C I N T R A F O R

Working Paper

62

FORESTRY IN TRANSITION:

OUTLOOK FOR PRODUCTION AND TRADE

IN EASTERN RUSSIA TO 2000

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This material is based upon work supported by the Cooperative State Research Service, US Department of Agriculture, and the State of Washington Department of Trade and Economic Development. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the funding agency.

EXECUTIVE SUMMARY

Forestry Developments in Russia

- Russia's forestry sector has recently received increasing international attention. Previous analysis by CINTRAFOR and others have sought to better understand this sector under ongoing political and economic reforms. Russia's international role in forestry, however, is increasingly determined by regional and local conditions, with substantial differences becoming evident between European Russia and the forests of Eastern Russia, including East Siberia and the Far East. This analysis reviews the recent trends in production and trade, and examines the emerging role of these two dominant Eastern Russian territories relative to the timber situation in the Pacific Rim.

- Policies to assist Russia during the transition to a market economy have drastically altered production, consumption and trade. The Eastern Region of Russia, including the Far East and East Siberia is largely characterized by extensive undeveloped forest resources, a relatively low population, a lack of infrastructure and transportation, and low levels of industrialization (capital investment and capacity) for the forestry sector.

- Political and economic change is the norm throughout Russia. While the decline in industrial output has recently slowed, the lack of performance measures for the forestry sector under the slowly emerging market conditions makes it difficult to forecast the future. It is obvious, however, that Eastern Russia's forests will play a significant and increasing role in the Pacific Rim.

Recent Industry Performance

- The declines in Russia's forest sector performance, first evident in 1990, continued largely unabated in 1995. The disruptions have affected both production and export trade. The sector has been plagued by high interest rates, lack of credit, shortage of capital for investment to replace obsolete equipment, lack of marketing knowledge (especially export markets), tax and license issues, and steeply rising rail and transportation costs.

- The forest sector of the Eastern Russia (East Siberia and Far East) has not escaped the difficulties of the sector at the national level. The trends of declining harvest and production and spiraling costs hold significance for the near-term outlook for Eastern Russia's participation in the timber economy of the Pacific Rim.

- The Russian Far East (RFE) produced approximately 8 percent of the Russia's timber industry output prior to the wave of economic and political change. RFE roundwood harvest was estimated at 42 million cubic meters in 1989, but had declined to 13.5 million cubic meters for 1994.

- Harvest from East Siberia has also fallen sharply, from an estimated 73.4 million cubic meters in 1988 to only 24.7 million cubic meters in 1994.

- Declining harvests have lead to significant cutbacks in the domestic production of forest products throughout Russia as demand has shrunk. Export shipments have also declined, but by proportionately smaller increments as producers have sought to shift from disappearing domestic markets to hard currency foreign markets.

International Trade In Forest Products

- Trade in forest products from European (Western) Russia is primarily comprised of softwood lumber, plywood, and pulp and paper products. In contrast, trade from Eastern Russia is primarily unprocessed roundwood and smaller volumes of lumber and other processed material.

- Trade in industrial logs have been almost entirely to Pacific Rim markets (primarily Japan) and China. Lower grade logs (including pulpwood) are also important to Russia's Pacific region trade. Trade from Eastern Russia is primarily conifer logs. Almost all of Russia's exports destined for the Pacific Rim originate in the Far East, and to a much lesser extent, East Siberia. In 1994, total Russian industrial log exports were 14.85 million cubic meters, down from 18.7 million in 1989. Trade in conifer logs with Japan rebounded slightly in 1993, then reached 5.0 million cubic meters in 1995.

- Russia's total softwood lumber exports dropped to almost 5.4 million cubic meters (1994), down from 7.7 million in 1989. In contrast with logs, Russia's trade with Japan in softwood lumber has been small. Volume was below 200,000 cubic meters from 1983 through 1987, then reached 424,000 cubic meters in 1995..

- Pulp, paper and paperboard from the Far East region is largely utilized domestically.

- The majority of Russia's Pacific Rim wood exports have been directed towards Japan, both North and South Korea, and to a lesser extent to China (pulpwood). Chip exports were reported to be entirely to Japan. South Korea has emerged recently as an importer of Russia Far East timber, also in the form of unprocessed conifer logs. China has been an important market, from both the Far East and East Siberian regions.

Forest Resources - Area and Volume

- The Russian Republic includes some 771 million hectares of forest, widely spread across the entire national landscape. Only 446 million ha. is considered as presently accessible, indicating current developed access or a likely potential for developing access within the next twenty years. For East Siberia, some 110 million ha. (47 percent) of the forest is inaccessible, while in the Far East 169 million ha (60 percent) is so considered.

- East Siberia and the Far East together account for approximately 438 million hectares of forest including 380 million hectares of conifer forests, comprising 72 percent of the Russia conifer forest total. The East Siberia and the Far East dominate most conifer species within Russia. Proportionately, these two regions account for the largest share of larch forests (271.6 million ha; 97.7 percent) and true fir (11.2 million ha; 71.3 percent). Pine, spruce, and cedar-pine forests are also nationally significant.

- While the forests of Russia contain an estimated 82 billion cubic meters of growing stock, only approximately 55 billion cubic meters are presently accessible (67 percent). For the Far East, just 12 billion board feet (57 percent) of the inventory is presently accessible, while in East Siberia 17 billion cubic meters are presently accessible - amounting to 59 percent.

- The forests of Eastern Russia account for some 47.4 billion cubic meters inventory, or over 64.6 percent of the total inventory for the Russian Federation.

Privatization

- A key strategy of Russian economic reform has been to privatize much of the state owned productive capacity, with unprofitable State enterprises as the primary target. Privatization has placed the responsibility for profits and losses squarely on local managers.

- Privatization has, however, not extended to the ownership of forest lands. Overall use and regulation of forests now falls under the Russian Federation "Fundamentals of Forestry Act" enacted in March 1993. Assignment of rights to utilize forests rests with the Russian Federation "Forest Authority" and "its subordinate units.." In practice, control of forest use (as allocated by the State) has been asserted at the Republic, Territorial, or District levels, resulting in considerable conflict and uncertainty as to actual legal authority and reliability of contracts.

Development Outlook for Eastern Russia's Trade

- The bulk of direct harvest from forestry operations ("principal harvest") is directly linked to the calculated "Annual Allowable Cut" (AAC) which is determined for both currently and "potentially" accessible forest lands (primarily Group III forests) as well as the total forest area including inaccessible and reserved forests. The total physical AAC for the Far East is reported at 188 million cubic meters, while the East Siberia AAC is 279 million cubic meters.

- For the Far East, the total "currently and potentially accessible" AAC is 105 million cubic meters, with 87 million cubic meters of conifer and 18 million cubic meters of deciduous timber. Of the total, about 57 million cubic meters are derived from currently accessible forests while 48 million cubic meters could only be made available from developing "potentially" accessible forests.

- East Siberia has an estimated "currently and potentially accessible" AAC of 179 million cubic meters, including 129 million cubic meters of conifer and 51 million cubic meters of deciduous timber. Some 109 million cubic meters of the AAC is from currently accessible forests, while 70 million cubic meters would be from "potentially " accessible forests.

- Even the "currently and potentially accessible" AAC can be misleading, particularly in the present economic and political climate of the Russian Republic. A part of the AAC is estimated here to be economically "not realistically" accessible under either the prevailing 1992 economic conditions nor is expected to become economically "realistic" before the year 2000.

- The estimated currently and potentially available AAC for the Far East of 105 million cubic meters based on currently accessible and "potentially" accessible forests falls to only 74 million cubic meters, excluding the near-term "unrealistic" component. This lower economic volume would be made up of 57 million cubic meters of conifer and 17 million cubic meters of deciduous timber. This is only 30 percent of the physical AAC of 188 million cubic meters which incorporates inaccessible and reserved forests as well. . For conifer species, the current economically accessible AAC is only 27 percent of the physical total. Total 1994 actual harvest for the RFE was reported at 13.6 million cubic meters, including 12.5 million cubic meters of conifer timber

- For East Siberia, the "currently accessible" AAC of 109 million cubic meters contrasts with the gross physical AAC of 279 million cubic meters (39 percent). Including the "realistic" potential harvest brings the estimate to 166 million cubic meters, or to just 59 percent of the

physical total. Actual harvest was 24.7 million cubic meters including 23 million cubic meters of conifers.

Economic Implications- Near Term Projections

- The reform of costs and prices in Russia and the liberalization of economic transactions and accountability highlight the importance of understanding economic accessibility as increasingly reflected by market-based costs and prices and the influences on harvesting and production decisions. A hypothetical ten percent increase in real prices, would, for example, increase the feasibility of accessing some larger portion of the present unrealistically available AAC. Such a real price increase could result in an potential economic AAC of 126 million cubic meters (vs. 117 million cubic meters at 1992 real prices) for Eastern Russia, a level well above the actual harvest of recent years which have been seriously impacted by market disruptions, lack of credit for operations, and the unavailability of investment capital required for industry restructuring and modernization.

- Near-term projections were formulated using the Russian Forest Sector Model which integrates information related to the forest and resource base, timber harvesting, timber processing and markets, reflecting constraints imposed by both resources and the performance of the Russian economy under continuing reforms. Domestic consumption was related to the trends in gross domestic product but constrained to meet minimum politically acceptable levels in the face of economic collapse.

Projected Domestic Consumption and Trade

- Total Russian annual wood supply was estimated at 227 million cubic meters for 1990-1995 with total domestic consumption of wood materials (which compete with exports) at an annual average of 207 million cubic meters. Wood exports were projected at an estimated 20 million cubic meters annually. Regional consumption projections for Eastern Russia were not estimated separately. Approximately 49 million cubic meters of the estimated Eastern Russia commercial wood supply (57 million cubic meters) would be delivered to domestic mills in Eastern Russia for further processing into manufactured products, while approximately 8 million cubic meters would be exported (6 million cubic meters) or shipped to other parts of Russia for processing (2 million cubic meters). .

- For the five year period ending in 2000, the estimated harvest and the volumes potentially exported fluctuate widely under the three alternative future scenarios representing a range of possible economic conditions.

- For the baseline (or "middle") scenario, the annual total Russian available wood supply was estimated at 225 million cubic meters, with 204 million consumed domestically, and about 20 million cubic meters available for export. Eastern Russia was estimated to produce about 63 million cubic meters, with 47 million cubic meters 'consumed' for processing within the region, 9 million cubic meters shipped to European Russia or the former Soviet Republics, and 7 million cubic meters shipped into the Pacific Rim.

- Under the pessimistic scenario, a total of 199 million cubic meters would be available annually within Russia, with 190 million consumed domestically and only 9 million cubic meters would likely be exported. Eastern Russia would produce about 64 million cubic meters, consuming about 50 million cubic meters within the region, and shipping 13 million

cubic meters to European Russia or the former Soviet republics. Without political intervention, exports could drop to zero in favor of protecting domestic consumption at minimum levels.

- With the most optimistic scenario, total annual wood supply increases to 302 million cubic meters of which 256 million cubic meters would be domestically consumed. Wood potentially available for export could be as much as 46 million cubic meters annually. Eastern Russia would produce as much as 102 million cubic meters, consuming 56 million cubic meters within the region for domestic processing. Significantly larger volumes (34 million cubic meters would be consumed within European Russia (17 million cubic meters) or the former Soviet Republics (17 million cubic meters), while as much as 12 million cubic meters would be exported to the Pacific Rim.

- The baseline projection of Russian total roundwood and chip exports for 1996-2000 indicate that a static level would be achieved relative to pre-reform years. Under more pessimistic near-term conditions, exports could fall. The optimistic scenario indicates a substantial increase in hard currency exports, with the national volume growing to almost 30 million cubic meters. Possible trends in gross domestic product within Russia are the primary determinant of production and consumption decisions.

- Under optimistic conditions, Pacific Rim exports would increase, for both high grade and lower grade materials. Lower grade exports (pulpwood and chips) would increase to just over 5 million cubic meters for Pacific Rim markets. Sawlog exports would increase to about 8 million cubic meters, equaling pre-economic reform levels.

- For 1996-2000, baseline Russian lumber exports would be 3.2 million cubic meters, falling slightly over 1990-95 levels.

- Under pessimistic conditions, total Russian domestic use of lumber could drop sharply, and a total of 5.1 million cubic meters would be potentially exported, but primarily from European Russia. Eastern Russia exports would remain flat due to the lack of investment capital to improve processing quality for international markets.

- The optimistic scenario would see Russia's lumber exports increase to a total of 5.7 million cubic meters, with 5.5 million cubic meters originating in European Russia since almost all near-term investment in modernization and equipment would first take place in western Russia.

- Eastern Russia lumber exports to the Pacific Rim would remain at only 200 thousand cubic meters under all scenarios due to the deteriorating productive capacity and quality limitations of the existing sawmill sector in East Siberia and the Far East.

- Estimated exports of wood-based panels (including plywood) are small with essentially all exports derived from the European regions of Russia and going to western European hard currency markets. Export of market pulp, processed paper, or paperboard products will also be very limited from East Siberia and the Far East to the Pacific Rim.

- Trade relations between Russia and its neighbors has been determined in part been by past political relationships as well as new economic realities, including the need to earn foreign exchange. Relations with Western Europe and the Pacific Rim (primarily Japan) have opened, where hard currency exports have provided considerable strength to the overall Russian Federation trade balances. The emergence of new trade partners include the Middle East, North Africa, South Korea, and potentially North America.

- Foreign participation in the forestry and forest products sector of the Russian Far East has been limited but is growing. The oldest bilateral linkages have been with North Korea and China. Japan has also had a long involvement with the forestry sector in Eastern Russia. South Korea has been actively involved since about 1990, although the level has declined significantly since 1995.

- As relations with the United States have improved in the post-reform period, there has been a very active interest in the Eastern Russia as a potential new source of timber. Imports of unprocessed logs into the Pacific Northwest have been prohibited due to regulations based on potential for pest and disease risks to US forests and the higher cost of treatment which would be required prior to importation. Interest in importing processed and dried lumber has grown, however, yet volumes imported to date have been small.

CONCLUSIONS

- The forestry sector in Eastern Russia, including East Siberia and the Far East, has substantial potential for future development. Timber resources are relatively abundant but utilization is presently limited by lack of access, high transport costs, shortages of investment capital, political uncertainty, and high comparative costs due to inappropriate and outdated technology.

- Substantial capital investment will be required to transform the existing industry to standards of technology and product quality required for the industry to become truly competitive in international markets of the Pacific Rim. Domestic sources are scarce and credit difficult, while international investors remain highly cautious of risks associated with political uncertainty and unstable economic conditions under ongoing reforms.

- Overall, large investments in infrastructure (access, transportation, housing, etc.) will also be required to make the harvesting and processing of timber economically viable under more market-oriented criteria of profit and loss. In Eastern Russia, territorial and local governments simply do not have the required funds required to undertake such infrastructure investments.

- The export of unprocessed timber and primary lumber products will, in the near term, remain as the most attractive export even as domestic prices continue to rise towards international levels. Eastern Russia has not yet become competitive for exporting a wider variety of manufactured wood products.

- Prospects for the period ending in 2000 will depend on the success of emerging policies to promote investment, and the re-investment of a larger share of the hard currency earnings by the owners-managers of enterprises within the forest sector.

- The longer-term prospect for wood exports remains clouded. Economic realities, together with sustainability limits imposed on forest resource management may effectively limit future utilization to levels near or below the historic centrally-planned levels. The wood contribution from Eastern Russia to the Pacific Rim beyond the turn of the century will ultimately reflect the economic realities of the region's comparative forest products competitiveness in both international and domestic markets in European Russia.

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INTRODUCTION

The forests of the former Soviet Union (and now primarily the Russian Federation) have held a special attraction for forestry professionals, development experts, and government and private analysts throughout the world. This interest is in part due to the limited information which has been available to those in the West regarding these vast resources. More correctly, interest is high because of the dramatic changes sweeping the Russian political and economic landscapes, potentially bringing considerable adjustment within the forestry sector and changing relationships with Russia's neighbors. Nowhere is this interest more widespread than in the Asian-Pacific Rim region as linked to the Eastern Regions of Russia encompassing the Far East and East Siberia.

The International Institute for Applied Systems Analysis (IIASA) and the Center for International Trade in Forest Products (CINTRAFOR) have pursued extensive research and analysis relating to the forests of the former Soviet Union and Russia, including over eight years of collaboration. This report provides a synthesis of prior published works and draws upon ongoing work in progress at both IIASA and CINTRAFOR. The near-term projections reported here derive from the unpublished doctoral dissertation completed by Dr. Backman at the University of Washington in 1993.[1] These projections are also reported in greater detail by Backman and Waggener in a recent Working Paper.[2] Other related analyses of the Russian forestry sector are listed in the References.[3]

Political and Economic Reform - A Sector in Transition

Political and economic change continues unabated in Russia. The unfolding drama over the distribution of power has generated a paralysis in government which is continuing to cast a long shadow over the future paths for regional development and trade which Russia will follow. New regional and territorial structures are also emerging in this power vacuum, further clouding

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[1] See: Backman, Charles A., Prospects for Wood Raw Material Exports to Pacific Rim and European Markets up until the Year 2000, College of Forest Resources, University of Washington, Seattle, Washington. 358 pp.

