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**USSR AS A PARTNER IN INTERNATIONAL TIMBER TRADE:
MAIN PRINCIPLES AND TENDENCIES**

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USSR AS A PARTNER IN INTERNATIONAL TIMBER TRADE: MAIN PRINCIPLES AND TENDENCIES

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INTRODUCTION

The USSR adheres to the idea of mutually advantageous, businesslike, and equitable interstate relations, this approach being our country's consistent, long-term policy.

Socialist countries are its major trade partners. Close economic ties between the socialist countries make it possible to solve their urgent economic problems and meet their demands for the basic types of products. In particular, the USSR acts as a principal supplier of timber and pulp-and-paper goods for the CMEA countries, meeting, as it does, more than 90% of their export demands in timber and about 50% in pulp and paper.

The manufacture of necessary products and their marketing are both developing successfully, owing to a rapid internationalization of economic activities and to growing integration and cooperation, in the context of the socialist countries' joint economic efforts. Development of trade, in particular in timber and the products of its processing, is undergoing a great impetus due to the abundance of this raw material in the USSR and to its rather short supply in other CMEA countries.

Within the CMEA, the trade in timber, just as in other goods, is carried out according to one-year, five-year, and long-term plans, which are duly agreed upon. The practice of mutual exchange is not restricted by the plans and is expanded through agreements on industrial cooperation and production specialization, as well as through compensation agreements.



The country's total growing stock is estimated at $85.9 \times 10^9 \text{ m}^3$ including $83.9 \times 10^9 \text{ m}^3$ in the national forests. The stock of mature and overgrown timber makes up $54.4 \times 10^9 \text{ m}^3$, including $46.3 \times 10^9 \text{ m}^3$ of coniferous wood. The national per capita figures are 2.7 ha for forest area and more than 300 m^3 for growing stock.

The USSR's wood resources are vast and the wood obtainable from forests is plentiful. However, when exploiting forests commercially one should pay due attention to other functions that the forests are able to perform.

The forest, a major oxygen supplier, is important as far as the biosphere is concerned; it is also a stabilizing factor for landscapes, ecosystems, and climatic features. The tourist, game, and recreational significance of the forest is increasing too.

Since the standing forest performs various ecological and social functions its use as a source of timber must be restricted to a certain extent. In the USSR, a great part of the forest is not subject to routine commercial practice, the logging work in them being either fully forbidden or essentially restricted. The protected forests possess $4 \times 10^9 \text{ m}^3$ of exploitable wood, the figure growing from year to year. The network of the country's reserves and national parks is becoming more extensive. In 1983 their number reached 154 and their area amounted to $14.3 \times 10^6 \text{ ha}$, compared with $8-9 \times 10^6 \text{ ha}$ in 1976. Over a considerable part of Soviet territory forest utilization is restricted. This territory includes protected and recreational forests, green belts for cities and industrial centers, and shelter belts along roads, rivers, and other reservoirs, and also mountain, near-tundra, cedar, and sand-binding forests. Some of them include commercially coniferous forests with much timber stock per hectare. However, they are not used for commercial logging since their protective and aesthetic significance is too great to do so. The forests of groups I and II occupy 23% of the total forest area, which is $175 \times 10^6 \text{ ha}$.

The allowed felling volume in the restricted forests is lower than that in commercial forests. The graded cutting areas of forests of groups I and II are used sparingly. This approach stems not only from the desire to keep the standing forests as they are, but also from pure economic reasons. The logging practice in group I forests is subject to more rigorous forest-management demands and involves greater organizational efforts, which raises the logging costs by at least 20 to 30%. As a result, the mountain forests that cover one third of the forest area account for a mere 10% of the country's procured wood.

However, the total potential of timber supply from the USSR's forests is still very great. According to the 1973 estimates, a net annual growth of growing stock makes up $844 \times 10^6 \text{ m}^3$, including that of coniferous wood, $577 \times 10^6 \text{ m}^3$. The allowable timber harvest (permissible felling volume) in the national forests amounts to $640 \times 10^6 \text{ m}^3$.

The country's forestry policy fully succeeds in preserving and increasing forest wealth. In 1983, reforestation and afforestation were carried out over an area of $2.2 \times 10^6 \text{ ha}$, including the planting and seeding of forests over $1.0 \times 10^6 \text{ ha}$, and assisted the natural regeneration over $1.2 \times 10^6 \text{ ha}$. Though the 1970s and 1980s have not seen an extension of these efforts toward new areas, the quality and efficiency of this practice have been

increasing and the results have improved. Greater efforts are made to restore forests with coniferous species over cuttings and slash firings, to prevent cuttings from becoming boggy, and to protect forests from pests, diseases, and fires. Over 60% of all the forests are safeguarded against fires by an aircraft service. In 1983, pest control activities were carried out over an area of 1.55×10^6 ha, with 56% of the area being treated biologically. Much attention is given to the regeneration of forests, to protective afforestation, and to anti-erosion planting; more efforts are being made for forest development. All this results in an increased area covered with young stand, a better qualitative composition of crops, and a higher productivity.

