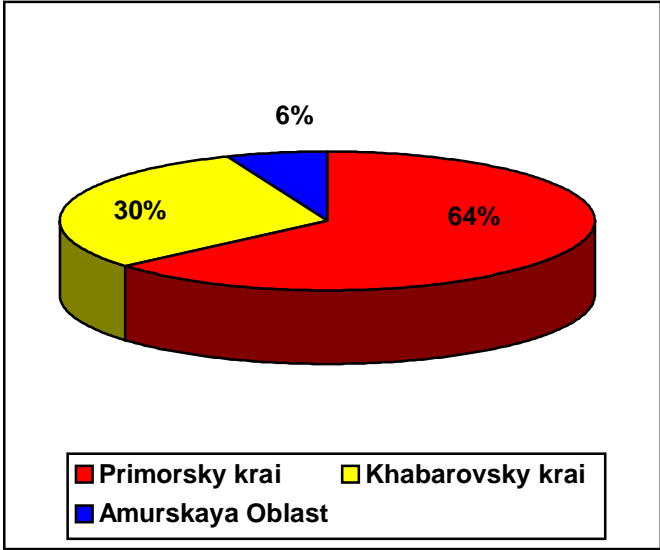
- Young - 17.7%
- Average -27.4%
- Before mature - 9.0%
- Mature and over mature - 45.9%

and ash (0.1%, 0.4 million hectares) are found in the south of the region. Creeping pine (*pinus pumila* Rgl.) and creeping alder (11.8%, 32.4 million hectares) forests grow in higher mountain zones and on flat lands in northern RFE.

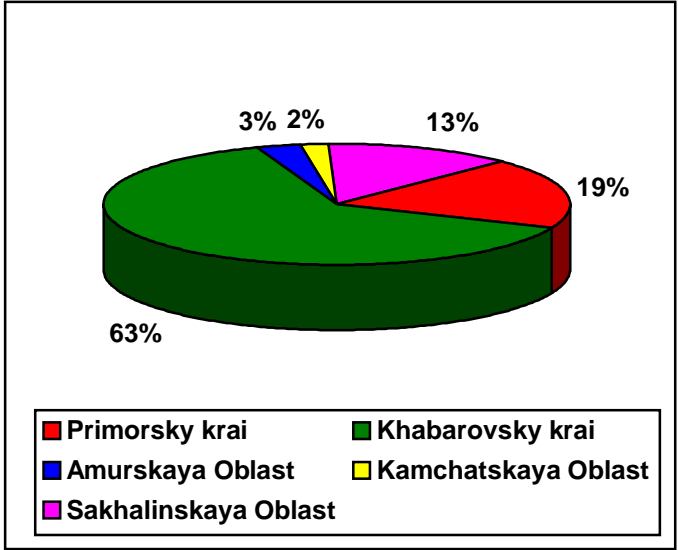
About half of the forests are mature or over mature and are suitable for commercial harvest. Variations across the territory is small: from 33.5% in Amurskaya oblast to 57.7% in Kamchatskaya Oblast.

Following larch, the volume of spruce stocks account for 13.4% of the total coniferous volume. Spruce is mostly found in the southern territories of Primorsky Krai, Khabarovsk, and Sakhalinskaya as these three regions hold 93% of the total

RFE Distribution of Pine



RFE Distribution of Spruce/Fir



Source: Data Base, Economic Research Institute, 1996

Average Volume per hectare for Coniferous Species in RFE (cum)

Territory	European Red Pine	Spruce	Fir	Larch	Korean Pine	Total
Sakha	104	126	181	68	187	71
Primorsky Krai	45	183	151	156	224	191
Khabarovsky Krai	105	170	132	103	212	121
Amurskaya Oblast	83	165	163	109	186	109
Kamchatskaya Oblast	8	182	---	154	---	159
Magadanskaya Oblast	---	---	---	38	---	38
Sakhalinskaya Oblast	12	188	179	118	---	153
Total Russian Far East	102	173	158	76	217	88

Source: Valentine Chjolyshev, RFE Forestry Data. Unpublished report. Far Eastern Forestry Research Institute, Khabarovski Krai, August 1995.

RFE spruce volume. Of all the regions in the RFE, the region with the highest proportion of spruce is Primorsky Krai, where spruce accounts for 41.5% of coniferous volume.

Fir and European Red pine make up the balance of coniferous species in the RFE. As fir only accounts for 1.7 percent of the RFE coniferous volume, and European Red pine is almost entirely found in the harsh northern regions, these species will have little significance in the development of the RFE forest industry.