[2] See: Backman, Charles A. And Waggener, Thomas R., The Russian Forestry Sector Outlook and Export Potential for Unprocessed Logs and Primary Forest Products through 2000", CINTRAFOR Working Paper 46, College of Forest Resources, University of Washington, Seattle. March 1994. 90 pp.

[3] In addition to the published sources cited herein, this paper also draws upon the unpublished presentation made by Backman at the 75th Annual Woodland Meeting of the Canadian Pulp and Paper Association held in Edmonton, April 5-8, 1994.

the future.[4] Against the unfolding political and economic turmoil, Russia's economic performance has continued to deteriorate.[5]

Estimating Future Sector Trends

While the decline in industrial output has slowed, the lack of long term historical data describing the performance of the forestry sector under market conditions makes it difficult to forecast the future with any certainty. The likely direction which production, consumption, and trade of forest products will follow will be shaped by new conditions both internally and externally which differ significantly with the prior centrally-planned economy. Although the desire for hard currency will undoubtedly support a desire to maintain historic (pre-reform) export levels to hard currency trading areas, the prospects for exports to countries belonging to the former COMECON trading bloc and republics of the former USSR is less certain.[6,7] Furthermore, the existence of quotas and other controls to limit the volume of exports are political decisions which will be based on the need to support minimal desired levels of domestic consumption in spite of export potential.

Near term policies which seek to assist Russia during the economic transition to a market economy will alter production, consumption and trade performance. Further, policies which seek to insulate the Russian population from the harsh consequences of adjustment will constrain economic performance and slow the pace towards a closer balance between domestic and international market performance. Abnormally high tariffs effectively discourage economic activity.[8] For example, applying export tariffs to forest products acts as a disincentive to export since the tariffs siphon off a portion of the economic returns which could be used to encourage restructuring and greater economic activity within the forest sector. Additionally, the rapidly changing cost and price structure, superimposed on the dissolution of the centrally planned economy as Russia strives for more market-determined price levels, makes the determination of

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[4]Stanglin, Dourlas and Pope, Victoria, "*Two cheers for demokratiya*", US News and World Report, 5 Apr. 1993, p. 42-52.

[5]Gross Domestic Product by the third quarter of 1992 had plummeted to levels less than two-thirds those existing in 1989. Industrial output showed similar declines. Value of exports have declined (1991 - $50.8 billion; 1992 - $38.1 billion), while estimated external debt has increased (1991 - $54.6 billion; 1992 - $69.1 billion). Retail prices have skyrocketed with inflation estimated to be nearly 800 percent in 1992. Witt, Howard, "Economy: All bets are on privatization", *The Seattle Times*, 28 Mar., 1993, p. A3

[6]Eronen, Jarmo and Simula, Markhu, *Russia and Other Ex-Soviet Republics as Future Paper Markets*, Conference Paper, Prima Conference, Helsinki, Finland, May 12-14, 1993, p. 11

[7]Estimates of sawn lumber exports to the unified Germany from Russia are in the range of 400 thousand to 600 thousand cubic meters. The combined total prior to unification for the two separate Germanys amounted to the range between 1.6 million and 1.8 million cubic meters. (*European Market Update*, 10 May, 1993, p. 1).

[8] *Timber Trade Journal*, 22 May, 1993

plausible future scenarios for demand, price, and costs difficult. While the eventual desired outcome of the reforms can perhaps be agreed upon, whether Russia's forest sector can successfully navigate the shoals which lie between the centrally planned economy and the market oriented one still remains to be seen.

Despite the uncertainties noted above, this Report seeks to illuminate some of the broad dimensions within which forest sector performance, including production and export of wood and fiber products can be expected to fall during the rest of the decade ending in the year 2000.

While providing an overview of the Russian forestry sector, this Chapter highlights the major developments and outlook for Eastern Russia, including the Far East and East Siberia (See **Map 1**). In previous work by Backman and Waggener, the Eastern Russia region is referenced as the Asian-Pacific Region. This region is largely characterized by extensive undeveloped forest resources, a relatively low population, a lack of infrastructure and transportation, and low levels of industrialization (capital investment and capacity) for the forestry sector. It is this undeveloped potential that has captured much international interest. The realization of that forest potential, however, is constrained in the near term by the general political and economic restructuring noted above which impacts the overall Russian forestry sector and the Russian economy as a whole. Thus the near-term outlook for the forestry sector of Eastern Russia must be framed within the context of the conditions and circumstances "inherited" by the "new" Russia at the time of the dramatic changes initially implemented in 1990.

RECENT INDUSTRY PERFORMANCE

National Forestry Sector Performance

Harvest and Production

The transition from a centrally planned economy to a market economy has been very painful for the country as a whole, and equally so for the forest sector. The declines in forest sector performance, first evident in 1990, has continued largely unabated into early 1996. The disruptions of this sector have affected both production and export trade. By 1992, Russian production of roundwood had declined to 238 million cubic meters, some thirty percent below the pre-reform levels attained in 1989.[9] A subsequent Russian forecast of forest sector output under the new reforms was made in 1993 and projected further drops in commercial roundwood output of 18 percent, lumber output of 26 percent, plywood of 16 percent, and particle board of 17 percent.[10]

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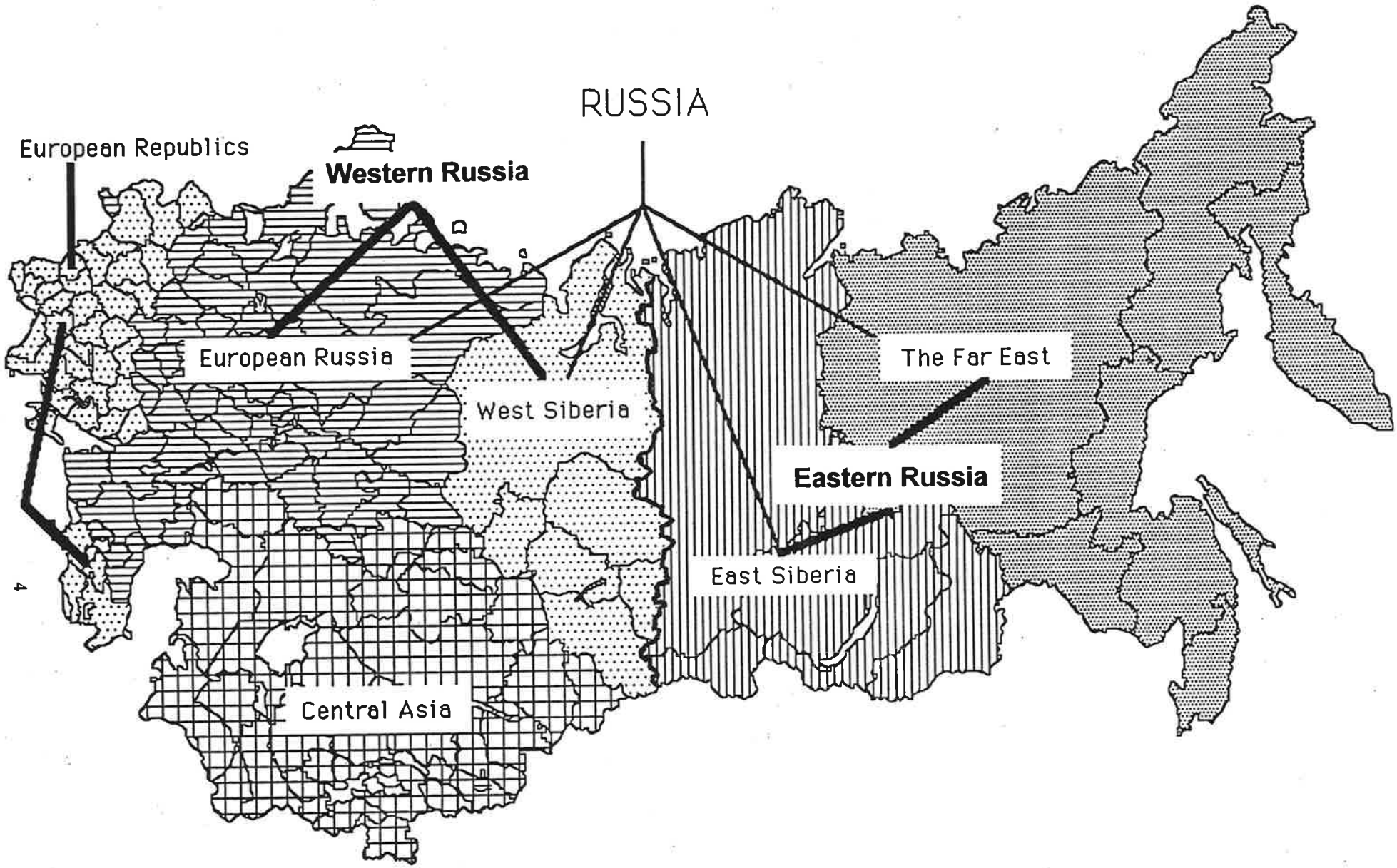
[9] Narodnoye Khozaustvo RSFSR v 1992g., p. 400

[10] *European Market Update*, 22 Apr., 1993, p. 6



Map 1. Russian Federation and Major Regions

The Russian total timber harvest was reported at 119 million cubic meters for 1994 with a slight increase to about 120 million cubic meters (preliminary estimate) for 1995, and a projected output to 122 million cubic meters for 1996 (FAS, 1994, FAS, 1996). In comparison, the reported 1995 industrial roundwood production was only 79 million cubic meters (FAO, 1996). The estimated total 1993 forest removal before the full impact of reforms was evident was 207.5 million cubic million cubic meters (as reported by FAO), and included 107 million cubic meters of conifer and 100 million cubic meters on deciduous timber and fiber. Of this, approximately 158.5 million cubic meters were utilized for industrial "roundwood" and 17.3 million cubic meters as pulpwood. It was estimated that the total Russian harvest fell as much as one-third during the first quarter of 1994, a period representing the main harvesting season.[11] Conifer sawlog and veneer log harvest for 1993 was reported at 52.7 million cubic meters, down from 69.8 million cubic meters in 1992 and a high of 142.8 million cubic meters in 1987 for the former USSR.[12] Total conifer harvest was estimated at 88 million cubic meters in 1994 and 91 million cubic meters in 1995.

As with the total forest products sector, production has been falling, reflecting economic conditions and the inability of Russia to generate the required capital investment to modernize the sector in light of changing cost-price structures. The output of lumber has suffered steep reductions, falling to 53 million cubic meters by 1992, approximately two-thirds of production level of 1990, and some 30 million cubic meters below levels achieved in 1989.[13] Total lumber production was an estimated 25.5 million cubic meters in 1995. Conifer sawnwood was just 32.8 million cubic meters in 1993, down from 43.7 million cubic meters in 1992. Output in 1995 was approximately 21.6 million cubic meters.

Similar declines in the other branches of the forest sector were reported between 1992-1995 as well.[14] Wood based panel production was 3.4 million cubic meters in 1994 and an estimated 3.2 million cubic meters for 1995, off from 7.4 million cubic meters in 1992. Panel production in 1989 prior to reforms was an estimated 13.1 million cubic meters for the Russian Federation and 15 million cubic meters for the former USSR.

Production of wood pulp declined from an estimated 11.1 million cubic meters in 1989 to 6.5 million cubic meters in 1992 and 3.2 million cubic meters in 1994 before increasing in 1995 to about 4.5 million cubic meters. The production of paper and paperboard also declined sharply, from approximately 10 million metric tons in 1989 to just over 2.2 million metric tons of paper

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[11] *European Market Update*, 5 September 1994

[12] FAO reports harvest for the former USSR through 1993 but only provides estimates for the Russian Federation since 1992. In 1993, Russia accounted for 91.3 percent of the conifer sawlog and veneer log harvest.

[13] *Narodnoye Khozaustvo RSFSR v 1992 g.*, p. 400

[14] Output of chemical pulp in 1992 amounted to 5.7 million tons, paper - 3.6 million tons, and paperboard - 2.2 million tons. In 1989, comparative levels of production were 8.1 million tons, 5.3 million tons, and 3.1 million tons, respectively. Narodnoye *Khozaustvo RSFSR v 1992 , v 1989,* various pages

and 1.2 million metric tons of cardboard and containerboard in 1994. Total pulp and paper production was approximately 7.2 million metric tons in 1995.

Prices for forest commodities have experienced rapid increases. For 1993, the average price index for all commodities increased by a factor of 7.6, while wood and paper products increased by 16 times. In the period January-September 1994, the all commodity average increased by 10.9 times, while wood and paper products increased by a factor of 29.3.[15] The sector has been plagued by high interest rates, lack of credit, shortage of capital for investment, obsolete equipment, lack of marketing knowledge (especially export markets), tax and license issues, and steeply rising rail and transportation costs. In spite of higher prices for products, the forestry sector has increasingly found operations unprofitable. For 1994, profitability had declined to an overall estimated return of about 6 percent. Returns to lumber had become negative (-5 percent) while pulping (14 percent) and wood chemistry production (29 percent) were above a 10 percent profitability level (FAS, 1996) . However, the sector still contributes approximately 6 percent of national output and sustains employment of approximately 6 million.

The loss of assured customers in central Asia, poor quality control against international standards, and potential competition from imported timber products has led to protectionist policies seeking to sustain the non-competitive and inefficient segments of the industry. At the same time, the funding of long term modernization of mills by the State has essentially stopped, and foreign investors are primarily "waiting" so see the outcome of major political and economic policy debates. It is estimated that during the first half of 1994 only $US 22 million in foreign investment went into the forest and forest products sector.[16]

Trends for the Eastern Russian Region

The forest sector of the Eastern Russia Region includes East Siberia and the Far East. This economic region has not escaped the difficulties of the sector at the national level.

Russian Far East

The Russian Far East (RFE) produced approximately 8 percent of the timber industry output prior to the wave of economic and political changes. Production and output for 1989 is shown below in Table 1.

Total roundwood harvest of all types was estimated at 42 million cubic meters in 1989, declining to 30 million cubic meters in 1992 and to 10.1 million cubic meters in 1994. The reported commercial roundwood supply available for utilization fell from 25.8 million cubic

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[15] *European Market Update*, March 1995

[16] *European Market Update*, March 1995

meters in 1989 to 16 million cubic meters in 1992. By 1994, the reported available commercial roundwood had declined to an estimated 6.9 million cubic meters.[17] Approximately 80 percent of the harvest is conifer species. However, official data sources have not captured all of the activity in the harvesting sector, particularly since the breakup of the former Soviet Union. Backman (1995) showed that the commercial roundwood production could have been more that 15 percent higher in 1992 and nearly 25 percent higher in 1993 than the reported levels.

TABLE 1. RUSSIA FAR EAST
FOREST PRODUCTS OUTPUT 1989

	PRIMORIE	KHABAROVSK	AMUR	SAKHALIN	OTHER	TOTAL
LOGS (000 CM) TOTAL ROUNDWOOD	3956	11780	5357	3060	2771	26924
INDUSTRIAL	3406	9901	4086	2596	1341	22330
LUMBER (000 CM)	1323	2165	1026	458	1283	6255
PLYWOOD (000 CM)	21	12	2	--	1	35
FIBERBOARD (mill Sq. M)	2	22	--	--	--	24
PARTICLEBOARD (000 CM)	121	63	--	--	--	185
PAPER (000 MT)	--	9	4	204	--	217
CARDBOARD (000 MT)	--	175	--	91	--	266
PULP (000 MT) (Chemical)	--	298	--	320	--	618
CHIPS (000 CM)	282	585	160	22	14	1063

Sources: Backman (1995), Burdin (1991), Agland Investment/Ward International (1993)

As shown in Table 1, the primary production of forest products is in Khabarovsk and Primorye. Amur and Yakutia (Sakha) produce important volumes of industrial roundwood, followed by Sakhalin. Primary processing, however, is heavily concentrated in Primorye and Khabarovsk, and less so in Amur. Lumber and plywood production is primarily in these two territories, followed by Yakut and Amur. Pulp production is centered in Sakhalin and Khabarovsk, with almost all paper production in Sakhalin. Production capacity for pulp and paper is limited in the Far East. In Khabarovsk Krai, one pulp mill is located in Amur. Seven mills, developed by Japan in the period 1914-1935, are located on Sakhalin Island.

[17] Discussion of the Russian Far East and East Siberia draws upon work in progress by Backman at the International Institute for Applied Systems Analysis (IIASA) and will be the topic of forthcoming publications.

Lumber production has declined to approximately 1.2 million cubic meters by 1994, while plywood production was only 1.7 million cubic meters for 1994. Other wood based panels (particleboard) had declined to 51.8 thousand cubic meters, pulp production has declined to 47.5 thousand metric tons, and paper-paperboard production has declined to about 19.3 thousand metric tons for 1994.

East Siberia

In 1989, the total harvest from East Siberia was an estimated 73 million cubic meters. This had declined to 36 million cubic meters by 1993, and to just 24.7 million cubic meters in 1994. East Siberia has traditionally accounted for approximately 22 percent of the Russian Federation total. Approximately 90 percent of the harvest is conifer species. However, these official statistics are believed to understate the commercial roundwood actually produced and available for use by the forestry sector. Backman (1995) estimated that the commercial wood harvested in East Siberia could have been 15 percent higher in 1992 and one-sixth higher in 1993.

Detailed information is not available regarding trends in production by Territory within East Siberia. Lumber production for the East Siberian region, however, declined from an estimated 19 million cubic meters in 1989 to 12 million cubic meters in 1992 and only 6 million cubic meters in 1994. Wood based panels declined to 244 thousand cubic meters in 1994 from about 1.1 million cubic meters in 1989. Pulp production declined from almost 2 million metric tons (1989) to only 914 thousand metric tons in 1994.