In 1983 the USSR forest industry employed 459000 people, as compared with 433000 in 1970 and 280000 in the pre-World War II period. In spite of the mechanization of forestry the number of employed has not decreased since many of the jobs are labor-consuming, especially tending the young stand.

Note that the tasks faced are so complicated and vast in scope that even such a large number of forestry jobs proves inadequate and fails, in some instances, to prevent an undesirable change in species or to restore the cuttings.

THE USSR TIMBER INDUSTRY

Vast forests of the USSR have provided a basis for the developed timber industry to yield considerable amounts of wood raw materials and to use it to the best advantage. The timber industry still holds an important place in the country's economy, despite the priority growth of such "new" branches as electronics, chemistry, and engineering. This can be seen from the statistics in Table 1.

TABLE 1. The share of the timber industry in total industrial output (%).

	1975	1980	1983
Industry, total	100	100	100
Timber industry*	5.1	4.5	4.5

* Including wood logging, woodworking, and the pulp-and-paper industry according to wholesale price data as of January 1.

According to the 1975 data (more recent data are not available), the timber industry employed 8.2% of the total industrial and production workers, the absolute number being 2795×10^3 , an insignificant decrease over 1970 (2848×10^3) or 1965 (2819×10^3). The share of those engaged in the pulp-and-paper industry rose to 10% in 1975 as compared with 7.5% in 1965. In 1975, the share of forest exploitation (mainly wood logging, as well as wood floating, boxing, and sleeper sawing jobs) accounted for about 30%, that of sawmilling and woodworking, for 45%, and those of furniture making and silviculture and other production activities, for 11 and 4%,

respectively.

Within the timber industry, woodworking has developed more rapidly while wood logging has kept stable or even somewhat decreased in volume. This has involved a transition to an intensive stage using a new technological base, which is evidenced by the data on the growth rate of the total output, given in Table 2.

TABLE 2. Growth rate of total output (1940=1).

	1940	1965	1970	1975	1980	1981	1982	1983
Industry, total	1	7.9	12	17	21	22	22	23
Timber industry	1	3.7	4.8	6.2	6.7	6.9	7.2	7.4
Wood logging	1	2.3	2.6	3.1	3.0	3.0	3.1	3.1
Woodworking	1	4.5	6.2	8.1	9.2	9.6	10.0	10.0
Pulp-and-paper industry	1	6.8	10.0	14	16	17	17	18

Changes in wood removals in the USSR are shown in Table 3.

TABLE 3. Changes in wood removals($\times 10^6$ solid m^3).

	1940	1955	1965	1970	1975	1980	1981	1982	1983
Total wood	247	334	379	385	395	357	358	356*	356*
Incl. industrial	118	212	274	299	313	278	277	273	275

* Including $318 \times 10^6 m^3$ of wood in the national forests.

The volume of removals has been stabilized because logging in new, undeveloped, and remote areas is rather expensive, hence the need for more economically efficient methods of utilization and processing of raw materials rather than for increased harvesting output. The actual volume of logging is still much lower than available in the felling area, but the scale of logging remains significant, the area of annual felling exceeding 3×10^6 ha, the area being equivalent to the territory of a country such as Belgium.

New resources of raw wood material are usually drawn from the economic turnover in regions where new tracks or railways are laid.

For example, the Baikal-Amur railway line (BAM) made it possible to begin the exploitation of forest lands that spread over 100-200 km to the north and south of the railway, to cover a total area of 54×10^6 ha with a merchantable stock of wood of about $2 \times 10^9 m^3$

However, there is a considerable potential for increasing wood harvesting procurement in the developed, traditional forestry regions through silvicultural felling and more efficient use of broadleaf trees. In the European part of the USSR alone one can obtain another $40-60 \times 10^6 m^3$ or more

through intermediate felling. No doubt the cleaning and sanitation cutting practice is much more labor-consuming and two to three times more expensive than clear cutting. However, as with the "sparing" kinds of clear felling, clear felling with narrow lanes and intermediate felling do not cause any grave ecological damage to the forest communities, but contribute to natural reforestation and to a sharp increase in productivity. Thus, expenditures on extra manpower and wood-cutting jobs are fully recovered, counterbalanced with economic gains due to improved raw material resources. A good experience in intermediate forest-use has been gained in Latvia and other Baltic republics, as well as in the western Ukraine. Through thinning around 40 m³ of timber per hectare are obtained, which is 1.5-2 times more than obtained in the rest of the European regions of the USSR. The practice of intermediate forest-use yields up to 50% of the total wood procured.

Intensive development of the timber industry contributes not only to the stabilization of wood logging but also to a regular output of primary, converted timber, with plywood output somewhat lagging behind. At present, a fuller utilization of raw materials is taking place against the backdrop of a more active substitution of all kinds of wood-based panels and paper board for sawn wood materials. The data in Table 4 show the trends in wood processing.

TABLE 4. Trends in wood processing.