The best stocked areas in the RFE are the Korean Pine stands in Primorski, which have stocking densities reaching 224 cubic meters per hectare. Overall, Korea Pine stands in the RFE average 217 cubic meters per hectare, well above the next best species of spruce, averaging 173. It should be noted that British Columbia's average coniferous volume per hectare is 197 cubic meters.

RFE Forest Harvesting

Russian Far East timber industry cuts less than half of the total annual allowable timber harvest because of the state of processing technologies and facilities. In the RFE, coniferous stands are the primary harvesting targets although harvest practices are very uneven; some stands are over-exploited and some are not harvested at all. The actual volume of total annual allowable cut harvested in provinces is relatively small; the maximum (50.0%) is in Sakhalinskaya oblast where forest lands have been thoroughly developed.

The volume of coniferous species harvested is higher. When logging was intensive (second half of 1980's), the figure reached 50-60% in provinces with highly developed forest industries, such as Primorsky and Khabarovsky krais. In the last 30 years (1965-1995) the annual allowable cut has decreased by 15%. This is accounted for, in part, by a smaller volume of mature forest available for exploitation and in part by a growing awareness of alternative functions of the region's forests.

RFE Wood Industry

Economic reforms and the crisis in 1992-1994, forced changes in the production structure of the forest industry. Prior to 1992, roundwood output accounted for 40.3% of total industry production; wood processing (lumber, container and wood chip production) 41.3%; pulp and paper production 16.0% and the forest chemical industry contributed 2.4%. By 1994-1995, roundwood production made up 74-85% of total production and all other forms of production made up a mere 15-25%.

Roundwood Production

Commercial timber production in the Russian Far East and its provinces have declined in the last ten years by a factor of four; in less productive provinces the decline is even greater, at 20-70 times.

Lumber Production

The decline in lumber production has been more dramatic, dropping 5.3 times in the last ten years in the Russian Far East and as much as 9 times in Primorsky krai.

Operators now find it more profitable to export roundwood than to sell it to local sawmills since the latter are unable to buy timber due to high prices. High timber prices have shut down many wood processing facilities and sawmills.

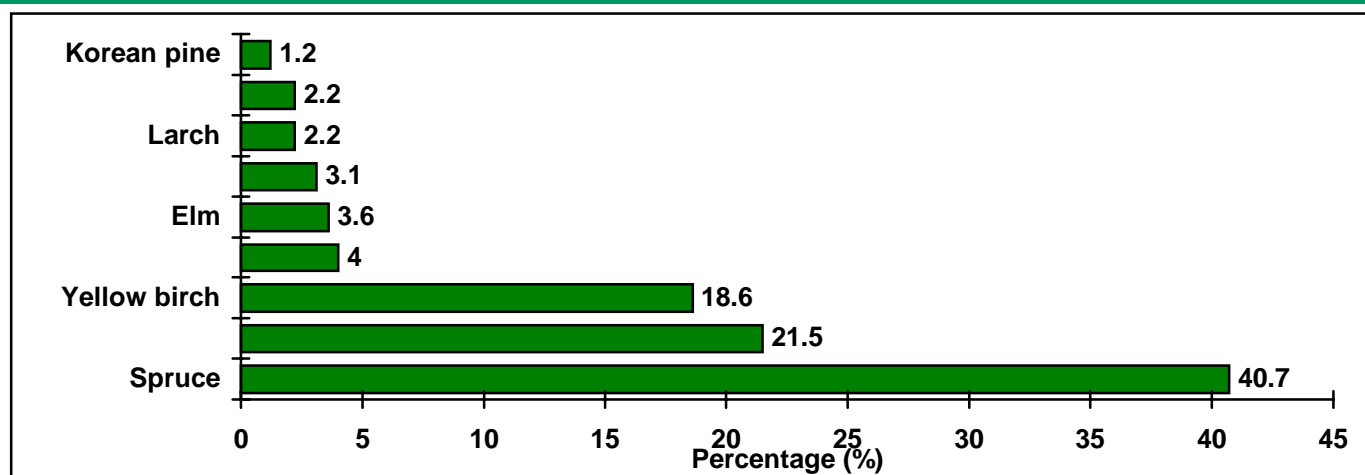
In addition to specialized operations, almost every ship building and ship repair plant is involved in wood processing and even furniture production. The latter are distinguished by high-tech production lines and almost all are equipped with dry kilns. Large machinery building plants (mainly military oriented) are also equipped with wood processing operations.