International Trade in Forest Products

Initial declines in domestic forestry sector production under economic and political reforms were more pronounced than have been the immediate changes in the foreign trade of forest products.[18]. In 1994, total industrial log exports amounted to 14.9 million cubic meters, down from 18.7 million in 1989. Log exports are estimated at 17 million cubic meters for 1995 with a forecast of 20 million cubic meters for 1996. Softwood lumber exports dropped also, falling to almost 6.5 million cubic meters in 1995, down from 7.7 million in 1989.[19] Plywood exports were at 680 thousand cubic meters in 1995, also well below pre-reform levels. Paper exports also suffered similar declines. In 1993 exports of paper and paperboard products amounted to only 482 thousand metric tons while 1989 exports were 1,020 thousand metric tons.[20]

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[18] The data presented in this paragraph considers export statistics of products destined for countries not belonging to the former Soviet Union.

[19] *Forest Products 1993*, United Nations, FAO, Agrostat Database, 1995

[20] *Narodnoye Khozaustvo RSFSR v 1990 g.*, p. 59.

Export volumes and value are summarized in **Table 2** below for the years 1993 and 1994.

TABLE 2. RUSSIA EXPORTS 1993-94
BY VOLUME AND VALUE

EXPORT VALUE ($US Million)	1994	1993	RATIO 1994:1993
Round Timber	686	662	104
Sawtimber (Lumber)	586	515	114
Plywood	138	106	130
Cellulose (Pulp)	309	213	145
Newsprint	166	125	133
EXPORT VOLUME			
Round Timber (1000 CM)	12,798	11,539	111
Sawtimber (Lumber) 1000 CM	5,360	4,638	116
Plywood (1000 CM)	568	379	150
Cellulose (Pulp) 1000 MT	911	858	106
Newsprint (1000 MT)	597	482	124

Source:

Trade in forest products from European Russia is primarily comprised of softwood lumber, plywood, and pulp and paper products, with relatively less trade in roundwood. Recent trade in pulpwood (small diameter, lower quality logs) has, however, increased this component of trade. In contrast, trade from the Asian-Pacific region of Russia is primarily in unprocessed roundwood and significantly smaller volumes of lumber and other processed material. The output mix for the Far East Region is summarized in **Table 3** below for 1992.

TABLE 3 - RUSSIA FAR EAST EXPORTS
FOREST PRODUCTS 1992

COMMODITY	VOLUME	SHARE
LOGS (Mill CM)	7.0	77%
LUMBER (Mill CM)	1.0	13%
PULP (Mill MT)	0.1	3%
CHIPS (Mill MT)	0.3	4%
PLYWOOD (Mill CM)	--	--
OTHER*	--	1%
CARDBOARD & PAPER (Mill MT)	0.3	2%

* Other includes fiberboard, paper, plywood, furniture, etc.

Source: Agland Investment Services, Inc./Ward International (1993)

Trade in roundwood is oriented to the Pacific. Export of industrial sawlogs for 1965-89 has been almost entirely to Pacific Rim markets (Japan) and China. Lower grade logs (including pulpwood) are also important to Russia's Pacific region trade. While exports to Western Europe (primarily Scandinavia) dominate, exports to both East Europe and the Pacific Rim are important, approaching 2 million cubic meters annually during the 1986-89 period. While some portion of this material may be utilized for low value sawnwood products, the majority is undoubtedly directed towards fiber for pulping. In 1995, Russia (primarily the Far East) exported approximately 5.4 million cubic meters of logs and 425 thousand cubic meters of lumber to Japan. Conifer species accounted for the majority of these exports, including 4.9 million cubic meters of logs and 424 thousand cubic meters of lumber.

While the Pacific Rim dominated the export of logs, the majority of conifer lumber exports have been to West Europe, East Europe, the Middle East, and North Africa. A much smaller volume has traditionally gone to the Pacific Rim, reflecting markets and quality requirements as well as the limited production capacity and problems of small scattered mills and transportation difficulties.

The pattern for the export of plywood closely follows that for conifer lumber, with primary exports to Western Europe, followed by East Europe. However, exports to the Middle East and North Africa closely match exports to the Pacific Rim, yet volumes remain modest in comparison to European markets. Trade in other wood-based panels has been quite modest, including approximately 80 million square feet of fiberboard for the period 1980-89, with European markets (west and east) accounting for approximately 75 percent. Particle board exports averaged about 325 thousand cubic meters from 1980-89, with heavy dependence on East European markets, but with a growing volume going to Western Europe after 1986. Pacific Rim

exports of fiberboard and particle board averaged less than 50 thousand cubic meters from 1986-89.

The historic pattern of production and net trade in paper and paperboard for the period 1965-1989 indicates that net trade has been quite modest relative to production and consumption. Pacific Rim trade has been almost negligible. Major trade in pulp and paper has been with East Europe, followed by Western Europe. For paper products, the Middle East and North Africa has also been a small but important market.

Far East Trade

Trade statistics for the Far East region is less complete. Nevertheless, some clear trends are evident relative to trade from this area. While major domestic markets have been far to the west, the growing potential of the Pacific Rim is of immediate relevance.

The dominant trade from the Far East region is for unprocessed logs, primarily conifer logs. The primary market has been Japan. Almost all of Russia's exports noted above destined for the Pacific Rim originate in the Far East, and to a much lesser extent, East Siberia. Transportation distances (and increasingly costs) limit exports from other regions destined for the Pacific Rim..

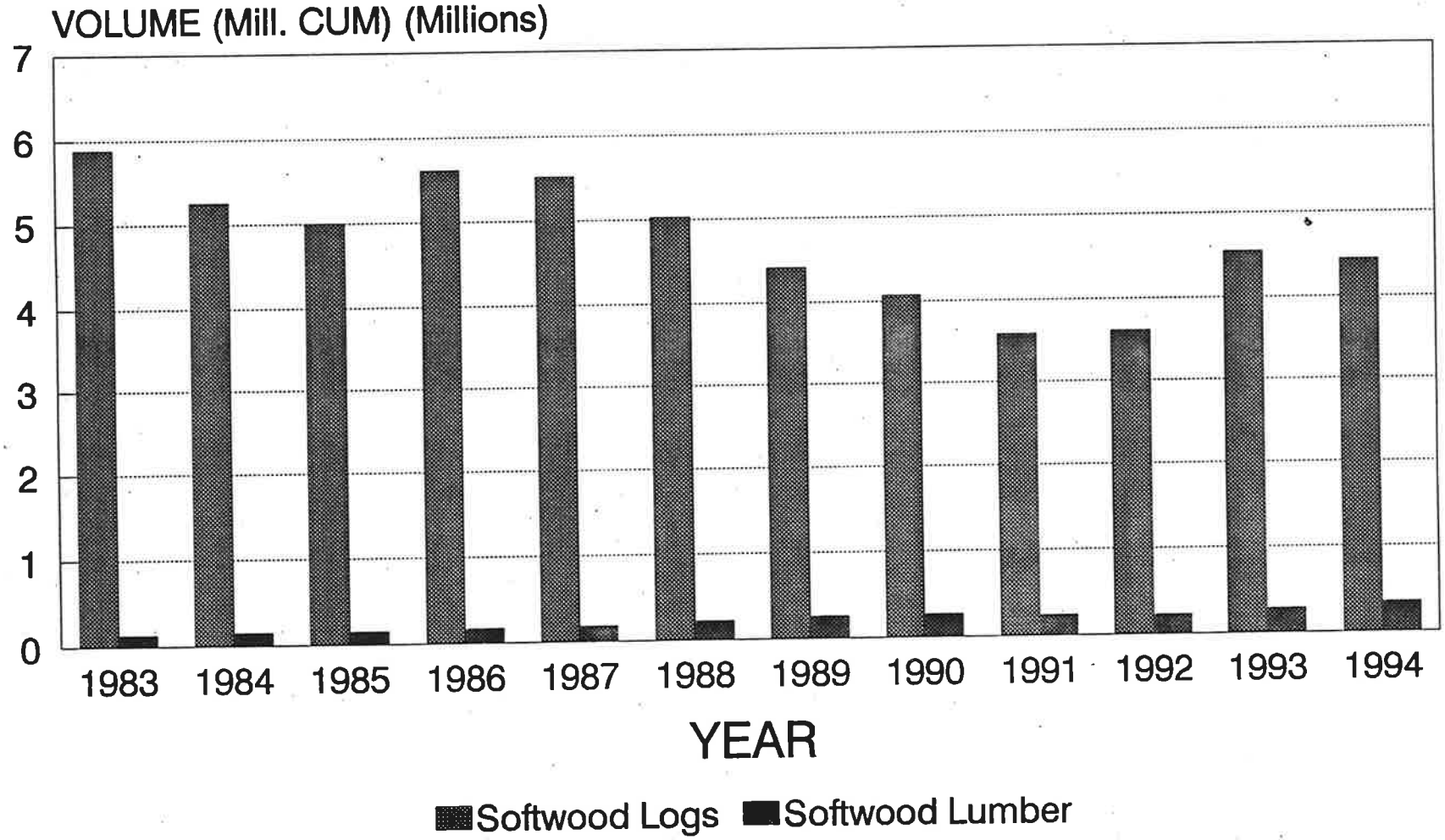
Softwood logs have dominated this trade (**Figure 1**), showing a variable trend since 1983 when volume was approximately 5.9 million cubic meters. Volume declined sharply after 1987, falling to a low of 3.6 million cubic meters in 1991 and 1992, in part reflecting the disruptions resulting from the uncertain policy and economic conditions. Exports were estimated at 4.2 million cubic meters in 1995.

Trade in logs with Japan rebounded slightly in 1993 and 1994, and reaching 4.9 million cubic meters, 1995. In contrast with logs, Russia Far East trade in softwood lumber has been small. Volume was below 200,000 cubic meters from 1983 through 1987, then increased to 265,000 cubic meters in 1990. Again, trade was impacted by economic conditions, and lumber volume declined modestly to 239 thousand cubic meters in 1991 and 224,000 thousand cubic meters in 1992 before again increasing. Volume reached 424,000 in 1995, but only 114 thousand cubic meters from the RFE. (Sheingauz et al, 1966). At present, North America is the major timber supply competitor for Russia in the Japan market. The US is the major exporter of conifer logs to Japan, while Canada and the US both exceed Russia as a supplier of conifer lumber.

In total, pulp, paper and paperboard from the Far East region is largely utilized internally, with approximately 40 percent consumed within the Far East, 48 percent shipped to other regions of the former Soviet Union, and 12 only percent exported.[21] It is evident that the majority of exports have been directed towards Japan, both North and South Korea, and to a lesser extent to China (pulpwood). Estimates indicate the export of only 9 thousand tons of pulp in 1992, and an

[21] Estimates are for 1985 as reported by Larsen (1991)

FIGURE 1 - JAPAN IMPORT OF USSR/RUSSIAN SOFTWOOD LOGS AND LUMBER 1983-94



estimated 18.8 thousand tons in 1994, mainly to North and South Korea.[22] Exports of paper and paperboard were 1.9 thousand tons in 1992, increasing to an estimated 30 thousand tons in 1995, with the Korea's as the major market. Export of wood chips were 486.8 thousand cubic meters in 1991 and 303.1 thousand cubic meters for 1992. Estimated chip export was 30 thousand metric tons for 1995. Chip exports were reported to be entirely to Japan.

Japan reports an important but declining import of pulp logs from Russia as shown in Table 4. Pulp log imports peaked at 755.6 thousand cubic meters in 1984 but declined to only 321.1 thousand cubic meters in 1992. Japan is also the dominant market for the export of wood chips from Russia. Japan's import of chips have been primarily conifer species. Volume exceeded 500 thousand cubic meters in 1989-90 and then declined, reflecting both the market dynamics in Japan as well as the supply disruptions in the Far East after 1990. Non-Conifer chips are also imported by Japan but at a much smaller level. While non-conifer chip imports exceeded 100 thousand cubic meters in 1987-89, and again in 1991, the volume in 1992 was only 70 thousand cubic meters. Japan has entered into a fourth agreement with Russia in 1985 for chip and pulp log trade which will become effective in 1986. Japan has agreed to provide equipment for forestry development and machinery for chip production, and to import 8.2 million cubic meters of chips and 3 million cubic meters of non-conifer pulp logs through 1995. Problems within Russia in supplying chips and the comparative advantage of importing chips from North America were cited as reasons for the failure to achieve the intended level of trade with Russia.[23] In addition to Russia and the US sources, Japan also imports non-conifer chips from Australia and Chile, and conifer chips from Canada, New Zealand, and Australia.

South Korea has emerged recently as an importer of Russia Far East timber, primarily in the form of unprocessed conifer logs. Imports in 1993 were estimated at 600,000 cubic meters, with an increase to 800,000 cubic meters in 1994.

China has also been an important market for Russia timber, from both the Far East and East Siberian regions. While detailed information is not available by region, China trade statistics indicate that total log volume has fluctuated widely, growing from 285,000 cubic meters in 1981 to a high of 2.9 million cubic meters in 1986. Trade remained at about 2.4 million cubic meters per year through 1989, thereafter declining rapidly to only 621 thousand cubic meters by 1992. Hardwood log exports have been minor, seldom exceeding 10,000 cubic meters. However, reported exports of hardwood logs to China were 73,000 for 1992, Sawnwood exports are almost all conifer species also. Exports were nil until 1988, when volume was only 3 thousand cubic meters. Volume increased in 1989 and 1990, reaching 36.4 thousand cubic meters. Sawnwood exports to China thereafter declined, falling to 25.6 thousand cubic meters in 1991 and to only 18.9 thousand cubic meters in 1992. In addition to the "official" trade, there is undocumented barter trade, particularly in the border region between the RFE and NE China.

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[22] Estimates for Far East trade provided by Dr. Alexander Sheingauz, private correspondence, 10 November 1994.

[23] Personal correspondence, Dr. Hiroaki Kakizawa, Dept. Forest Science, Hokkaido University, Sapporo, Japan. Oct. 19, 1994.

TABLE 4: JAPAN IMPORT OF PULP AND PAPER MATERIALS FROM RUSSIA

YEAR	PULP LOGS (1000 CUM)	CHIP (Conifer) (1000 CUM)	CHIP (Non-Conifer) (1000 CUM)	PULP (Tons)
1983	636.5	335.0	50.3	-
1984	755.6	336.9	52.1	-
1985	528.9	335.7	40.7	-
1986	470.2	430.2	79.8	-
1987	465.2	480.4	100.2	-
1988	394.3	415.8	107.5	-
1989	515.6	533.8	105.7	-
1990	516.5	522.4	77.5	-
1991	449.4	352.8	105.5	1,473
1992	321.2	257.8	70.1	1,285

Source: Dr. Hiroake Kakizawa, Dept. Forest Science, Hokkaido University, Sapporo

While there has been growing interest in Russian timber in the United States, particularly in response to changing timber supply from public lands in the Pacific Northwest, the realization of trade has remained elusive. The import of unprocessed logs is presently banned due to pest and disease problems. The import of softwood lumber has only recently started, with imports in 1992 at only 188 cubic meters, with an increase to 8.7 thousand cubic meters in 1993. Volume fell to just 3.3 thousand cubic meters in 1994. Trade in softwood plywood was recorded for the first time in 1994 at just over 1 thousand cubic meters, with hardwood plywood exports to the US were initially reported in 1992. Volume in 1992 was 11 thousand cubic meters, with an increase to 26 thousand cubic meters in 1993 and to 61 thousand cubic meters in 1994. Although not identified by geographic origin, it is highly likely that the modest volumes of Russian Republic hardwood plywood imported into the United States originated in European Russia rather than the Far East.[24]

The export of lumber and logs from the Far East remains an important component of the total trade structure. Forest products are second only behind fishing in importance for the RFE. By territory, the share of trade (by value) is as noted in **Table 5**. Below.

[24] Personal communications (Waggener) with Forest Products Division, Foreign Agricultural Service (FAS), US Department of Commerce. Washington, D.C. May 25, 1995.

TABLE 5 - FOREST PRODUCTS TRADE IN RUSSIA FAR EAST
SHARE OF TOTAL TRADE BY VALUE, SELECTED YEARS

TERRITORY - RFE	YEAR	SHARE OF TRADE (%)
PRIMORSK KRAI	1988	19.4
Lumber and Wood	1992	0.8
KHABAROVSK KRAI	1988	65.6
Raw Materials	1992	37.0
AMURSK OBLAST	1990	62.9
Wood Products	1992	11.6
KAMCHATSK OBLAST	1990	11.6
Logs	1992	2.2
MAGADANSK OBLAST	1990	--
Wood Products	1992	3.6
SAKHALIN OBLAST	1991	10.9
Timber and Wood	1992	14.3
YAKUT ASSR (SAKHA)	1989	6.5
Timber and Wood	1992	2.6

Source: Far East Update, November 1993

Russia, including the Far East region, has a stated goal of increasing the export of "value added" forest products and to curb log exports in the future to a level of approximately 14 million cubic meters. In 1994, Russia abolished export quotas and export licensing. "Special Exporters" however remained operational, including some 200 firms operating in the forest products market. Roslesprom, the State Timber organization (successor to the Ministry of Forest Industry) established Roexportles in October 1994 as a Joint Stock Company to facilitate State timber trade. Roslesprom retains controlling interest. Together with Exportles, the prior State monopoly export agency, trade is still highly controlled, with the stated intent of improving the trade performance of the sector. In early 1995, Roslesprom indicated to goal to increase exports by 27 percent in 1995, and to increase value added output exports to 66.8 percent of the total. Milled products, however, have fallen fro 36.8 percent of the export mix in 1993 to just over 34.2 percent in 1994[25]. The Far East is particularly hard pressed by the lack of capital investment in capacity, mill modernization, and operating finances required in order to increase international competitiveness.