	1940	1965	1970	1975	1980	1981	1982	1983
Sawn wood(10 ⁶ m ³)	35.4	111.0	116.4	116.2	98.2	98.1	97.5	97.0
Plywood(10 ³ m ³)	782	1756	2045	2196	2022	2035	2015	2103
Fiber boards(10 ⁶ m ²)	4.1	138	208	409	469	482	469	502
Wood particle boards (10 ³ m ³)	-	798	1991	3996	5118	5390	5583	5749
Pulp(10 ³ tons)	592	3234	5110	6815	7123	7319	7444	7913
Paper(10 ³ tons)	838	3231	4185	5215	5288	5399	5439	5667
incl. newsprint (10 ⁹ m ²)	-	14.5	21.4	26.3	30.0	30.1	30.7	31.6
Cardboard(10 ³ tons)	153	1449	2516	3368	3445	3555	3539	3889

Full use of wood and recovery of all waste materials are economically more promising and resourceful than an extensive build-up of wood logging. Sawn wood operations alone could provide about 45×10⁶ m³ of recoverable wastes. Although the most efficient enterprises manage to utilize the raw materials with a factor as high as 0.92-0.94, the average figure for the industry as a whole is but slightly over 0.7. The combined conversion of wood reduces the cost of products and increases commercial resources, which in turn contributes to a most reasonable satisfaction of the national economic requirements, while duly allocating the goods that are in export demand.

The transportation facilities available for delivery of wood goods are of great importance. The share of wood goods in railway haulage has dropped, but is still rather high; besides, the share of freight traffic has decreased at a slower rate than has the share of weight, because the average distance of wood goods haulage is increasing.

Wood and timber also account for 10% river freight and 7% marine freight (see Table 5).

TABLE 5. Wood transportation.

Goods transported	1940	1965	1970	1975	1980	1981	1982	1983
By railway, Total (10 ⁶ tons)	605	2415	2896	3621	3728	3762	3725	3851
Incl. wood goods (10 ⁶ tons)	70	175	179	187	147	152	143	151
Total freight traffic (10 ⁹ tons/km)	421	1950	2495	3237	3440	3503	3465	3600
Incl. wood goods (10 ⁹ tons/km)	52	263	295	308	252	264	247	264

Since haulage of primary wood and timber is marked by rather low efficiency plans are underway for on-site wood sawing operations, i.e., for increasing the output of sawn materials in the vicinity of the logging sites. Some of this work has to be done by the lumber enterprises.

TRENDS IN TECHNOLOGY AND SOME ECONOMIC STATISTICS OF THE USSR TIMBER INDUSTRY

The timber industry is steadily increasing the level of mechanization of its jobs and operations. The statistics in Table 6 show the increased number of mechanized production and transfer devices and machines installed at the timber, woodworking, and pulp-and-paper enterprises.

TABLE 6. Increased mechanization in the wood industry.

	1971	1975	1979	1981	1983
Mechanized production lines	6228	8550	10377	11289	11784
Transfer lines	612	1196	1626	1811	2039

Wood felling sites are also witnessing an intensive mechanization of jobs and operations. The volume of mechanized operations as a percentage of the total work done in grading, sizing, and piling of wood has developed as shown in Table 7.

TABLE 7. volume of mechanized operations as a percentage of work done.

	1970	1975	1980	1981	1982	1983
Grading	62	72	78	78	78	80
Piling	60	70	84	85	87	89

On the whole, 41.4% of the wood logging jobs were mechanized in 1982, as compared with 40.5% in 1980. The equipment is being updated and its output is growing. The power capacity of an average skidding vehicle rose from 89.0 h.p. in 1975 to 91.5 h.p. in 1980, the respective figures for an average-rated articulated lorry being 193 and 197 h.p., with a rise in load capacity from 17.8 to 18.5 tons.

The main feature of technological change in wood logging practice is the use of multipurpose machines, which reduces hard and hazardous manual operations on a logging site, greatly contributing to higher labor productivity.

The volume of mechanical jobs done on logging sites is shown in Table 8.

TABLE 8. Volume of mechanical jobs at logging sites.

	1975	1979	1980	1982
Mechanical felling	0.9	19.2	25.3	33.3
Chockerless skidding	11.6	31.6	38.6	47.7
Delimiting	14.4	25.2	29.5	35.7

In 1982, the logging enterprises of the Ministry of the Paper and Wood-Working Industry used mechanical equipment for 16.3% of felling work, 23.4% of skidding work, and 17.5% of delimiting work. In many heavily wooded regions these figures, however, exceeded 50%. This is especially so in remote, labor-deficit regions of Siberia and the North of the European part of the USSR. By the end of 1984 the volume of mechanical felling was to be increased to $53 \times 10^6 \text{ m}^3$, that of chockerless skidding to $80 \times 10^6 \text{ m}^3$, and that of mechanical delimiting to $50 \times 10^6 \text{ m}^3$.

To provide enterprises with larger quantities of efficient wood-cutting and other equipment, an integrated scientific-and-technological special-purpose program, "Development and Mastering of Integrated Mechanical Equipment and Operations for Wood-cutting, Haulage, Primary Woodworking Jobs and Building of All-Year-Round Forest Roads" has been worked out.