Annual Allowable Cut in the Russian Far East (million cum)

Territory	Annual Allowable Cut (AAC)		Actual logging (million cubic meters)	Actual harvests as % of AAC
	Total	Coniferous forests		
Sakha	33.0	32.5	3.0	9.1
Primorsky krai	10.7	6.7	3.4	31.8
Khabarovskiy krai	33.3	25.9	7.1	21.3
Amurskaya krai	15.8	11.6	3.1	19.6
Kamchatskaya oblast	1.9	0.7	0.4	21.1
Magadanskaya oblast	0.4	0.4	0.05	12.5
Sakhalinskaya oblast	4.4	4.1	2.2	50.0
Total Russian Far East	101.1	82.4	19.3	19.6

Source: Data Base, Economic Research Institute, 1996

Harvested Timber Composition in Primorsky Krai %



Based upon a 1994 survey of 35 logging enterprises in Primorsky krai,
Total 1994 harvest (3.0 million cubic meters)

Roundwood Production in the Russian Far East (thousand cum)

Provinces	1985	1990	1994	1995
Sakha republic (Yakutiya)	1843	1886	464	308
Primorsky krai	4519	3716	1157	1018
Khabarovskiy krai	11084	9507	2702	2700
Amurskaya oblast	4700	4549	1340	1600
Kamchatskaya oblast	654	511	72	68
Magadanskaya oblast	252	180	16	6
Sakhalinskaya oblast	3017	2669	1124	1096
Russian Far East Total	26069	23457	6937	6816

Roundwood Production in the Russian Far East (thousand cum)

Provinces	1985	1990	1994	1995
Sakha republic (Yakutiya)	810	809	226	140
Primorsky krai	1495	1044	168	106
Khabarovskiy krai	1692	1541	346	302
Amurskaya oblast	756	863	207	100
Kamchatskaya oblast	270	210	37	30
Magadanskaya oblast	188	107	11	3
Sakhalinskaya oblast	585	448	140	90
Russian Far East Total	6179	5415	1185	777

Source: Database, Economic Research Institute, 1996

Panel Production

Fiber and chipboard production has declined more slowly in comparison with timber and sawn board production. The manufacture of plywood has all but ceased.

Provinces	1985	1990	1994	1995
Chipboards (thousands cubic meters)				
Primorsky krai	75	98	28	7
Khabarovsky krai	40	91	24	15
Kamchatskaya oblast	1	0.6	-	-
Russian Far East	117	189	52	22
Fiberboard (millions square meters)				
Primorsky krai	1.7	1.6	0.3	0.1
Khabarovsky krai	21.3	22.2	5.3	3.9
Russian Far East	23.0	23.8	5.6	4.0
Plywood (thousands cubic meters)				
Primorsky krai	23.5	17.2	0.6	-
Khabarovsky krai	10.0	6.2	0.6	-
Amurskaya oblast	1.2	1.2	-	-
Russian Far East	35.9	25.3	1.7	-

Source: Data Base, Economic Research Institute, 1996

Pulp Production

Provinces	1985	1990	1994	1995
Commercial Cellulose (thousand tons)				
Khabarovsky krai	95	97	20	21
Sakhalinskaya oblast	81	72	18	28
Russian Far East	176	169	38	49
Paper (thousand tons)				
Amurskaya oblast	4	3	0.03	-
Sakhalinskaya oblast	216	204	11	14
Russian Far East	229	215	11	14
Cardboard (thousand tons)				
Khabarovsky krai	120	156	5	3
Sakhalinskaya oblast	72	85	3	8
Russian Far East	192	241	8	11

Source: Data Base, Economic Research Institute, 1996

Russian Far East Exports of Principal Forest Commodities

Provinces of the RFE	1994	1995	1996
Commercial timber (thousands cubic meters)			
Primorsky Krai	660	469	1200
Khabarovsky Krai	2590	2445	2900
Amurskaya Oblast	525	600	600
Kamchatskaya Oblast	20	30	35
Sakhalinskaya Oblast	586	670	600
Russian Far East	4393	4219	5341
Lumber (thousands cubic meters)			
Primorsky Krai	70	100	120
Kamchatskaya Oblast	4	5	8
Magadanskaya Oblast	3	3	3
Sakhalinskaya Oblast	33	6	50
Russian Far East	110	114	181
Technological chips (thousands tons)			
Primorsky Krai	31	30	35
Sakhalinskaya Oblast	1	---	---
Russian Far East	32	30	35
Cellulose Pulp (thousands tons)			
Khabarovsky Krai	6.6	13.1	7.0
Sakhalinskaya Oblast	12.2	23.4	15.0
Russian Far East	18.8	36.5	22.0
Paper (thousands tons)			
Sakhalinskaya oblast & RFE	13.8	13.7	----

Source: Statistical handbooks for RFE provinces.