[25] International Trade Administration (BISNIS), January 13, 1995. See also Timber Trades Journal, March 4, 1995.

PHYSICAL VS ECONOMIC RESOURCE CAPACITY

Russian Republic

Russia (as the former Soviet Union) is an immense country. Ranging from Central Europe to the Pacific, this nation is not easily categorized, even for a sector so seemingly straightforward as "forests". The Russian Republic includes some 771 million hectares of forest, widely spread across the entire national landscape. While including all forest lands, this total is perhaps misleading, since much of the forest is presently inaccessible (**Figure 2**).

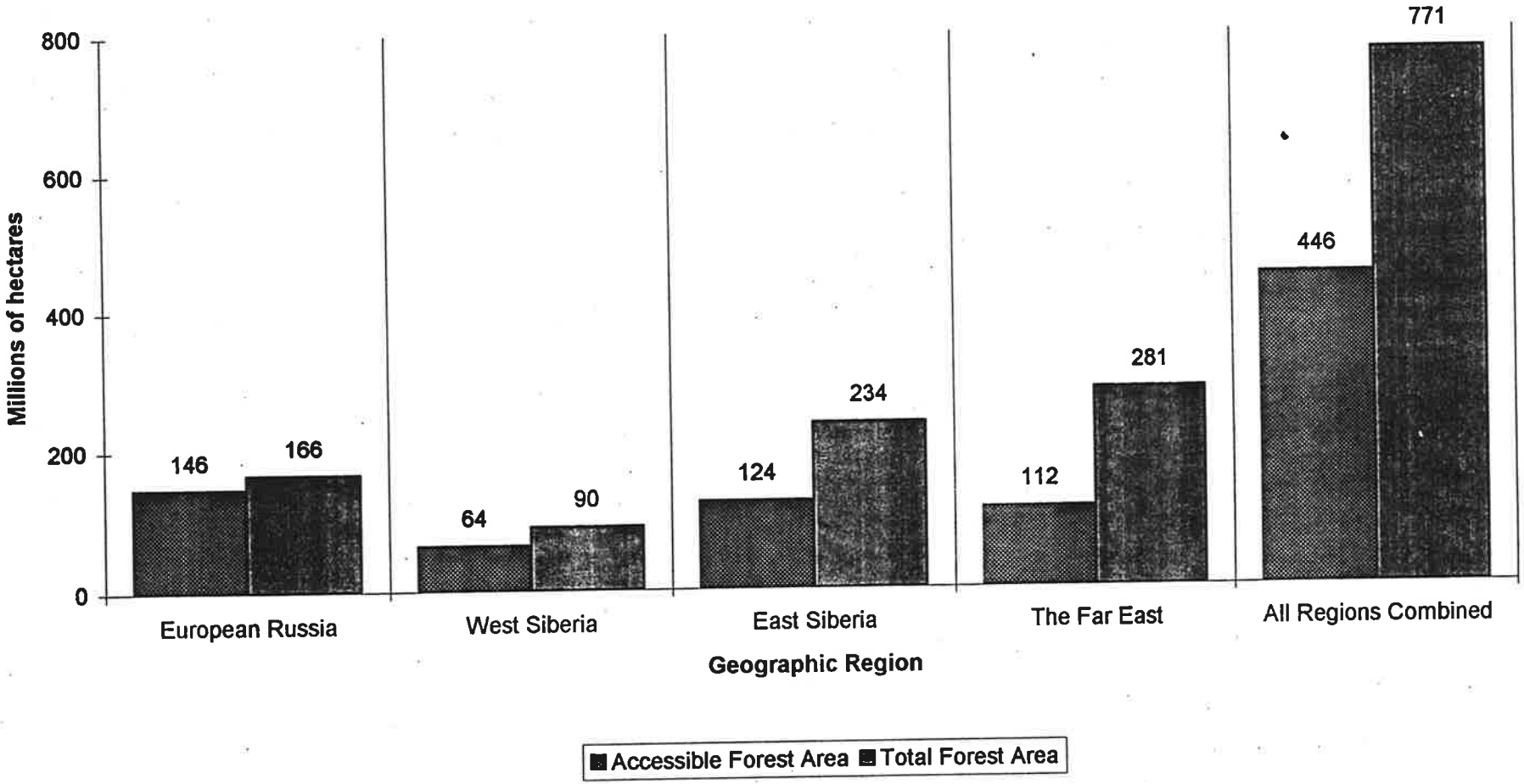
As shown in Figure 2, of the total of 771 million ha., only some 446 million ha. is considered presently accessible. Figure 2 also shows the distribution of both total and accessible forest by geographic region. While almost all forests in the European region is considered accessible, an increasingly larger proportion of the forest is presently inaccessible as one moves eastward. For East Siberia, some 110 million ha. (47 percent) of the forest is inaccessible, while for the Far East a total of 169 million ha (60 percent) is so considered.

Figure 3 shows the significance of the difference between total forest land and accessible forests in terms of the estimated growing stock. While the forests of Russia contain an estimated 82 billion cubic meters of growing stock, only approximately 55 billion cubic meters are presently accessible (67 percent). Fully 43 percent of the inventory in the Far East and 41 percent of the inventory in the East Siberian regions are presently inaccessible - amounting to some 21 billion cubic meters. It is these two geographic regions of Russia that are of the most significance to the Pacific Rim Region as discussed in more detail in other sections of this Chapter.

The distribution of the principal timber species is not uniform, however. As shown in **Figure 4**, the forests of Russia are classified into three major groups: Conifer, Hardwood Deciduous, and Softwood Deciduous. In addition, a classification of "Other" is used for both unclassified forests or smaller areas of mixed composition, including forests of species other than the "primary" species. Conifer forests are by far the most significant, followed by "soft" deciduous species (primarily birch, aspen, and black alder).

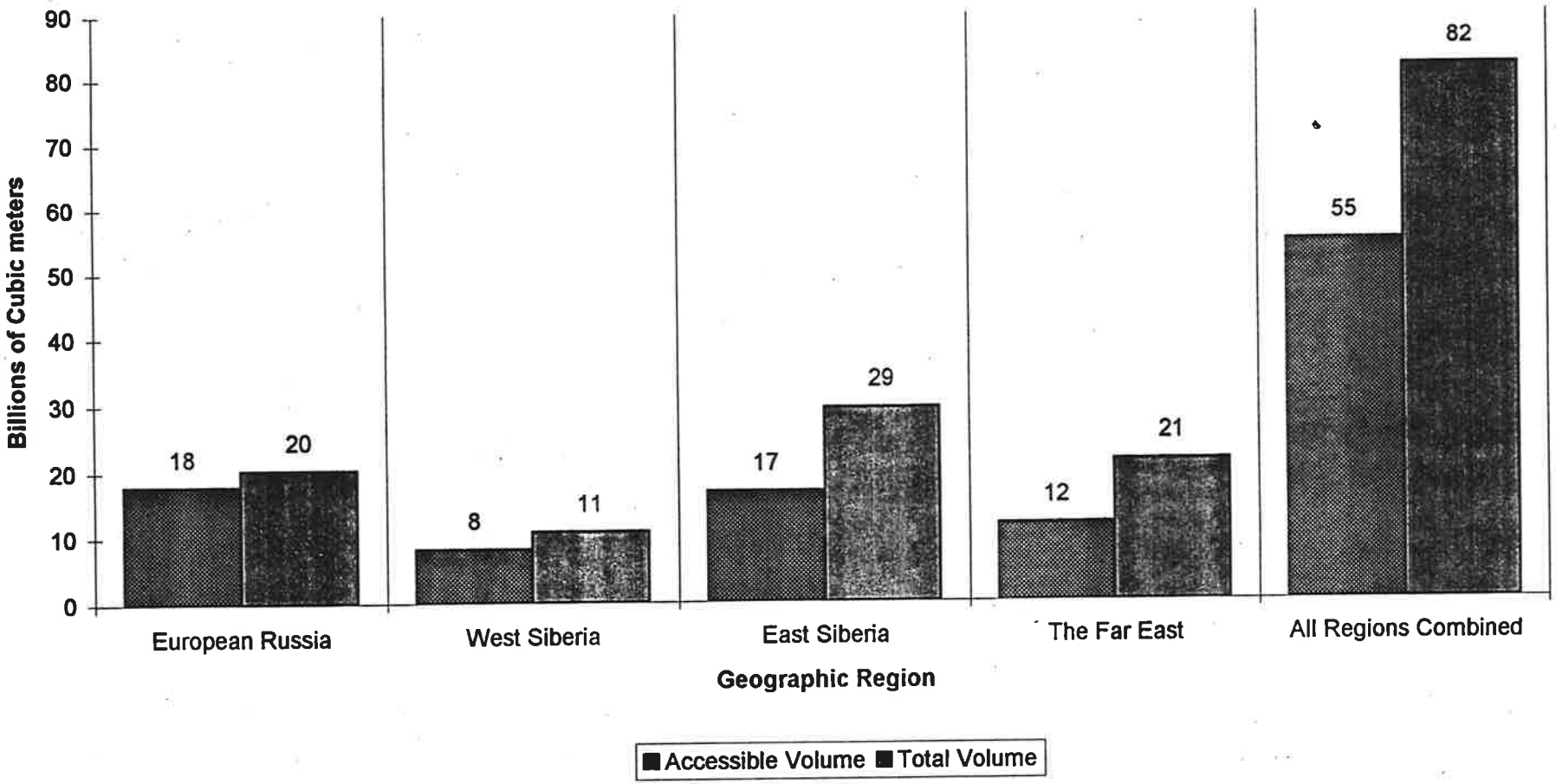
For the Eastern Russia Region (including the Far East and East Siberia) a total of almost 390 million ha. are conifer forests, with approximately 50 million ha. of "soft" deciduous forests. Conifer forests for Russia contain approximately 60.2 billion cubic meters, with 25.2 billion cubic meters (42 percent) consisting of larch, followed by 14.3 billion cubic meters (24 percent) pines, 10.7 billion cubic meters of spruce (18 percent), and 7.4 billion cubic meters (12 percent) "cedars". "Hard" deciduous volume is estimated at approximately 1.8 billion cubic meters, primarily oaks (42 percent), beech (10 percent) and a wide mixture of other related species. As noted, most "soft" deciduous timber is Birch (7.9 billion cubic meters; 70 percent), aspen (2.6 billion cubic meters; 23 percent) and black alder (94 million cubic meters; 1 percent).

FIGURE 2 - RUSSIA and REGIONS
Total and Accessible Forested Area



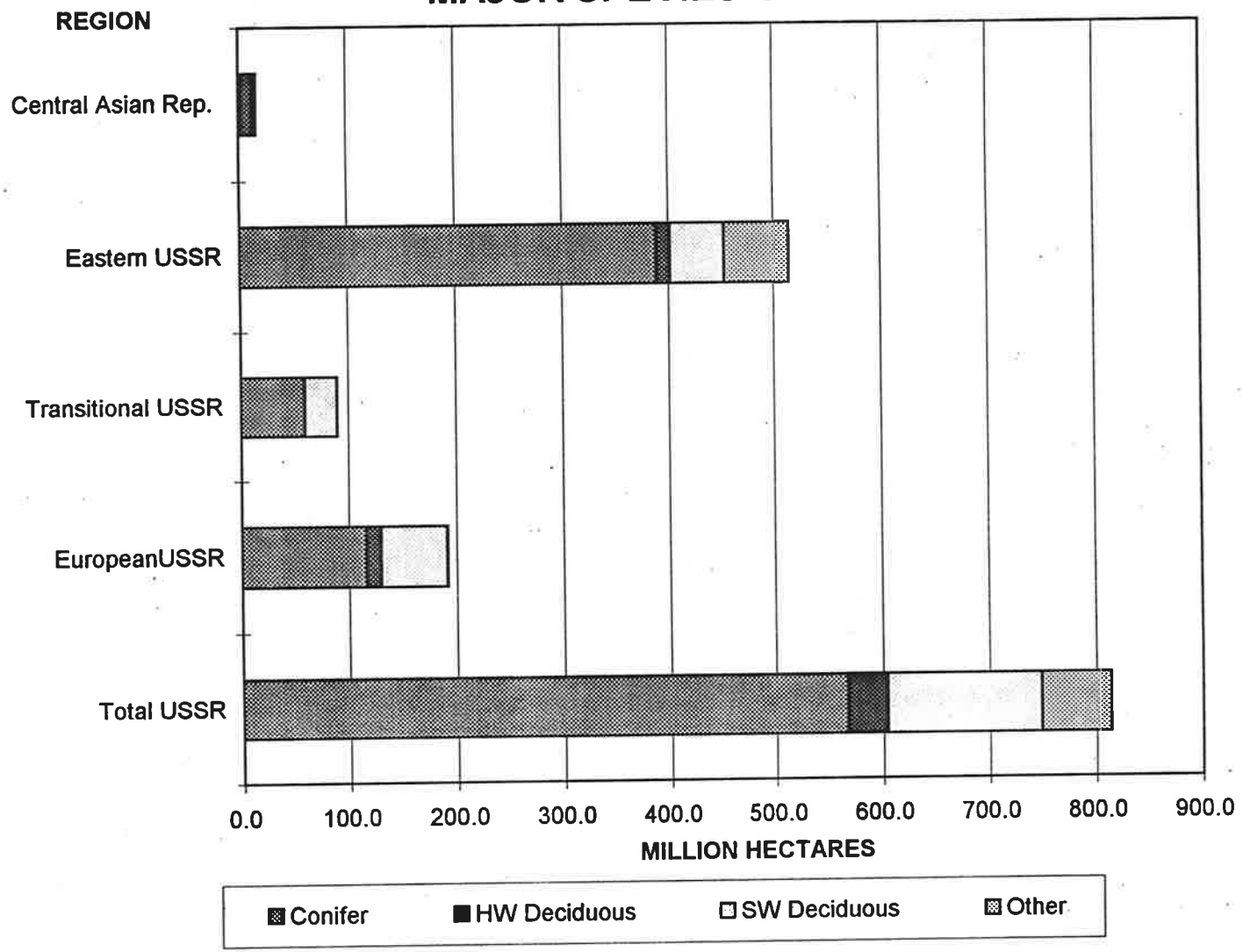
Source: C.A. Backman,Goskomles

FIGURE 3 - RUSSIA and REGIONS
Total and Accessible Growing Stock



Source: C.A. Backman, Goskomles

FIGURE 4 - USSR STOCKED FOREST LAND BY REGION & MAJOR SPECIES GROUP 1989



Eastern Russia Region

Given the relevance of the East Siberia and Far East regions for the future outlook for the Pacific Rim, this region's forest resources are of a primary interest. **Table 6** provides a summary of the forest land base for Russia together with Territorial statistics for East Siberia and the Far East. As is indicated, these two regions account for approximately 438 million hectares of forest, or about 67 percent of the Russian Federation total. These regions hold some 380 million hectares of conifer forests, comprising 72 percent of the Russia total. Proportionally smaller shares of the hardwood deciduous (11.6 million ha; 68 percent) and softwood deciduous (46.6 million ha; 42.5 percent) forest area is in these two regions.

Table 6 also displays the distribution of forest land by major conifer species, indicating the dominance of East Siberia and the Far East relative to larch (271.6 million ha; 97.7 percent) and true fir (11.2 million ha; 71.3 percent). Pine, spruce, and cedar-pine forests are also significant. The distribution of forests by Kray and Oblast within the two eastern regions are summarized in Table 6.

Table 7 provides the corresponding distribution of forest inventory for the Russian Federation and the East Siberia and Far East regions. Inventory volumes include "major species" only, and excludes minor and economically insignificant species not of importance for timber purposes. The two regions together account for some 47.4 billion cubic meters inventory, or over 64.6 percent of the total inventory for the Russian Federation. The combined two-region inventory for conifer species is 42.5 billion cubic meters, or almost 71 percent of the Russian total. Almost 57.7 percent of the hardwood deciduous inventory of Russia is located in the Far East region (1 billion cubic meters), while 3.8 billion cubic meters (33.7 percent) of the softwood deciduous inventory is within the two regions, more heavily concentrated in East Siberia. As would be expected based on the forest area concentration noted above, East Siberia and the Far East account for the overwhelming share of the larch inventory (24.5 billion cubic meters; 97.3 percent) and true fir (1.9 billion cubic meters; 75 percent). Cedar-pine is also heavily centered in these two regions, primarily East Siberia which alone accounts for 4.5 billion cubic meters of inventory (60 percent).

The summary in Table 7 also includes the distribution of forest inventory by Kray and Oblast, clearly indicating the importance of Krasnoyarsk and Irkutsk within East Siberia and Khabarovsk, Primorsk, and Amursk in the Far East. Larch dominates in both Krasnoyarsk and Irkutsk, while in the Far East larch is the largest volume species in both Khabarovsk and Amursk. In Primorsk Kray, in contrast, spruce and cedar-pine are the predominant species.