New machines considerably raise labor productivity, although the difficulties involved in mastering them somewhat hinder this process. Thus, the best operators of the LP-19 feller-buncher handle $60 \times 10^3 \text{ m}^3$ or more a year, surpassing a rated standard, while the average annual output for this machine for the industry as a whole is about 2.5 times lower. However, experience in operation of these machines is being gradually gained and the

repairing and maintenance services are being improved, so that outputs and utilization will yield better results. The machines themselves are being improved and brought up to date, and new types are making their appearance on wood-cutting sites.

Heavy, powerful machines prove most efficient on clear cutting sites with large-size trees where the ground is of high bearing capacity. Their employment, however, unfavorably influences natural reforestation as machines destroy regrowth, damage the soil, and clutter up the site with cut debris. All this urgently calls for the design of "ecologically soft" machinery that does minimum damage to nature.

The labor efficiency of wood haulage depends both on power and loading capacity of vehicles and on the availability of adequate roads. The share of the all-year-round forest roads is growing. In 1978 they were used for haulage of 58% of total wood as compared with 47% in 1968, but a systematic and regular exploitation of all-year-round hard-surface roads is still an urgent problem. The problem becomes increasingly pressing because the average haulage distance to many important wood-procuring regions is becoming longer. This keeps transportation costs very high, thus determining, to a large extent, the prime cost of delivered wood. In many large wood-logging enterprises haulage accounts for about 50% of the cost, while the expenditure on road construction and purchasing of transport facilities amounts to 75% of the total industrial capital investment. The share of haulage operations in the total labor consumed on wood-cutting sites is 20-30%. Employment of large-capacity, high-power log trucks, while increasing labor efficiency of haulage operations, does not prove worthwhile in many cases because they destroy roadbeds, thus involving more money in road construction, repair, and maintenance.

A widely used technique is to haul wood from cutting sites mainly as part-tree timber, responsible for about 92% of the total haulage in 1985. The estimated share of whole-tree timber is 3%, and that of short-wood is 5%.

The years 1981 and 1982 saw an increase in the power capacity of one man engaged in wood-sawing and woodworking from 10.3×10^3 to 10.9×10^3 kW/h. In 1981-1982, 12 automatic control systems were put into operation in woodworking and pulp-and-paper production, nine of them to control manufacturing processes.

Between 1970 and 1983 the growth of capital investment in the timber industry was insignificant, the industry's share in the total industrial investment having decreased from 4.6% to 3.7% (Table 9), since attention was mainly paid to a more efficient use of the money already allocated.

TABLE 9. Capital investment in comparable prices (10^9 rubles).

	Average			
	1971-1975	1976-1980	1981-1982	1983
Industry, total	34.5	44.8	50.2	53.7
Timber industry	1.6	1.8	1.9	2.0
Harvesting and working	1.1	1.2	1.3	1.4
Pulp-and-paper production	0.5	0.6	0.6	0.6

The rate at which new production units were put into operation through constructing new enterprises and enlarging or updating the existing ones dropped (annual average) to 0.7×10^6 m³ during 1981-1983, as compared with 1.0×10^6 m³ during the previous decade. The respective figures for pulp were 0.2 and 0.3×10^6 tons, and for paper and paper board they were 0.3 and 0.2×10^6 tons.

Supply of the timber industry with equipment and other means of production is growing as quickly as the rate of growth of industrial production funds, being but slightly lower than those for industrial purposes as a whole. As to the promising subbranches involving the intensive conversion of wood, the funds are even somewhat higher, Table 10.

TABLE 10. Investment in equipment and other production items.

	1970	1975	1980	1981	1982	1983
Industry, total	100	151	217	232	248	266
Timber industry	100	145	199	210	223	238
Wood logging	100	133	166	173	183	192
Woodworking	100	150	206	220	232	246
Pulp-and-paper production	100	153	227	242	259	281

The increase of funds was maintained in spite of their rather intensive withdrawal: for example, in 1983 the timber industry wrote off 2.6% of assets while industry as a whole lost 1.2%. The reason is a high degree of amortization in harvesting, which amounts to 6.1% and reflects the necessity to move into new wood-cutting areas, thus abandoning roads and houses. On the other hand, the share of the amortization of funds for wood-working is close to the average for industry, 1.8%, while for pulp-and-paper this share is as low as 0.7%.

One should note that the structure of industrial production funds in the timber industry comprises a rather high share of the active part - machinery and equipment. This is evidenced by the statistics in Table 11.

TABLE 11. Structure of industrial production funds in percentage of the total (as per January 1, 1983).

	Funds, total	Build-ings	Struc-tures	Trans-fer fac-il-ities	Machines and equipment				Trans-port means	Other basic funds	
					Total	Power	Material working	Mea-suring			
Industry, total	100	28.4	18.8	10.8	39.0	7.6	28.7	1.5	1.0	2.2	0.8
Timber industry	100	32.0	17.9	4.8	39.1	4.7	33.3	0.4	0.5	5.5	0.7
Harvesting	100	18.9	29.4	2.3	35.7	4.3	30.7	0.1	0.4	13.0	0.7
Woodworking	100	45.2	11.3	3.8	35.0	3.2	30.7	0.3	0.6	3.9	0.8
Pulp-and-paper production	100	30.5	14.9	7.7	45.5	6.3	37.8	0.7	0.5	1.1	0.3

The capital per capita in the timber industry is growing even more rapidly than in industry as a whole, being 247% in 1983 as compared with 219% in 1970. During the 1980-1982 period alone the capital rose from 10.3 to 11.5×10^3 rubles. The capital-labor ratio of wood logging jobs was somewhat lower than the average, being 9.9×10^3 rubles in 1982, but it still showed an accelerated growth due to the supply of expensive and efficient machines. In 1981-1982, the capital-labor ratio of sawmill and woodworking enterprises rose from 8.6 to 9.5×10^3 rubles.