RFE Wood Exports

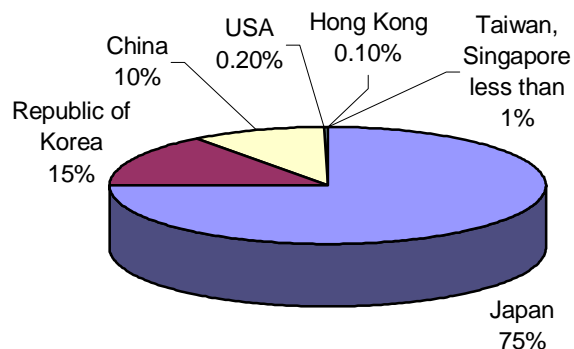
The Russian Far East accounts for 40% of Russia's total round wood exports (Table 9). Analysts felt that of any region in Russia, the Russian Far East had greatest potential to earn hard currency from its wood products. However, there is a current downward trend that is in part explained by domestic costs associated with producing export grade goods, by increases in transportation tariffs and by unwarranted competition among exporters.

Timber produced in Siberia, where energy is less expensive, is successfully displacing timber exported from the RFE to the Pacific Rim countries. Timber exports represent the largest percentage of exports in the RFE. Khabarovskiy krai and Sakhalinskaya oblast are the two major exporting provinces in the region. Primorsky krai is a major exporting province in total forest production (round wood, lumber and limited amount of wood chips), though its proportion represents a mere 7% of the general export volume for 1994.

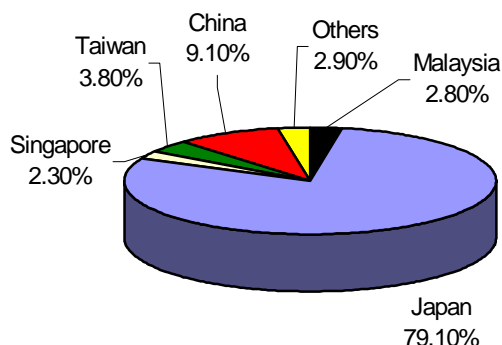
RFE Forest Sector Outlook

When the current economic reforms began in Russia, there was no single concept for the structural reorganization of the forest sector in the Russian Far East. With the exception of organizational changes, all other structural changes were a result of cuts in centralized funding for forest sector development in addition to new restrictions on the use of forest resources and a breakdown of traditional economic links within the former Soviet Union. Equally important was a shortage of capital investment funds at the enterprise level. Given limited federal funding, these enterprises have had fewer chances to reorient manufacturing facilities to produce new types of products. Another major constraint is the industry's shortage of modern, efficient equipment to log, haul and process timber.

Primorski krai Unprocessed Timber Material Export Destinations Jan-Sept, 1995



Primorski krai Timber Export Destinations Jan-Sept, 1995



Importing Country	Percent
Plywood	
China	100 %
Wood Cellulose	
China	53.4 %
Republic of Korea	46.6 %
Newsprint	
Vietnam	100.0 %

Source: Data by the Pacific Center of the Economic Development and Cooperation,

The systematic renovation of the Russian Far East forest sector can and will be oriented toward both foreign and inter regional markets and will be closely linked to a general, regional economic recovery and specifically linked to an increase in the volume of construction.

Unless significant structural reorganization and technical refitting of current operations takes place, the industry will find it very difficult to achieve the changes necessary to effectively end the current situation.

A lack of new logging, hauling, and primary and secondary wood processing equipment to convert raw timber into high quality wood products hinders structural reorganization of the industry. Fixed assets of most enterprises are dilapidated and obsolete, and rolling rock is worn out and are a danger to both employees and environment.

It is estimated that more than half of wood processing equipment is obsolete. Current equipment needs to be replaced by modern, automated, and ecologically safe equipment. This will

provide an opportunity to introduce new timber harvesting technologies.

The Russian forestry sector is especially sensitive to the country's overall economic health. The forest sector was the first to experience the effects of economic stagnation and it will possibly be the first in the Russian Far East region to overcome this slump. The timber industry can be a pioneer, the first to initiate stabilization and growth tendencies important to regional production processes.

In stride with general economic stabilization, additional steps are needed for the forest sector to find a way out of the economic slump. This includes rationalizing the timber sector structure to emphasis timber processing that is 85-90% efficient and that meets world quality standards. An increase in production efficiencies will not only result in better use of raw materials, where there is total utilization of timber at each stage of processing, it will also create additional jobs and act as a center for new value added enterprises throughout the region.