The Far East is made up of seven districts (Krai or Oblast) including the Yakutia (Sakha Republic). The coastal districts of Khabarovsk Krai and Primorsk Krai (also known as the Maritime Krai) and the inland southern-most district of Amur Oblast are the most accessible and important for present forestry activities.

TABLE 6. RUSSIA AND EASTERN RUSSIA FORESTS - AREA BY REPUBLIC AND TERRITORY

Thousand Hectares	Total All Species	Total Conifer	Conifer						Deciduous	
			Pine	Spurce	True Fir	Larch	Cedar	Conifer Other	Hardwood Total	Softwood Conifer
RUSSIA	652,880	526,104	113,564	78,310	15,666	277,898	40,166	500	17,097	109,680
East Siberia	211,567	180,173	32,140	12,390	9,358	102,799	23,486	0	1	31,394
Far East	226,574	199,726	12,009	13,657	1,812	168,800	3,449	0	11,625	15,223
EAST SIBERIA	211,567	180,173	32,140	12,390	9,358	102,799	23,486	0	1	31,394
Krasnoyarsk Kray	111,380	94,018	11,112	8,824	7,468	56,345	10,269	0	0	17,362
incl. Khakassk A.O.										
Taymy A. Okr.										
Evenka Okr.										
Irkutsk Oblast	51,850	44,040	15,135	3,333	1,600	17,073	6,899	0	0	7,811
incl. Ust-Ordia										
Chita Oblast	23,685	19,145	2,581	13	6	15,589	957	(0)	1	4,539
incl. Aga-Buryat										
Buryat ASSR	16,981	15,569	3,210	159	284	10,068	1,848	(0)	0	1,411
Tuvinsk ASSR	7,671	7,400	101	61	1	3,724	3,514	0	0	271
Unallocated										
FAR EAST	226,574	199,726	12,009	13,657	1,812	168,800	3,449	0	11,625	15,223
Primorsk Kray	11,112	6,498	4	2,817	295	1,137	2,244	0	2,933	1,682
Khabarovsk Kray	42,969	36,483	1,150	8,559	606	25,366	803	0	1,589	4,897
incl. Jewish A.O.										
Amursk Oblast	19,825	14,589	726	417	52	13,389	6	0	498	4,739
Kamchatsk Oblast	8,182	1,161	9	213	0	940	0	0	5,712	1,309
incl Koryak A Okr.										
Magadansk Oblast	9,765	9,453	0	0	0	9,453	0	0	0	313
incl. Chukotsk A. Okr.										
Sakhaline Oblast	5,008	3,814	69	1,271	838	1,637	0	0	893	301
Yakut ASSR	129,712	127,730	10,052	380	21	116,880	397	0	0	1,983
Unallocated										

TABLE 7. RUSSIA AND EASTERN RUSSIA FOREST INVENTORY - MAJOR SPECIES (Million CUM)

	TOTAL MAJOR	CONIFER	CONIFER						DECIDUOUS HARDWOOD	SOFTWOOD
	SPECIES	Total	PINE	SPRUCE	TRUE FIR	LARCH	CEDAR	OTHER	TOTAL	TOTAL
Russia	73,312	60,163	14,310	10,730	2,560	25,163	7,400	0	1,820	11,329
East Siberia	27,656	24,935	5,475	1,749	1,634	11,624	4,453	0	0	2,721
Far East	19,710	17,559	1,238	2,412	290	12,867	752	(0)	1,050	1,102
EAST SIBERIA	27,656	24,935	5,475	1,749	1,634	11,624	4,453	0	0	2,721
Krasnoyarsk Kray	13,820	12,291	1,871	1,234	1,283	5,907	1,996	0	0	1,528
incl. Khakassk A.O.										
Taymy A. Okr.										
Evenka Okr.										
Irkutsk Oblast	8,569	7,751	2,938	486	304	2,514	1,509	0	0	818
incl. Ust-Ordia										
Chita Oblast	2,331	2,090	284	1	1	1,623	181	0	0	241
incl. Aga-Buryat										
Buryat ASSR	1,851	1,745	365	20	47	1,014	300	0	0	106
Tuvinsk ASSR	1,086	1,058	17	8	0	566	467	0	0	28
FAR EAST	19,710	17,559	1,238	2,412	290	12,867	752	(0)	1,050	1,102
Primorsk Kray	1,747	1,240	0	515	45	177	503	0	321	186
Khabarovsk Kray	5,136	4,582	131	1,492	83	2,701	174	(0)	175	379
incl. Jewish A.O.										
Amursk Oblast	1,937	1,617	62	71	9	1,473	1	0	20	301
Kamchatsk Oblast	731	146	0	46	0	100	0	0	484	101
incl Koryak A Okr.										
Magadansk Oblast	374	341	0	0	0	341	0	0	0	33
incl. Chukotsk A. Okr.										
Sakhaline Oblast	650	582	1	239	150	193	0	0	50	18
Yakut ASSR	9,135	9,051	1,044	48	4	7,882	74	0	0	83

The distribution of Far East forest land by territory emphasizes the dominant role of Yakutia due to its sheer size. However, all forest is not either suitable nor available for commercial utilization. Under the Russian forest classification system, "Group III" forests are those identified for current or future commercial utilization. **Figure 5** shows the distribution of these forest lands as of 1989, with a further classification of forests as either "exploitable", "reserved", or "inaccessible" based on then-current conditions. While Yakutia includes over 130 million hectares of Group III forests, only some 42 million hectares were considered "exploitable". The total Group III forests for the other Far East territories was considerably less, or just under 91 million hectares, yet a larger proportion (almost 48 million ha) was exploitable. The majority of this exploitable forest area was in Khabarovsk and Amur, followed by Primorsk (Maritime) Krai. Although small in total, a large share of the Group III forest of Sakhalin is also considered exploitable. Approximately 14 million ha. are currently "reserved" and some 30 million ha. are "inaccessible".

Of the total 19.7 billion cubic meters of forest inventory in the Far East, over 9.1 billion cubic meters (46 percent) is located in Yakutia . The majority of Yakutia inventory is Larch (7.9 billion cubic meters), with the remaining volume mainly pines (1 billion cubic meters). Khabarovsk includes a total inventory of 5.1 billion cubic meters, with some 4.6 billion cubic meters of conifer species. Primorsk Kray contains an estimated 1.7 billion cubic meters of total inventory, including 1.2 billion cubic meters of conifers. The Amursk Oblast contains 1.9 billion cubic meters, with 1.6 billion cubic meters of conifer species. In contrast, Kamchatka contains only 731 million cubic meters, Sakhalin 650 million cubic meters, and Magadan 374 million cubic meters. While Kamchatka is primarily deciduous species (484 million cubic meters "hard" deciduous and 101 million cubic meters "soft" deciduous", both Magadan (larch) and Sakhalin (spruce and larch) contain conifer species.

Figure 6 graphically displays the conifer inventory on Group III lands which were previously held by the forest authorities of the former USSR. The predominance of larch, particularly in Yakutia, is evident in this summary. Excluding Yakutia, the inventory of the remaining territories of the Far East still reflect a major concentration of larch, with spruce and pine (including cedar-pine) as the other major conifer species.

FIGURE 5 - Russian Far East Forest Area Commercially Exploitable (Group III) (Total Excludes Yakut) 1989

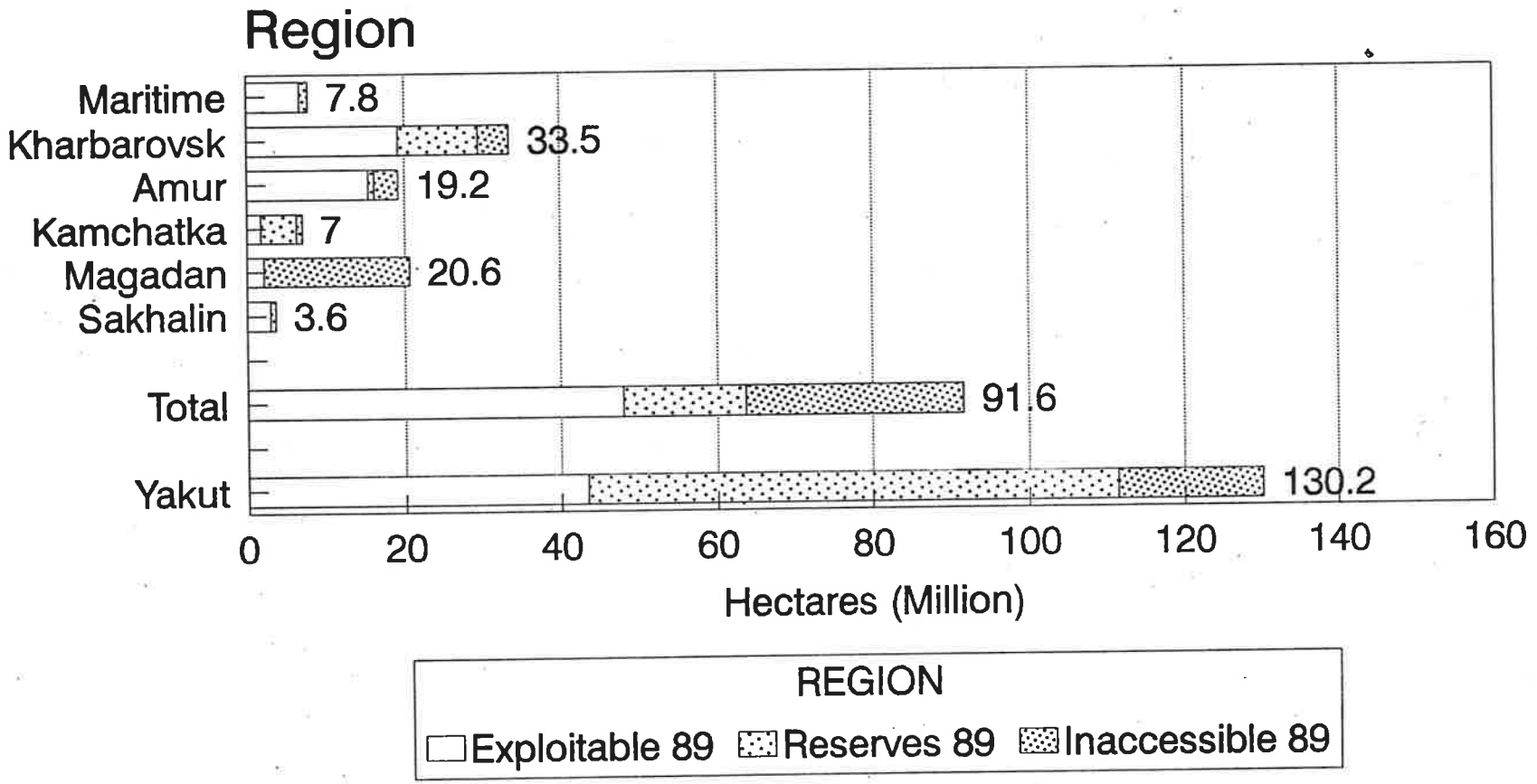
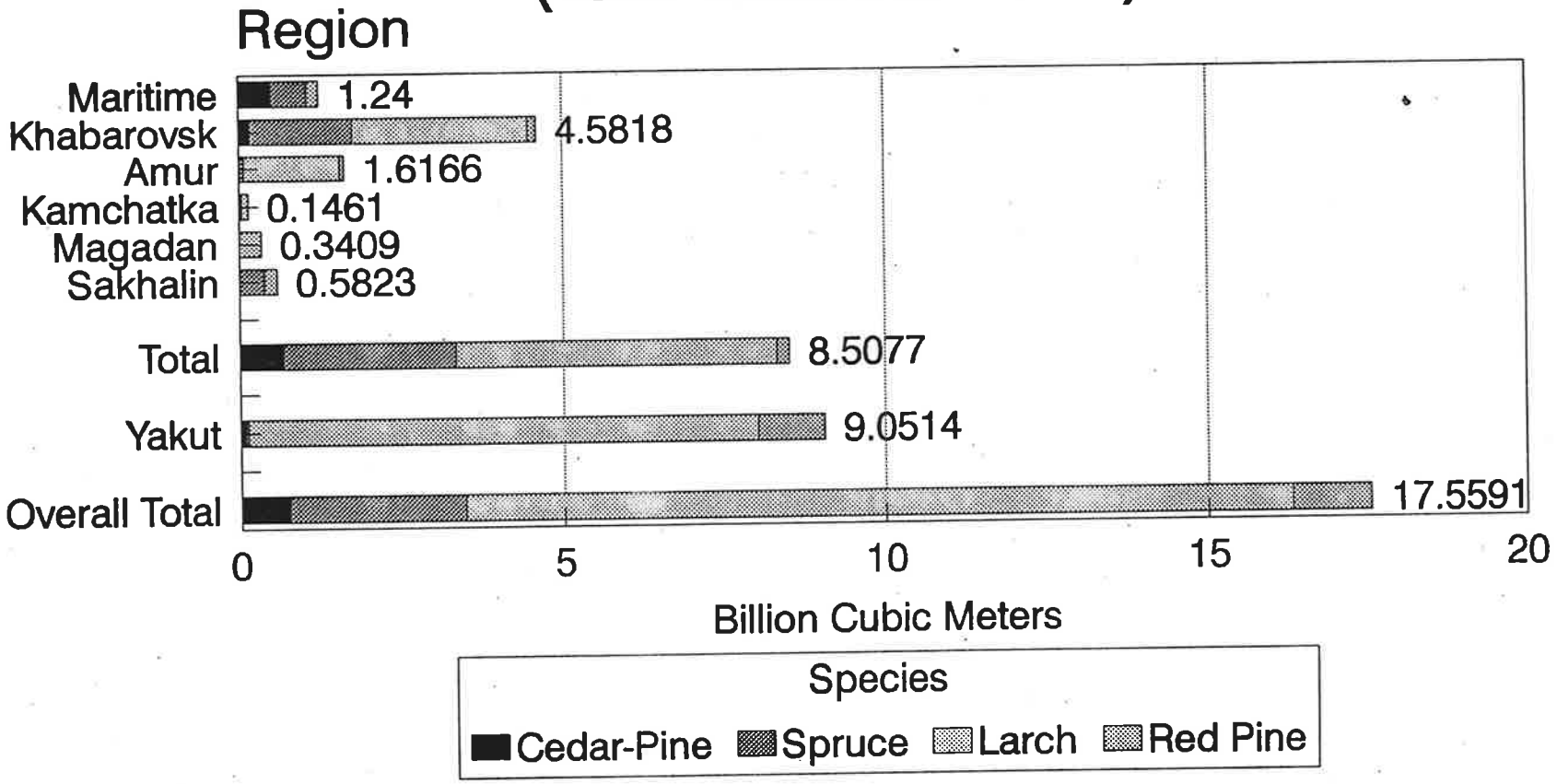


FIGURE 6 - Russian Far East Conifer Inventory

Under Forestry Administration 1989
(Total excludes Yakut)



CINTRAFOR/trw

PRIVATIZATION

A key strategy of the Russian economic reforms has been to privatize much of the state owned productive capacity - and the financial problems brought to light by the corresponding price and cost reforms. Unprofitable state enterprises were a primary focus of privatization.

Privatization also meant economic "liberalization" and decentralized economic decision-making. This placed the responsibility for assuring profitable operations squarely on the local managers - in the short run this required that operations at least cover the incremental cash cost of operations at a time where credit was vanishing. Increasingly all producers and suppliers of inputs required cash payment. This required the forest products industry (including pulp and paper) to develop active market strategies, restructure production systems, suddenly comprehend and accommodate market demand as a guide to production decisions, and to rationalize production in terms of competitive advantage. This has been a huge challenge, particularly in light of rapidly changing policies and economics. For example, rail rates for transporting products has increased by several times, often within a matter of days and weeks with no advance notice.

Lipman indicates that at the end of 1993 the Federal Russian government continued to own some 1,796 enterprises in the forestry sector, accounting for more than 60 percent of production. Privatization within the pulp and paper sector has impacted the major large forestry complexes. The lack of capital investment and constrained raw material supplies threaten the future of even this limited production capacity within the Far East region.

Privatization has, however, not extended to the ownership of forest lands. Previously, the responsibilities for forests was held by three primary organizations: The Ministry of Forestry (forest lands and management), the Ministry of Forest Industry (harvesting and processing), and Exportles (international trade and marketing). Roslesprom was created as the successor to the Ministry of Forest Industry, acting as a State forestry and timber company. Responsibilities held by Exportles regarding trade have partially been assumed by Roslesprom also, via the creation of Rosexportles with Roslesprom as the controlling share holder.

Overall use and regulation of forests now falls under the Russian Federation fundamental forest legislation.[26] Assignment of rights to utilize forests rests with the Russian Federation "Forest Authority" and "its subordinate units..". In practice, use (as allocated by State) is assumed at the Republic, Territorial, or District level. At the territory level, each territory has an administrative department or committee, such as a "Territorial Committee on Forest Use". In the Far East, for example, Khabarovsk Krai has established an "Administration of Natural Resources" while Primorsk has a "Committee for Natural Resources".[27] Forests generally fall under the "Property Fund" of the Territory. Considerable uncertainty still exists as to the authority and

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[26] See *Fundamentals of Forestry Act*, RF Act No. 4613-1, RF Supreme Soviet Decree No. 4615-1 and Decree No. 4616-1, March 6, 1993.