It is obvious that the development of the timber industry is largely dependent on the labor productivity that can be achieved in the corresponding industries. Labor productivity of the industry is growing, although somewhat lagging behind that in more advanced industries, with rather high increment rates being observed at enterprises engaged in the intensive working of wood and the lowest rates being typical of wood-logging jobs (Table 12).

TABLE 12. Labor productivity.

	1940	1965	1970	1975	1980	1981	1982	1983
Industry, total	100	372	492	657	769	789	806	835
Timber industry	100	269	348	450	493	510	525	543
Wood logging	100	217	254	315	322	326	337	339
Woodworking	100	243	322	414	468	487	505	522
Pulp-and-paper production	100	300	405	539	568	588	599	636

The total annual output per scheduled worker (the amount of timber extracted divided by the number of workers engaged in cutting and extraction operations) rose from 208 to 571 m^3 a year between 1950 and 1975. It dropped somewhat, however, to 557 m^3 in 1980 in new timber exploitation regions, with the average volume of long-tailed timber decreasing and

haulage distance increasing. Introduction of new, efficient equipment and improvement of the processes made it possible to dramatically change this trend, and 1982 saw again the level of 570 m³. Note, however, that this level is at least 9% higher than it was in 1980, if one applies comparable evaluation and bears in mind the rise in labor input per cubic meter.

The power available per worker engaged at a wood-cutting site reached 25.6 kW in 1980 and rose during four years by 10%.

The expenditures on timber industry products show that it is a relatively labor- and capital-intensive industry. The share of depreciation and cost of wages are large as well. On the other hand, the expenditure structure shows that the industry's subbranches are highly autonomous, which means that it is less dependent on other industries for raw and other materials. Table 13 illustrates the situation in 1982.

TABLE 13. Expenditure structure of the timber industry (percentage of the total).

	Total expen- diture	Raw and other materials	Fuel	Power	Amor- tiza- tion	Wages plus social insurance	Other expen- diture
Industry, total	100	66.1	4.1	2.8	7.6	14.5	4.9
Timber industry	100	50.6	4.0	2.6	10.0	24.3	8.5
Wood logging	100	28.5	4.6	1.3	13.5	34.6	17.5
Woodworking	100	61.1	2.5	2.0	6.2	23.1	5.1
Pulp-and-paper production	100	58.0	6.4	5.9	13.9	13.2	2.6

The profits of enterprises (less turnover tax) in the timber industry are, on average, lower than in industry as a whole. Besides, harvesting has long shown no profits and received state subsidy from the budget. It was as late as 1982, when the prices for timber were somewhat raised, that this branch exhibited a favorable balance and profitability (the ratio of profit and the cost of fixed assets, productive assets, and circulating capital). Table 14 shows the data for changes in these statistics.

TABLE 14. Timber industry profits and profitability.

	1970	1975	1980	1981	1982	1983
<i>Profits</i>						
Total industry (10 ⁹ rubles)	56.0	65.9	73.3	75.0	87.8	92.7
Timber industry (10 ⁶ rubles)	2587	2216	1565	1571	3659	3781
Logging (10 ⁶ rubles)	901	512	-258	376	1026	865
Pulp-and-paper production (10 ⁶ rubles)	484	588	410	404	878	1021
<i>Profitability</i>						
Total industry (%)	21.5	15.8	12.2	11.5	12.6	12.4
Timber industry (%)	20.0	11.4	6.1	5.8	12.4	12.3
Logging (%)	16.4	6.3	-2.6	-3.6	9.3	7.5
Pulp-and-paper production (%)	14.7	10.7	5.2	4.6	9.3	10.3

SOVIET TIMBER EXPORTS

"Traditional" is a most appropriate word when speaking of timber export from our country. Even before the Revolution, Russia was one of the main suppliers of timber to the world market. Later on, in 1921, the young Soviet Republic began its foreign trade with shiploads of plywood and sawn timber. Since then the All-Union Foreign Trade Association "Exportles", which carries out practically all Soviet foreign trade in timber and pulp-and-paper goods, has become the world's largest timber trade company.

Russia's timber exports (in terms of the present territory) was $10.9 \times 10^6 \text{ m}^3$ in 1913, including $4.8 \times 10^6 \text{ m}^3$ of sawn timber, $60 \times 10^3 \text{ m}^3$ of plywood, $3.9 \times 10^6 \text{ m}^3$ of pulpwood and pit props, and $1.3 \times 10^6 \text{ m}^3$ of coniferous saw logs. In 1930 the export of forest products from the USSR exceeded the pre-Revolution level and amounted to $13.0 \times 10^6 \text{ m}^3$. The trade expanded both due to an increased volume of exported goods and due to an increased number of commodity items. New regions were involved in export production. From the end of World War II up to 1959 timber exports from the USSR were lower than those in the 1930s. This decline was caused by the home demand in building materials for restoration and development of the war-torn national economy. However, with the restoration period nearing its completion, timber exports from the USSR gained strength at an increasing pace and became more diversified. The data illustrating changes in the export statistics for main timber and paper goods are given in Table 15.

TABLE 15. Timber export statistics for the USSR.

	1930	1940	1950	1960	1970	1980	1981	1982	1983
Coniferous sawlogs (10^6 m ³)	1.5	0.1	0.1	1.5	7.3	6.5	6.2	6.2	6.9
Pulpwood (10^6 m ³)	3.3	0.6	0.1	1.6	6.0	5.7	5.8	5.4	6.3
Sawn timber (10^6 m ³)	4.5	0.4	1.0	5.0	8.0	7.1	6.9	7.2	7.3
Plywood (10^3 m ³)	76	17	48	129	281	314	324	336	328
Wood fiber boards (10^6 m ³)	-	-	-	-	42	91	96	83	79
Wood particle boards (10^3 m ³)	-	-	-	2	145	332	362	334	328
Furniture (10^6 rubles)	-	-	-	1	7	26	28	24	20
Pulp (10^3 tons)	-	-	68	244	448	821	824	888	1012
Paper (10^3 tons)	3	1	30	122	475	647	659	691	669
Paper board (10^3 tons)	-	-	-	1	247	372	388	325	365

The statistics in Table 15 are good evidence of the changes taking place in Soviet timber exports. These consist largely in the stabilization of, or even some reduction in, goods requiring little processing and in a parallel increase in the export of pulp-and-paper and other intensively worked wood goods.

The USSR continues to hold a very strong position as an exporter of timber; as for pulp-and-paper goods, the Soviet share of the world market is increasing, but still remains at the rather low level of less than 10% of world papers (Table 16).

TABLE 16. World and USSR timber exports.

	1970			1981		
	World	USSR	USSR share (%)	World	USSR share	USSR (%)
Coniferous sawn material (10 ⁶ m ³)	49.3	8.0	16	60.8	6.7	11
Pulpwood (10 ⁶ m ³)	26.6	6.6	25	41.6	5.8	14
Coniferous sawn wood (10 ⁶ m ³)	24.4	7.4	30	23.0	6.2	27
Plywood (10 ⁶ m ³)	4.753	0.281	5.9	7.013	0.324	4.6
Wood fiber boards (10 ⁶ m ³)	2.062	0.139	6.7	2.415	0.319	13.2
Wood particle boards (10 ⁶ m ³)	2.048	0.145	7.0	5.153	0.362	7.0
Pulp (10 ⁶ tons)	13.490	0.448	3.2	17.589	0.844	4.8
Newsprint (10 ⁶ tons)	10.619	0.260	2.4	13.165	0.322	2.4

The bulk of exports of roundwood are from the Asian part of the USSR, especially in the case of sawlogs (about 80%). At the same time the the Asian share in exports of sawn goods and pulp is insignificant, only 2-3%. All wood panels, paper, and paper board are exported from the European part of the country.

The major importers of Soviet sawn timber are European countries (eight out of ten leading states): the GDR (18% of total Soviet export in 1983), Great Britain (17%), Hungary (9%), the FRG (8%), Cuba (5%), Italy (5%), France (4%), the Netherlands (4%), Belgium (3%), and Egypt (3%). The European market is also the basic one for Soviet export of timber boards and pulpwood, while Japan leads in purchasing coniferous sawlogs (71% of 1983 Soviet exports in 1982). The USSR export of pulp-and-paper goods is mainly delivered to the European socialist countries (about two thirds).

When using the conversion factors for the volume of exported forest products and paper goods applied by the Forestry Committee of FAO, one can estimate the total volume of timber raw equivalent exported from the USSR in 1983 as 37×10⁶ m³. This is a mere 10% of the logging volume, which shows that the country's timber and paper industry is mainly used to meet the national economic demands, with the exports being only of secondary importance.

Calculation of the export quota for sawn timber, an important export item, is further proof of a rather low ratio between USSR exports and production volumes (Table 17).

TABLE 17. Export and production of sawn timber.

	1913	1930	1960	1970	1980	1982	1983
Production of sawn timber (10 ⁶ m ³)	11.7	21.9	105.6	116.4	98.2	97.5	97.0
Export of sawn timber (10 ⁶ m ³)	4.8	4.5	4.9	8.0	7.1	7.2	7.3
Export quota (%)	41	21	4.7	6.9	7.2	7.4	7.6

The USSR's export quota seems especially moderate when compared with those of such timber-exporting countries as Canada, Sweden, Finland, and Austria, whose exported raw material equivalent in conventional units amounts to 60-80% of the logging volume, with an export quota for production of the main timber and paper goods reaching 90%.

In recent years the share of timber and paper goods in the whole export revenue has been decreasing.