[27] *Russian Far East Update*, June 1994 and February 1995.

responsibilities for the allocation of forest use. Further, conflicts between timber utilization and other purposes, including environmental and wildlife reserves, continues to cloud decision-making. For example, in Khabarovsk Krai the Governor appointed the "Commission on Timberlands Utilization" which is presently allocating timberlands, while the Property Fund seeks to allocate forests by "tenders".[28]

Roslesprom is also reported to be active in the creation of "Woodworking Groups" coordinating individual enterprises and stock companies. As of November 1994, some 46 "groups" had been formed, including about 600 companies. In some areas, the groups largely represent former cooperatives. The objective is to encompass most timber companies previously under the Ministry of Forest Industry. Each mill is presumably free to decide whether to "join" such a group or not. Future plans may include the integration of "financial-industrial" groups by incorporating major banks and financial institutions with the forest enterprise groups.[29]

With the privatization of forest industry and the loosening of controls over exports, the issue of licensing of exporters has remained a difficult issue. While some control was felt necessary for efficiency and reliability in marketing Russian timber abroad, the system of "special exporter" licensing was also subject to abuse and frequently resulted in extra payments (or "commissions") in order to export. The requirement for "special exporter" status was disbanded recently, allowing "unofficial" exporters to directly access customers. Roslesprom had favored the restricted system, hoping to reduce the number of "special exporters" to about 50, further strengthening control over export trade. However, the lack of marketing knowledge and supporting infrastructure, quality control, and difficulties in obtaining funding for international transactions will undoubtedly continue to channel trade through established organizations for some time to come.[30]

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[28] *Russian Far East Update*, October 1994 and March 1995

[29] *European Market Update*, March 1995

[30] *Timber Trade Journal*, 1 April 1995

ECONOMIC OUTLOOK FOR NEAR-TERM TRADE WITH A FOCUS ON THE EASTERN RUSSIA REGION

What then of the future role of the Russian forest resources in supplying wood and fiber to the Pacific Rim region? This section provides a brief summary of the analysis undertaken at the Center for International Trade in Forest Products (CINTRAFOR)[31] and provides a two period "outlook" covering the base period 1990-1995 with three scenarios based on alternate economic conditions for the period 1996-2000, utilizing the Russian Forest Sector Model developed by Dr. Charles Backman.[32] The analysis integrates the dynamics of the near term forest land and inventory situation, the current and expected industry structure and capacity, and the relative consumption of forest products within Russia and the former Republics of the former USSR reflecting the implications of alternative outlooks for further economic reform and change. The export potential is projected relative to the competitive nature of export markets which Russia might effectively serve.

Wood and Fiber Supply

Backman (1993) identified 5 components of the total Russian wood and fiber supply. The major component consists of the principal harvest and non-forest sector harvest, which accounted for 342 million cubic meters or 84 percent of the total wood and fiber supply of 469 million cubic meters in 1989. Other contributing components include intermediate harvesting of 29 million cubic meters, other harvesting (23 million cubic meters), the use of secondary fiber (74 million cubic meters) , and imported solid wood raw material and pulp products of 1 million cubic meters.

Solid Wood Fiber Supply

The solid wood supply consists of the principal harvest including non-forest sector harvest, the intermediate harvest, and the other harvest, which together accounted for more than four-fifths of the estimated fiber supply in 1989.[33]

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[31] For a more complete assessment of the likely outlook for the Russian forestry sector, see Backman and Waggener, "The Russian Forestry Sector Outlook and Export Potential for Unprocessed Logs and Primary Forest Products through 2000", CINTRAFOR Working Paper 46, March 1994.

[32] See Backman, Charles A. 1993.

[33] It is this fiber supply upon which the estimate of economic accessibility is based.

a) Principal Harvest and Allowable Annual Cut

The principal harvest is that portion of the wood supply derived from primary forest operations and which is directly linked to the calculated "Annual Allowable Cut" (AAC). Statistics which identify the principal harvest since 1990 are not readily available, and in fact, are not very useful when developing an estimate of either physical or economic accessibility.[34]

The significance of forest lands and inventory, of course, is the potential for providing a flow of timber and fiber for utilization on a sustained basis. For Russia, as with most of the forested countries of the world, this 'sustainable' potential is the "Annual Allowable Cut" or AAC.[35] **Figure 7** provides one summary of the AAC for Russia and the economic regions. The AAC shown includes estimated sustainable harvest from both currently and "realistically potentially"[36] accessible forest lands (primarily Group III forests) As shown on this basis, the combined Russian AAC is approximately 545 million cubic meters, including 320 million cubic meters of conifer and 225 million cubic meters of deciduous timber. For the Far East region, the similar-defined AAC is 74 million cubic meters, with 57 million cubic meters of conifer and 17 million cubic meters of deciduous timber. East Siberia has, on this basis, an AAC of 166 million cubic meters, including 119 million cubic meters of conifer and 46 million cubic meters of deciduous timber. Nearly 40 percent of the currently and realistic potentially accessible Russian AAC is located in European Russia. West Siberia accounts for approximately 20 percent, East Siberia accounts for 30 percent while the Far East accounts for almost 15 percent. Approximately one-half of the deciduous AAC is located in European Russia compared with one-third of the coniferous AAC.

For Russia as a whole, some 426 million cubic meters of this AAC is derived from currently accessible forests, while 119 million cubic meters depends upon the realistic portion of the "potentially accessible" forests. For the Far East, 57 million cubic meters is from currently accessible forests while 17 million cubic meters is from realistic "potentially" accessible forests.[37] Some 109 million cubic meters of the AAC is from currently accessible forests in East Siberia, while 57 million cubic meters derive from "potentially " accessible forests.

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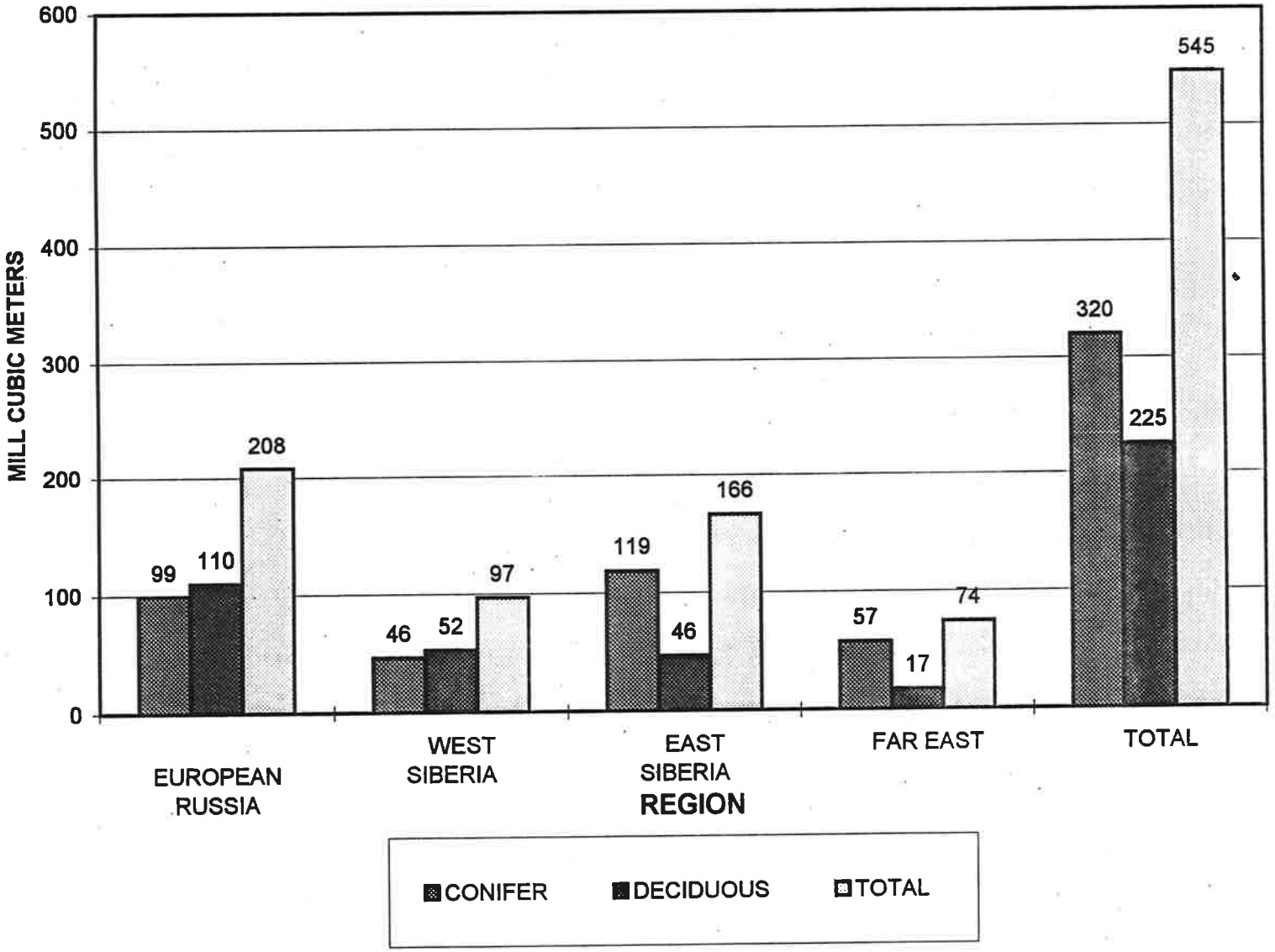
[34] The former Soviet Union up until the end of 1991 effectively functioned under the centrally planned system. As Backman (1993) notes, the degree to which costs and prices determined the level of harvest was not very high. In fact, industrial activity took place under a completely different economic and social system than which Russia is presently operating.

[35] The AAC is primarily a technical concept which is computed on the basis of estimated growth potential over the long run. Different countries measure AAC differently, and resulting computations are not immediately comparable. Caution should be exercised in interpreting data from any country, including Russia. AAC does, however, give a relative indication of forest production capacity.

[36] "Potentially" accessible forest includes those forests that may be made accessible during the next twenty year period based on capital investment in infrastructure, etc.

[37] As discussed below, these estimates for AAC for the Far East generally exclude Yukutia which is considered primarily inaccessible in spite of the classification of Group III forests. The total published AAC for the FE including Yukutia is approximately 115 million cubic meters.

FIGURE 7 - RUSSIA & REGIONS: CURRENTLY AND POTENTIALLY ACCESSIBLE ANNUAL ALLOWABLE CUT BY SPECIES GROUP



Calculations of AAC can be, however, somewhat misleading, particularly in the present economic and political climate of the Russian Republic. The total "physical" AAC for Russia has been estimated at 833 million cubic meters, based on all forests (Groups I, II, and III), with 568 million cubic meters of conifer and 265 million cubic meters of deciduous timber and fiber. This total is a composite of the current and potentially accessible AAC and further includes the estimated AAC for "Reserve and Inaccessible" forests.

The overwhelming share of the Russian forest products industry is located in the European-West Siberian region, with substantially less industry in the Eastern Russian sub-regions. Furthermore, the forest-based industry in East Siberia and the Far East regions is predominantly in the southern-most territories and in the coastal region of Primorsk Kray. With exceptions to be noted below, the "industry" in the Eastern Russia region consists of timber harvesting and sawmills, with only limited pulp and paper capacity. In contrast with the European-West Siberian region of Russia where harvest has approached the AAC, the East Russian region exhibits a "favorable" balance where the combined gross physical AAC is an apparent 467 million cubic meters vs. an estimated harvest of only 111.4 million cubic meters in the pre-reform period (1989) and only 38.4 million cubic meters in 1994.[38] From such comparisons, it would appear that there is a substantial potential for greatly increased timber flows from this sparsely developed forest region.

Based on the analysis undertaken by CINTRAFOR, a significant part of the "currently and potentially" accessible AAC is actually not "realistically" accessible based on economic factors as representative of 1992 economic conditions and is not expected to become "realistic" before the year 2000.[39] Using this realistic analysis, the "current" Russian AAC is only 51 percent of the physical total, and is only 44 percent for the conifer component. This increases to just 65 percent for the "current and realistic potentially accessible" forests, and 56 percent for conifers.

Table 8 shows an estimate of the components of possible AAC for the Far East and East Siberia regions of Russia, estimated for the 1995-2000 period (Backman, 1993) The frequently cited total of some 188 million cubic meters of AAC for the Far East region falls to only 105 million cubic meters based on currently and the total "potentially" accessible forests. However, excluding the "unrealistic" component of the "potentially accessible" forests, the AAC drops further to approximately 74 million cubic meters, made up of 57 million cubic meters of conifer and 17 million cubic meters of deciduous timber. Thus the "currently accessible" component of AAC is only 30 percent of the physical AAC for the Russian Far East. The current plus realistic potential AAC is just 39 percent of the total. For conifer species, the current economically accessible AAC is only 27 percent of the physical total, while the current-realistic potential AAC is 35 percent.

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[38] The year 1989 is used here to represent a relatively "stable" situation for Russia and the regions prior to the substantial reform processes initiated in 1990. Thus 1989 provides a "baseline" for the industry for later comparisons.

[39] The column in Table 8 headed "Potential" is the "realistic" component of the "potentially accessible" AAC discussed earlier.

TABLE 8. RUSSIA AND EASTERN RUSSIA ANNUAL ALLOWABLE CUT BY ACCESSIBILITY, SUB REGION AND SPECIES GROUP

	ANNUAL ALLOWABLE CUT (Mill CUM)							CURRENT AAC AS SHARE OF TOTAL AAC (%)	CURR & POTENTIAL AS SHARE OF TOTAL AAC (%)
	CURRENTLY & POTENTIALLY ACCESSIBLE AAC					RESERVE & INACCESSIBLE	TOTAL PHYSICAL AAC		
	CURRENT	POTENTIAL	SUBTOTAL	NOT REALISTIC	TOTAL				
RUSSIAN REPUBLIC									
TOTAL	426	119	545	88	633	200	833	51%	65%
CONIFER	248	72	320	71	391	177	568	44%	56%
DECIDUOUS	178	47	225	17	242	23	265	67%	85%
EAST SIBERIA	109	57	166	13	179	100	279	39%	59%
CONIFER	81	39	120	9	129	87	216	38%	56%
DECIDUOUS	28	19	47	4	51	13	64	44%	73%
FAR EAST	57	17	74	31	105	83	188	30%	39%
CONIFER	45	12	57	30	87	77	164	27%	35%
DECIDUOUS	12	5	17	1	18	4	22	55%	77%

Source: Backman (1993)
Vorob'ev (1979)

For the East Siberian region, the currently accessible AAC of 109 million cubic meters contrasts with the gross physical calculation of 279 million cubic meters, or just 39 percent. The addition of the "realistic" potential harvest brings the estimate to 166 million cubic meters, or just 59 percent of the physical total. The currently accessible conifer AAC is 45 million cubic meters, and with the addition of the realistic potential, the total is just 57 million cubic meters, or 35 percent of the physical total.

It is this apparent discrepancy between purely physical calculations of AAC for all forests and the economic assessment of a "realistic" AAC for Group III forests (primary timber production) that gives rise to the conflicting assessments of the Russian forest potential within both Russia the international community.

AAC is itself only a gross estimate of the "sustainable" volume of timber that might be harvested over time. Changes in both the allocation of the forest land base (Group III) and periodic re-estimation of growth rates influence the AAC. Both factors have led to reductions in the physical AAC for Russia and the economic regions over recent years. Further, the AAC volume does not directly estimate the volume of timber actually flowing into the forest products and trade sectors.

The Far East AAC based on an estimated physical total of 115 million cubic meters can be broken down into several 'components'. The total AAC of 115 million cubic meters is first reduced to 51.5 million cubic meters based on economic accessibility, thereby eliminating much of the "potential" from Yakutia and smaller shares from the other territories of the Far East. This total is yet further reduced to 38 million cubic meters, reflecting logging waste (unutilized) reflecting current logging technology and handling. In turn, this remaining volume is reduced by 5.2 million cubic meters for processing and handling waste at lower landings, leaving a net AAC of only approximately 32.8 million cubic meters - a considerably smaller volume than the gross physical AAC of 115 million cubic meters.

Although this analysis of the "realistic" resource potential is less "optimistic" than other reviews of the Russian forest, there is still substantial potential for greater production of timber and fiber from Russia's Eastern principal timber-production forests. The realization of this potential will depend upon the restructuring of the forest products industry as well as the ultimate success of ongoing political and economic reforms. These issues are discussed in the following sections.

b) Intermediate Harvesting

Backman (1993) showed that current levels of intermediate harvesting accounted for nearly 6 percent of the overall solid wood fiber produced in Russia in 1989. The contribution was much higher in the European part of the country where transportation network and markets are more developed. In the European Russia, intermediate utilization accounted for up to 10 percent of the over all fiber resource. An estimated 22 million cubic meters of intermediate utilization in European Russia constituted over two/thirds of the national total of 29 million cubic meters in this

category. In the European region, almost two-thirds of intermediate utilization was made up of deciduous species, in contrast to only 50 percent for the national intermediate utilization total.