The significance of timber and pulp-and-paper goods is, however, relatively greater in trade with the market economy countries. If one takes into consideration a decrease in prices for some other export goods, especially since 1982, and the persistent trend for higher prices of timber and paper goods, their significance in generating export revenue is enhanced. Table 18 shows the statistics for the value of the main timber goods exported from the USSR.

TABLE 18. Main timber goods exported from the USSR.

	1930	1940	1950	1960	1970	1980	1981	1982	1983
Total USSR exports (10 ⁹ rubles)	0.81	0.24	1.6	5.0	11.5	49.6	57.1	63.2	67.9
Timber goods* (10 ⁶ rubles)	134	15	50	275	749	2009	1893	1791	1916
Round timber (10 ⁶ rubles)	57	8	8	55	254	615	531	451	499
Saw logs (10 ⁶ rubles)	11	0.5	1.4	21	142	389	307	249	278
Pulpwood (10 ⁶ rubles)	25	4.3	1.7	16	70	153	152	133	138
Sawn timber (10 ⁶ rubles)	67	6	26	165	300	784	712	661	694
Plywood (10 ⁶ rubles)	6	0.9	4	13	31	77	80	81	83
Pulp (10 ⁶ rubles)	-	-	5	23	54	221	242	258	280
Paper (10 ⁶ rubles)	0.2	0.1	6	17	65	172	188	212	217
Paper board (10 ⁶ rubles)	-	-	-	-	30	80	86	76	90
Fiber board (10 ⁶ rubles)	-	-	-	-	8	30	37	33	32
Wood particle board (10 ⁶ rubles)	-	-	-	-	8	19	22	21	21
Furniture (10 ⁶ rubles)	-	-	-	1	7	26	28	24	20

* Less the three bottom items.

Thus the share of timber and paper goods in Soviet exports dropped to 3% in 1983, whereas in the 1960s and 1970s it varied from 5 to 6% and normally exceeded 10% in the pre-World War II period. The share of high value-added products (pulp-and-paper and wood panels) in Soviet timber exports is gradually increasing, but still remains at a relatively low level (about one third).

Soviet trade organizations extensively use the services of brokers and agents while dealing in foreign markets and at the same time develop close ties with importers and final users.

The USSR relies more and more on modern methods of forest products transportation to their clients, including the delivery of sawn goods in packages and of other products in blocks by several units, which enables both parties to draw additional advantages.

Having at its disposal a wealth of natural and production resources, the USSR does not depend on imports but it is, nevertheless, interested in various purchases, including timber goods, in accordance with the rational international division of labor. Even according to formal logic the

development of exports gives rise to, and stimulates, the flow of imported goods, which is confirmed by the changing statistics for timber and paper goods and related products imported to the USSR (Table 19).

TABLE 19. Main timber imports to the USSR.

	1930	1940	1950	1960	1970	1980	1981	1982	1983
Total USSR import (10 ⁹ rubles)	0.83	0.25	1.3	5.1	10.6	44.5	52.6	56.4	59.6
Timber goods (10 ⁶ rubles)*	14	6	51	94	224	889	939	884	797
Pulp (10 ⁶ rubles)	4	3	0.2	13	49	89	129	102	99
(10 ³ tons)	55	86	3	83	287	221	273	222	242
Paper and paper board (10 ⁶ rubles)	7	1	6	22	99	456	431	459	365
(10 ³ tons)	70	12	25	113	480	905	821	861	748
Paper and paper board products (10 ⁶ rubles)	-	1	0.3	9	37	213	230	202	218
Furniture (10 ⁶ rubles)	-	0.5	0.5	59	179	420	517	578	480

*Less the two bottom items.

The growing Soviet timber imports are largely made up of an assortment of pulp-and-paper products and of products of southern origin such as veneer logs and veneer of tropical wood species, cork bark, parquet, and sawn timber of hardwoods.

To use the vast wood resources of the USSR in the economy turnover (valorization) and to promote of the national export potential requires considerable production capacities, capital investments, and manpower. This task can be accomplished through additional resources and the introduction of new types of international cooperation.

These forms of cooperation include the use of foreign manpower for logging in the USSR, the construction and modernization of timber enterprises by foreign companies, which act as general contractors, as well as compensation agreements. Contracts for such a cooperation normally stipulate that a foreign partner provides material means or services, which are later compensated for by output produced.

At present, under intergovernmental agreements the USSR employs Bulgarian workers in logging jobs. The Soviet side provides wood-cutting equipment, fuel and energy, vehicles, tools, and spares, as well as services; it also sees to it that the logging, reforestation, and construction regulations are duly observed. The Bulgarian side sends manpower to the logging areas and does the work of logging, construction, and reforestation. The expenditures on wages for Bulgarian workers are compensated with raw wood supplies, the share of wood supplied being estimated from the ratio of the partners' expenditures. The deliveries under the agreements concluded

are classified as noncommercial and thus not included in export volume statistics.