The future contribution to the solid wood fiber potential from this source is difficult to predict within the context of the short to medium term. Only the increase in the European part of Russia has been considered when formulating the estimates of the potentially available fiber supply. No significant increases are anticipated for either East Siberia or the Far East regions.

c) Other Harvesting

The contribution of fiber from other harvest (lands outside the direct management of the forestry sector and timber removed from lands cleared for other uses) has only recently exceeded 20 million cubic meters per year. In 1989, estimated "other" harvest was 23 million cubic meters, including 16 million cubic meters of conifer materials. Two thirds of the total was derived from the European region (7 million cubic meters) and West Siberia (6 million cubic meters) with a combined total of only 9 million cubic meters from East Siberia and the Far East. Very little information is available about this harvest which makes projections of future levels difficult. Consequently, future estimated contributions to the total fiber supply are restricted to levels evident in 1989. Other harvesting does not contribute to the potentially available fiber supply. Near term projections are for approximately 5 million cubic meters in such harvest for the Far East, including 4 million cubic meters of conifer timber and one million cubic meters of deciduous species. For East Siberia, the anticipated "other" harvest is 4 million cubic meters, including three million cubic meters of conifer.

Secondary Fiber Resource

Secondary material, consisting of wood-based fiber and recycled waste paper, has contributed significantly to the fiber supply of Russia. In 1989, it accounted for 16 percent of the fiber supply.[40]

In 1989, the total secondary fiber available amounted to 75 million cubic meters, the majority of which was located in the European part of the country. The degree to which both waste paper and secondary wood fiber contribute to the fiber supply of Russia depends on the level of economic activity.[41] Cost of collection was not explicitly considered a factor influencing the degree to which secondary fiber contributes to the overall wood-fiber supply under existing

[40] Waste paper is used solely in the manufacture of paper and paperboard, while secondary wood-based material is used in the manufacture of pulp, particleboard and fiberboard. It is also used for non-manufacturing purposes in heating as a substitute for coal, oil, and gas.

[41] Chip supply was based on the domestic production of lumber while waste paper supply was based on the domestic consumption of paper products.

and near term conditions. Consequently, secondary fiber supply was not considered when developing an estimate of the future economic fiber supply. Secondary fiber amounted to 14 million cubic meters in East Siberia and 6 million cubic meters for the Far East region in 1989, almost entirely from waste wood fiber.

Imported Fiber

While the wood and fiber supply can be augmented by imports of wood raw material or products manufactured from wood fiber, historically, these sources have only played a minor role. Furthermore, under the current economic conditions existing in Russia, it is unlikely that these sources would contribute in a significant way to the overall fiber supply. Import of these products would require the use of hard currency which is critically limited for the forest industry at the present time. Consequently, imported fiber is ignored in the estimates of near term economic wood and fiber supply.

Economic Wood Supply

The reform of costs and prices in Russia and the liberalization of economic transactions and accountability at the end of 1991 highlight the need to develop an estimate of the realistic economic forest accessibility based on emerging market-based costs and prices. Backman (1993) divided the solid wood supply physical estimates into 12 categories or cost levels (six each for conifer and deciduous forests) representing the incremental cost (or cash flow costs) required to 'justify' harvesting. These estimates provide an indication of the likely economic accessibility of the solid wood resource at alternative levels of incremental harvesting cost - which increasingly need to be fully covered by timber prices.

A greater share of the potential solid wood supply of the Euro-Siberian Russian region was located in areas where the lower three cost categories would permit economic harvest than was the case for Eastern Russia.[42] In Euro- Siberia, four-fifths of the physical fiber supply is included in the first three (lowest) cost categories while only three-fifths of the potential supply fall in these 'low cost' ranges for Eastern Russia. The degree of economic accessibility is further compromised in Eastern Russia where a significant share of the available timber resource is of lower valued species which decreases the effective average price (revenue) received for the timber and hence the feasibility of covering higher incremental harvesting costs.

An indication of the size of harvest which is economically accessible under the actual 1992 domestic prices and costs was estimated as the "economic" roundwood supply. For the Russian

[42] Backman (1993) divided Russia into two regions for purposes of developing an estimate of wood raw material exports. European Russia plus West Siberia were amalgamated together into one region, called Euro-Siberian Russia. East Siberia and the Far East were combined together into one regions, initially identified as Pacific Asian Russia. and here referenced as Eastern Russia for greater clarification. **Map 1** shows the different regions of Russia referred to in the text.

Federation this was estimated at 250 million cubic meters, with 190 million cubic meters produced in Euro-Siberian Russia and 60 million cubic meters were produced in Eastern Russia.

While the long-term economic solid wood supply is difficult to estimate, the most significant determinant of wood supply is the degree to which the current level of prices and costs will permit the replenishment of the capital stock of the forest sector over time. As Backman (1993) observed, the current price vectors are insufficient to cover the required capital investment costs let alone the incremental operating costs associated with the harvesting process. While the relation between current prices and costs (1992) could 'sustain' production for (at least) the next ten years, as the stock of industrial capital which was carried forward from the previous Soviet era is further depleted, maintaining or increasing future harvest levels will subsequently depend on the level of new capital investments.

Two 'economic' timber supply scenarios were developed. It was possible to estimate the "economic" level of Russian roundwood production by assuming world level prices and costs at 1992 levels and, alternatively, likely production with a ten percent increase in "real" prices. An increase in the real price for roundwood (relative to costs) would give greater feasibility to accessing previously "unrealistically available" components of the "potential" forest for harvest.

If such an increase in real prices were to be achieved, the Eastern Russia region is estimated to have an "economic" AAC of 126 million cubic meters (vs. 117 million cubic meters at 1992 real prices). However, this analysis indicates that the increase is obtained through greater utilization of the deciduous component, with little or no increase in the economic conifer harvest. The price increase would be insufficient to induce the substantial capital investment that is required in East Siberia and the Far East regions.

Wood and Fiber Allocation

The aggregate wood and fiber supply, estimated in the previous section, can be allocated towards processing and local consumption, exported to the now "foreign" markets in the various Republics formerly included in Soviet Union, or exported to other countries not part of the former USSR. It is believed that the Russian government will follow policies which do not deprive the Russian peoples of an "adequate" domestic consumption of basic forest products. Thus, estimating the future consumption levels of forest products within Russia under only partly freed private markets is critical when determining the degree to which forest resources and products may be economically "surplus" to domestic needs, and thereby made available for export.[43]

[43] There is an obvious conflict between domestic consumption and trade. In the near term, international prices would dictate that a substantial volume would yield greater return via exports. Hence exports would grow at the expense of domestic processing and consumption. However, a depressed domestic economy reduces demand, thereby stimulating greater exports as has been the case during the 1992-1995 period.

Allocation of Available Harvest

The total delivered harvest can be utilized for domestic processing, or alternatively allocated to export. Because of the distortion of internal prices and costing in the past, the domestic Russian market is presently based on economic conditions still reflecting costs and prices substantially below international ("world") levels. Without some constraint on policies allocating timber between domestic and foreign trade in order to protect the domestic forest products industry and internal consumption, a large share of production would be exported in the short run at greater "profit". In the near term, the estimated level of domestic timber consumption and processing is constrained to a level determined by the outlook for overall economic conditions as measured by the relationship with Gross Domestic Product and 1989 per capita consumption ratios.

Domestic Consumption

The estimated level of domestic consumption of wood and fiber materials is shown in **Table 9** for the 1990-95 period (Period 1) and under the three economic scenarios developed for the period 1996-2000 (Period 2).[44] Total Russian domestic consumption of wood and fiber materials was estimated at an annual average of 207 million cubic meters in the first period. The total annual wood and fiber produced amounted to 227 million cubic meters. Thus, the wood and fiber economically available to be exported amounted to an estimated 20 million cubic meters annually.

For the five year period ending in 2000, the estimated size of harvest and economic "surplus" available for export fluctuated widely under the three scenarios representing the range of likely economic reforms and subsequent outcomes. As estimated for the pessimistic scenario, 199 million cubic meters available annually, with 190 million consumed domestically. Thus, under unfavorable conditions only 9 million cubic meters would be available annually for export. Under the baseline (middle) scenario, the economically available wood and fiber was estimated at 225 million cubic meters annually, with 204 million consumed domestically. In this scenario, about 20 million cubic meters were available for export.

Under the optimistic scenario, total estimated annual wood and fiber available increased to 302 million cubic meters of which only 256 million cubic meters would be consumed domestically. Thus, commercial wood and fiber potentially available for export would amount to an estimated 46 million cubic meters.

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[44] The timber supply discussed in this section refers to the economic share of the harvest identified as "realistic" harvest in the previous section which has commercial potential, plus the estimated supply of by-product and chip materials consumed.

TABLE 9 - ESTIMATED DOMESTIC CONSUMPTION OF WOOD AND FIBER
RUSSIAN FEDERATION
(Million Cubic Meters)

PERIOD	SCENARIO	SUPPLY AVAILABLE	DOMESTIC CONSUMPTION	EXPORT
ONE (1990-95)	BASELINE	227	207	20
TWO (1996-2000)	PESSIMISTIC	199	190	9
	BASELINE	225	204	21
	OPTIMISTIC	302	256	46

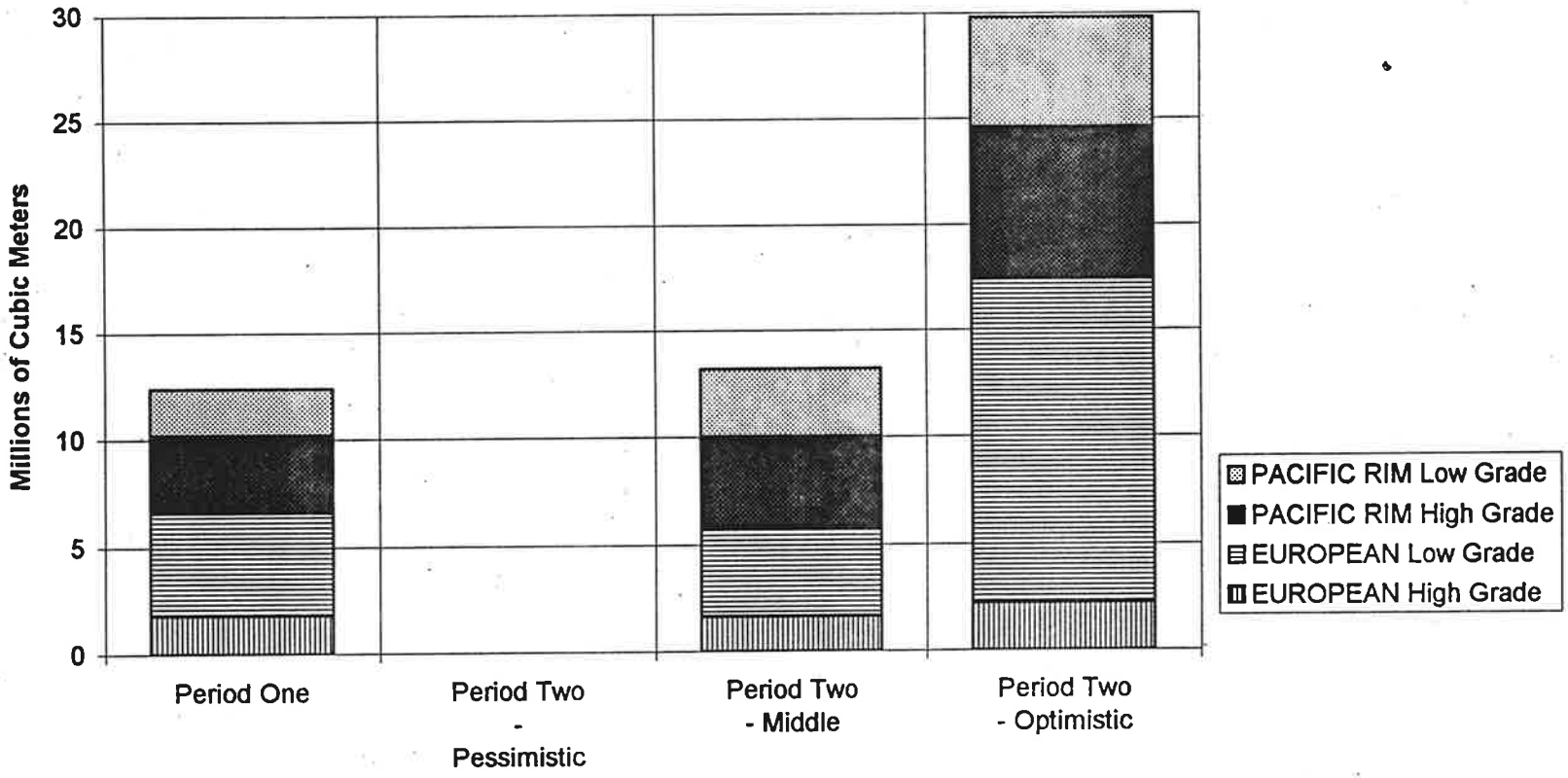
Source: Backman (1993)

Projected Trade

Projected exports to hard currency markets for Europe and the Pacific Rim are summarized in **Figure 8.** Total Russian export volume for the Baseline (Period 1) is estimated at 13 million cubic meters, consisting of 6 million cubic meters of high grade materials (primarily sawlogs) and 7 million cubic meters of low grade timber and fiber (primarily pulpwood and chips). The exports to European markets are estimated at 7 million cubic materials, including only 2 million cubic meters of high grade material but 5 million cubic meters of low grade logs and chips. This reflects the existing pattern of export of processed wood (lumber and panels) to Europe in addition to the lower grade pulpwood. In contrast, exports to Pacific Rim markets are estimated at 6 million cubic meters, consisting of 4 million cubic meters of higher grade sawlogs and 2 million cubic meters of lower grade materials. As indicated previously, the Eastern Russia region is an exporter of primary (unprocessed) timber rather than processed products. Essentially all Pacific Rim exports would originate in the Far East and, the remaining smaller volumes, in East Siberia.

The Baseline estimates of exports projected for Period Two indicate total Russian exports would be consistent with Period One levels without significant change. European and Pacific Rim exports remain at about 7 million and 6 million cubic meters respectively. European low grade materials would decline only slightly, while Pacific Rim low grade exports would increase. Under more pessimistic conditions, exports could (without policy interventions) fall to zero - since delivered harvest would be below the constrained level of domestic consumption based on a declining Gross Domestic Product. However, it is projected that exports would not disappear, since the Russian need for foreign exchange would eventually outweigh domestic consumption policies. The optimistic scenario indicates a substantial increase in hard currency exports, growing to almost 30 million cubic meters. The greatest growth would be for European exports of lower grade materials. Pacific Rim exports would also increase, for both high grade and lower

FIGURE 8 - RUSSIA and REGIONS - Projected Export of Wood Fiber to European and Pacific Rim Markets



Source: Backman (1993)

Source: C.A. Backman

grade materials. Lower grade (pulpwood and chips) would increase to just over 5 million cubic meters in Pacific Rim markets. Sawlog exports would increase to about 8 million cubic meters, equaling pre-economic reform levels.

An unknown factor at the present is the longer term outlook for Russia's trade ties to the other Republics of the former Soviet Union. Since a substantial volume of trade in roundwood and fiber has previously been to supply these timber-deficient Republics, any policy changes which would substantially reduce trade with the other Republics could release additional wood and fiber for allocation to hard currency markets. While it is felt that it is unlikely that Russia will abandon favored trade with the former Republics, the inability of those Republics to finance trade in hard currencies may ultimately outweigh any former political considerations.

In period one, the most significant change would be the redirection of low grade materials away from the former Republics to Western and Eastern Europe markets. Such exports would jump to almost 20 million cubic meters. In the short run, other markets, including the Pacific Rim, would be largely unaffected. In the longer term, however, trade with both Europe and the Pacific Rim would be impacted and internal domestic markets would react to supply conditions. In Period Two, total exports to the Pacific Rim would increase to almost 15 million cubic meters, with the increase almost entirely in low grade materials which would be almost 11 million cubic meters. This would contrast with an estimated export of only 2 million cubic meters of low grade materials to the Pacific Rim in Period One under the baseline conditions.

In addition to the projected trade in low grade (pulpwood) roundwood and higher grade sawlogs, Russia has also engaged in the export of processed primary wood materials, including lumber, plywood, wood-based panels, wood chips or residues suitable for pulping, market pulp, and processed paper and paperboard products.

Estimated exports of lumber (sawnwood) and wood based panels are summarized in **Table 10.** Lumber exports during period one were estimated to average about 4.5 million cubic meters annually, with the majority of exports being from the European regions (4.1 million cubic meters) and only 400 thousand cubic meters from the Eastern Russia region. All of those exports would be to the Pacific Rim markets, while European region exports would be to European hard currency markets. During the second period (1996-2000), lumber exports would be 3.2 million cubic meters, falling slightly over period one and economic conditions hold more of the lumber production for domestic consumption. Under pessimistic conditions, however, domestic use of lumber would drop and a total of 5.1 million cubic meters would be exported (4.9 million cubic meters from European Russia). The optimistic scenario would see lumber exports increase to a total of 5.7 million cubic meters, with 5.5 originating in European Russia. Eastern Russia exports (those going to Pacific Rim) would remain at only 200 thousand cubic meters under all scenarios due to the deteriorating capacity and quality limitations of the existing sawmill sector in East Siberia and the Far East. Increased exports will require substantial capital investment which is not expected to be available before 2000.

TABLE 10. ESTIMATED RUSSIAN EXPORTS OF SAWNWOOD AND WOOD PANELS TO HARD CURRENCY MARKETS, PERIOD AND ECONOMIC SCENARIO (Million Cubic Meters)

	Period 1			Period 2								
				Pessimistic			Baseline			Optimistic		
	European HC Markets	Pacific Rim Markets	Total HC Exports	Europ HC	Pac Rim	Total HC	Europe HC	Pac Rim	Total HC	Europe H	Pac Rim	Total HC
LUMBER (Mill CM)												
RUSSIA	4.1	0.4	4.5	4.6	0.2	4.8	3.1	0.2	3.3	5.6	0.2	5.8
Conifer	4.1	0.3	4.4	4.9	0.2	5.1	3.1	0.2	3.3	5.5	0.2	5.7
Larch	0.1	0	0.1	0	0	0	0.1	0	0.1	0.1	0	0.1
Other	4.1	0.3	4.4	4.9	0.2	5.1	3	0.2	3.2	5.4	0.2	5.6
Deciduous	0	0.1	0.1	0	0	0	0	0	0	0	0	0
EUROPEAN RUSSIA	4.1	0	4.1	4.9	0	4.9	3	0	3	5.5	0	5.5
Conifer	4.1	0	4.1	4.9	0	4.9	3	0	3	5.5	0	5.5
Larch	0.1	0	0.1	0	0	0	0.1	0	0.1	0.1	0	0.1
Other	4.1	0	4.1	4.9	0	4.9	2.9	0	2.9	5.4	0	5.4
Deciduous	0	0	0	0	0	0	0	0	0	0	0	0
EASTERN RUSSIA	0	0.4	0.4	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2
Conifer	0	0.3	0.3	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2
Larch	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0.3	0.3	0	0.2	0.2	0	0.2	0.2	0	0.2	0.2
Deciduous	0	0.1	0.1	0	0	0	0	0	0	0	0	0
PANELS (Mill CM)												
RUSSIA	0.4	0	0.4	0.3	0	0.3	0.3	0	0.3	0.3	0	0.3
EUROPEAN RUSSIA	0.4	0	0.4	0.3	0	0.3	0.3	0	0.3	0.3	0	0.3
EASTERN RUSSIA	0	0	0	0	0	0	0	0	0	0	0	0

Estimated export of wood-based panels (including plywood) are also shown in Table 10. Volumes are small in both period 1 and period 2, essentially all deriving from the European regions of Russia and destined to European hard currency markets. It is possible for Russia to export either market pulp, processed paper, or paperboard products. However, the analysis indicates that these exports will be limited from East Siberia and the Far East to the Pacific Rim. Estimated production of pulp, paper and paperboard in the Far East was a combined total of about 710 thousand tons in 1992 but only 66.8 million tons in 1994.. Production for the East Siberian Subregion was 1.158.4 million tons in 1994. The combined Eastern Russia region thus failed to reach the projected 2.4 million tons. Much of the East Siberian production would originate at the Bratsk, Lake Baikal and Ust-Ilimsk combines. While potentially accessible by rail to the Pacific port cities serving export markets, these facilities face imposing rail transport costs which have increased repeatedly in recent months. This complex also requires huge capital investments in order to maintain production and economic competitiveness. Finally, these mills have traditionally shipped to the European Russia region and to the former Republics of the former USSR. Far East pulp production is primarily from the technically obsolete mills of Sakhalin and Khabarovsk Paper production is primarily from Sakhalin. There is a bleak short-term outlook for improved economic performance from these establishments. Substantial capital will be required to update and/or expand these facilities - with little prospect of such investment from outside foreign sources under present conditions.

CHANGING RELATIONS WITH NEIGHBORS

Trade relations between Russia and its neighbors have been discussed in previous sections. Trade has in part been determined by political relationships and partly by economic realities including the need to earn foreign exchange. Trade has historically been with former planned economies, including other Republics of the former USSR, Eastern European nations, China, North Korea, and Cuba. With the dynamics of political and economic change, relations with Western Europe and the Pacific Rim (primarily Japan) have opened, where hard currency exports have provided considerable strength to the overall Russian Federation trade balances. The emergence of new trade partners include the Middle East, North Africa, South Korea, and potentially North America.

As political conditions have changed, so have the non-trade relations with neighbors interested in the Eastern Russian forestry sector and its domestic development. Nevertheless, joint ventures have traditionally been linked to the export of raw materials. This is particularly the case in Eastern Russia, including East Siberia and the Far East. Financial and technical assistance on a bilateral basis has been largely linked to transportation infrastructure (including roads and ports), harvesting, and other technology favoring the export of unprocessed logs. This has been the most evident form of 'international cooperation". Investment in direct forest sector operations and processing are much more limited and await more favorable economic investment conditions for joint ventures in the forestry and wood products sector. Nevertheless, initial cooperation is taking place and is interest is active (if not rapidly growing).

Joint Ventures

Foreign participation in the forestry and forest products sector of the Eastern Russian forestry sector has been limited but growing. While it is not presently feasible to fully document such activities, there is limited information available representative of the types and scale of activity to date, primarily in the Far East region (Miller, 1995; Sheingauz, 1996; US Dept. Commerce, 1996). The following examples simply illustrate the primary countries involved. The names and organizations involved are subject to change, as business relations are presently undergoing radical and frequent adjustments. Sheingauz (1996) reported that as of 1994 there were some 75 joint ventures registered in the Far East region active in the production and export of commercial roundwood (logs) with foreign equity shares ranging from 41 to 72 percent. The largest number were in Sakhalin Oblast (30) followed by Primorsk Krai (14) and Khabvarovsk Krai (14). There were also 37 registered joint ventures involved in sawmilling, furniture manufacturing and export of 'ready-made' products, with a total of 21 located in Khabarovsk Krai. Foreign capitalization was generally lower, ranging from 25 percent to 50 percent.

North Korea

Perhaps the oldest bilateral venture in the Far East is the cooperative logging agreement with North Korea. This agreement provides for joint operations centered in Urgalles, Khabarovsk Krai. In total, there are eight "projects" located in Khabarovsk and Amur. The agreement is for five years and subject to renewal. Assets remain the property of Russian interests. Korea provides labor (up to 18,000 laborers have been reported) while the Russian side provides the raw materials and equipment. Estimated output is 3 million cubic meters logs and 350 thousand cubic meters of chips. By agreement, 35 percent of the output goes to North Korea while 65 percent is retained by the Russian partners. Interest has been expressed in joint manufacturing, but has not developed to date. The prior agreement expired in 1993 but has recently been extended under new "terms" related to labor (7,000 workers), environmental controls, restrictions on political activities by North Korea (allegedly the "camps" have served as prison camps), and payment for the transport of logs within Russian territory on Korea's own account.[45] This agreement has been the subject of much controversy related to environmental matters and political strain with South Korea due to labor camp conditions and "escapees" seeking political asylum through South Korea. Operations are reported to be at a 'standstill' due to the lack of capital (Sheingauz, 1996).

Japan

Japan has also had a long involvement with the forestry sector in Russia, particularly in the Far East. The present pulp mills on Sakhalin were originally constructed by Japan over 50 years ago. The Vaninskii Timber Complex (Vanino-Tairiku) involves the Tairiku Trading Company. This lumber operation is a newly constructed facility has an output of approximately 55 thousand

[45] See *Russian Far East Update*, September 1994 and May, 1995. See also, *European Market Update*, April 1995

cubic meters of lumber annually. A similar operation has been operational for a longer period located in Siberia (Irgirma Tairiku). A second joint venture with Tairiku at the Port of Vanino has a reported output of 56,000 cubic meters.[46]

The Lidoga Russia-Japanese Joint venture was established in Khabarovsk Krai in 1989 for the production of hardwood lumber and chips for export The Ligoda Wood Processing facility has involved Itochi Shoji and Dallesprom. While originally holding a 49 percent interest, Itochi Shoji has reduced its holdings to approximately 10 percent. This was one of the earliest joint ventures by Japan in the Far East, but problems of an adequate raw material supply has forced reductions in output. Production has recently been reduced from 20 thousand cubic meters annually to 10 thousand cubic meters, and without arrangements for a satisfactory timber supply the future participation by Itochi Shoji is perhaps in doubt.[47]

Other joint ventures involving Japan include Somon in Ulchaii District, Khabarovsk with a production of about 18 thousand cubic meters per year. The Russian Wood Company Ltd (Tokyo) is a joint venture between Iskra Industry and Exportles, started in September 1994 with the objective of promoting RFE products in Japan. The oldest reported JV by Japan is the Igirma-Tairiku operations in Irkutsk, involving two sawmill production lines with wood drying facilities. Output capacity is reported at 56 thousand cubic meters annually. Mitsui-Tajima is also located at Irkutsk, with a mill with an estimated output of about 130 thousand cubic meters. Other expected cooperative operations include sawmills at Kharskii Biochemical Works and the Supiaiskii Timber Complex. [48] Rolent Ltd. is a Russian -Japan joint venture in Primorsk with a physical capacity of some 25 thousand cubic meters and with efficient technology. However, due to the imposition of requirements for using low-quality logs and the lack of drying capacity, this venture has had economic difficulties in providing internationally competitive products (Sheingauz 1996).

South Korea

South Korea has been actively involved since 1990 in the Russian Far East through a joint venture arrangement at Svetlaia, Primorsk Krai. Hyundai Company has invested approximately $US 7 million, with a planned production exceeding one million cubic meters of logs annually. The output in 1991 was reported at about this level, but fell to only 190 thousand cubic meters in 1992. This operation has also faced considerable difficulty, including disputes regarding land holdings and rights of indigenous Udege people in the upper Bikin as well as economic difficulties in part linked to export duties and forced sale of 50 percent of export earnings.[49] The original agreements preceded the economic and political reforms and is now confronted with new and revised legislation governing operations. Efforts to shut down this operation have been evident

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[46] See *Russian Far East Update*, December 1993; see also *European Market Update*, April 1995.

[47] See *Russian Far East Update*, June, 1993.

[48] See *Russian Far East Update*, March 1994, December 1994; see also *European Market Update*, April 1995

[49] See *Russian Far East Update*, January 1993

with potential intervention of the Central Russian government requested. Continued operations were in doubt at the end of 1995.

South Korea is also involved in a new joint venture Yakor Company (formerly the Sovetskaia Gavan Ship Repair Yard). The Korean partner is the Korea-Russia Industrial Company (Seoul). The Sovetskaia Gavan complex produces both timber products and manufactured furniture. [50]

United States

As relations with the United States improved in the post-reform period, there has been a very active interest in the Russian Far East (and elsewhere) as a potential source of timber in light of the diminished US supply, particularly in the US Pacific Northwest. Consideration of the import of unprocessed logs into the Pacific Northwest have been placed on hold due to US Department of Agriculture regulations restricting such imports on the basis of potential pest and disease risks to US forests. Interest in the alternative import of processed lumber has grown, yet volumes imported to date are small as previously noted.

Interest in joint venture arrangements in the RFE are perhaps most visible in the activities of the Weyerhaeuser Company in Khabarovsk. Weyerhaeuser has pursued two projects involving reforestation, in the Vanino District and Komsomolsk-na-Amure. Weyerhaeuser has shipped seedlings in cooperation with the Russian Forest Service for reforestation of some one million hectares of burned forest area. A proposed joint venture with the Koppinskii complex has, however, been withdrawn due to difficulties in reaching agreement on the proposed operations. Difficulties have included the share of ownership permitted, the valuation of the proposed operations, and environmental concerns.[51] The NDC Timber Company (Olympia, Washington) has been engaged with UREK in the LESCO joint venture at Yuzhno-Sakhalinsk. This operation hopes to export lumber to Japan with an anticipated output of about 25,000 cubic meters annually.[52] The Pioneer Group (Boston) is a partner in Forest Starma in partnership with Stara Holdings International at the Siziman Timber Project, Siziman Bay in northern Khabarovsk Krai. This logging operation was started in 1993 and anticipated export of logs during the fourth quarter of 1994.[53]

The US Global Forestry Management Group is pursuing a joint venture with Exportles and Sov Gavain Lespromhoz in Vanino County, Khabarovsk involving about one million hectares. This operation has been subject to controversy regarding the authority to allocate timber rights between the Khabarovsk Territorial authorities and the local county authorities. Operations are

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[50] See *Russian Far East Update*, May, 1995.

[51] See *Russian Far East Update*, May, 1993, May 1994, June 1994, September 1994,

[52] See *Russian Far East Update*, December 1993

[53] See *Russian Far East Update*, July 1994.

oriented to both Pacific Rim markets and domestic sawmills.[54] Global Forest Management is also engaged in joint venture operations for the Sovgavan Port which was founded in 1994 at the terminus of the Baikal-Amur railroad (BAM). KMJ has interests in Sakhalin involving production at about 13 thousand cubic meters of sawnwood processed to Japan dimensions.[55]

While the above examples of joint venture involvement in the timber sector is necessarily incomplete and subject to substantial revision as conditions change, it is representative of the active interests expressed by Russia's neighbors. In almost all cases, the primary interest is in the acquisition of rights to timber and export, preferably as logs but also increasingly linked to captive sawmill capacity and processed lumber exports. Acquisition of equity shares in mills under privatization has provided an opportunity not previously available to foreign interests. The lack of substantial capital investment in permanent facilities has been evident, and contributes to a perceived motive of simple "exploitation" of Russia's resources by foreigners and a resultant caution.

Bilateral International Cooperation

Broader bilateral cooperation has also been evident in the forestry sector. Japan has concluded the fourth agreement (KV agreement) for assistance to the sector through a system of credits in exchange for timber exports. The recently concluded fourth agreement would provide assistance in logging, transportation, and port facilities and limited credits for processing facilities. Japan has agreed to reduce tariffs on Russian sawn timber during the period 1995-98 where in the past the rates have exceeded duties on other lumber imports, including those from the US. China has taken steps to improve border trade with Russia, including reduced import taxes and easing of travel restrictions. The general relations with China, while improved, still involve difficulties for more direct involvement of Chinese workers in the forestry sector. South Korea has pursued facilities for wood processing in the Nakhodka Free Economic Zone though the "Russian-Korean Industrial complex, covering some 330 hectares and an investment of $US 400 million. A similar project involves US interests in the "Pacific-Industrial Technopark" but which still lacks significant investors.[56]

The United States and Russia signed a cooperative "Memorandum of Understanding" for wood converting and woodworking industries (including pulp and paper) on June 23, 1994. Objectives include development of investment in sustainable resource management, promotion of Russian privatization in the wood and paper industries, and development of regional infrastructure to improve utilization of Russian timber resources.[57] According to Roslesprom, it is hoped that

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[54] See *Russian Far East Update*, December 1994

[55] See *European Market Update*, April 1995.

[56] International Trade Administration, US Department of Commerce. BISNIS communication of May 15, 1995.

[57] *Memorandum of Understanding between the Government of the United States of America and the Government of the Russian Federation on cooperation in the sphere of the Wood and Pulp and Paper Industries*, June 23, 1994.

this agreement may ultimately attract direct investment in the forest products sector of $US 1.5 to 2 billion.[58]

A Working Group involving the US West Coast timber interests and the Russian Far East was formed in June 1995 as a sub-group of the US-Russia Business Development Committee. Involvement of the US Import-Export Bank in terms of funding guarantees and the OPIC guarantees of investment political risk insurance is expected to substantially increase US involvement in the Russian Far East. However, this assistance is not without controversy in the United States. Assistance to the forest industry in terms of technology, improved infrastructure, and upgrading of product quality for international markets are seen by many environmental interests as potentially contributing to heavier harvesting and environmental damage in the absence of effective government controls and regulations.

Canada is also involved in the Russian Far East with the forestry sector through the "Model Forest Program" at the Gassinskii Preserve in Nanaiskii District.

CONCLUSIONS

The forestry sector in Russia, including East Siberia and the Far East regions, has substantial potential for development. Resources are relatively abundant and utilization is presently limited by lack of access and appropriate technology. Substantial capital investment will be required to transform the existing industry to standards of technology and product quality to become truly competitive on the international markets of the Pacific Rim. Present political and economic conditions are not yet conducive to large scale foreign participation in the sector's development, but investment should increase gradually as conditions stabilize and become more favorable. Overall investments in infrastructure (access, transportation, housing, etc.) will also be required to make the harvesting and processing of timber viable under more market-oriented criteria of profit and loss. Neglecting capital investment costs (depreciation) will permit continued operations on the basis of covering incremental (cash) costs in the near term. By the turn of the century, however, the deteriorated industry capital will increasingly fail to be competitive (domestically or internationally) if domestic and international sources of investment are found.

With economic improvement, the demand for forest products will grow, perhaps significantly, within Russia. While transport distances and costs will limit access to the major Russian markets in the western (European) regions, the Eastern Russian forests should find growing domestic demand. Exports of timber and wood products in the near term will remain attractive as domestic prices adjust to international levels. Retention of foreign earnings will be required, however, to provide the base capital investments in modernization and upgrading of capacity.

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[58] See *European Market Update*, March, 1995

Trade of forest products with hard currency trading regions were expected to continue at levels evident in the late 1980's and early 1990's until 1995. However, industrial performance has continued to decline, at least through 1992. It is too early to determine whether Period One projections were in fact optimistic. Prospects for the period ending in 2000 depend on policies, *inter alia,* to promote investment, and the re-investment of hard currency generated by the current owners-producers the forest sector. These policies have not yet emerged.

The longer-term outlook for the volume of wood raw material exports to trading regions not belonging to the former Soviet Union is clouded in uncertainty. Rising domestic consumption levels interacting with the sustainable physical limits imposed by the forest resource may effectively limit the contribution which Russia can be expected to make to global consumption in regions outside of Russia, including the Pacific Rim, Western Europe, and possibly the United States.

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