Also of interest is the experience, although as yet limited, of inviting foreign companies for the construction and modernization of timber and pulp-and-paper key projects in the USSR, when the companies act as general contractors. For example, in the 1970s Finnish companies built the Lake Pyaozero lumber logging establishment in the Karelia border district; in 1983 they completed the modernization of the Svetogorsk pulp-and-paper combine in the same region. The Finnish side was paid with additional supplies of timber material from the USSR.

Since the late 1960s the Soviet timber industry has maintained cooperation with Japan on the basis of compensation agreements. The latter provides the USSR with special-purpose credits, for purchases of Japanese-made logging equipment and road machines, mechanisms, spares and materials, with credits being repaid by Soviet supplies of merchantable wood, technological chips, and sawn timber. The annual deliveries under this agreement exceed $2 \times 10^6 \text{ m}^3$.

A multilateral, compensation-based project is a large pulp mill in Ust-Ilimsk, put into operation in 1982 and having a rated capacity of 500×10^3 tons of commercial, bleached sulfite pulp. The main equipment for this mill was supplied by French and Swedish companies, the credits for construction were granted by French banks and some European socialist countries. The credits are repaid through pulp deliveries from Ust-Ilimsk to the socialist countries and France as well as to other West European countries.

The late 1970s saw the first Soviet compensation arrangements in the furniture industry with Swedish and FRG companies. The deliveries of equipment and materials to Soviet enterprises are paid for in products whose specifications and quality fully conform with present-day requirements, while the high quality of raw material used makes them competitive in the satiated West European furniture market. These new forms of cooperation are mutually advantageous, since foreign partners can obtain from the USSR additional quantities of high-quality timber products, while the Soviet side saves some capital and labor costs, speeds up construction and commissioning of industrial projects, and increases its export potential. The two sides are interested in this steady and long-term international cooperation, which always proves favorable both for the partners and for the world market as a whole due to the planned nature of agreements on the volume and structure of deliveries.

The USSR, in turn, takes part in building projects of timber and pulp-and-paper industry abroad. For example, the Soviet foreign-trade association "Neftekhimpromexport" has built in several countries: a pulp mill of 140×10^3 tons capacity and the plants for manufacturing capacitor and cigarette paper in Bulgaria, a factory for making container corrugated cardboard of 100×10^3 tons capacity in Rumania. The USSR also took part in some joint projects in Czechoslovakia: in the modernization of a large pulp-and-paper combine in Ruzomberok, jointly with the Canadian company "Simons"; and in the construction of a mill for the manufacture of hardwood beech pulp in Paskov, a consortium deal with the Finnish group "Metex" ("Valmet and Yalkhjavaara" companies).

Such agreements on specialization and cooperation of production are gaining greater importance. The CMEA countries have concluded over 1000 bilateral and about 120 multilateral agreements of this kind. Although the timber industry is not of top priority in such cooperation, a number of agreements are operative in the field of woodworking and pulp-and-paper production.

A good example of reliable international cooperation is provided by intergovernmental agreements on economic, industrial, and scientific and technological cooperation concluded between the USSR and a number of Western countries. The powerful scientific and technological potential of the USSR and its considerable experience in fundamental and applied research, as well as in the development of new manufacturing processes and equipment, provide a lasting stimulus for its partners. The same is true of the timber industry. An example of the wide scope of research problems is provided by the program for economic and industrial cooperation between the USSR and Sweden for the 1981-1990 period, which comprises a wide range of problems: machine tree-planting and wood-tending work, genetic methods for increased efficiency of forest growth, and mechanization of various production processes applied at logging, woodworking, and pulp-and-paper enterprises, including the commercial use of wastes, the development of new equipment and factory ships, etc.

The following types of cooperation also hold considerable promise: joint developments, workshops, and symposia on pressing scientific and technological problems, joint tests of new equipment, exchange of licenses and know-how, commercial cooperation, and in particular, joint marketing of finished products.

CONCLUSION

An increasing relative deficit in economically available timber the world over gives rise to the problem of finding additional resources capable of meeting the growing future demand. Some of the solutions to this problem are as follows: setting up forest plantations with shorter periods of crop rotation in countries of the warm and hot belts; intensification of forestry in forest-rich and forest-poor countries of the moderate belt. This trend, however, implies much expenditure with the resultant higher costs of wood products without relieving the shortage of the most valuable, close-grained coniferous wood grown in northern regions.

The extra demand in the world market for wood products can be successfully met from resources in the USSR, which does not make full use of its available forest resources. The USSR is a reliable trade partner aiming at long-term cooperation and the development of stable trade relations, and its foreign trade policy is free from market fluctuations. The planned Soviet economy, with its controlled redistribution of capital investment, materials, equipment, and manpower, favors large-scale, stable, mutual ties with foreign markets, above all owing to the establishment of export-oriented production capacities.

Being a large and reliable exporter the USSR is prepared to share the responsibility for a steady market and to maintain the general competitiveness of forest products. It is willing to cooperate with all partners

interested in mutually advantageous relations, although this willingness is to a considerable extent dependent on the sincere and active response from these partners. An increase in its export volume, and the expansion of the range of exported items against the background of a huge domestic consumption, will invariably be in line with its partners' interests, in reasonable correlation with the world market's supply and demand, and in line with economic imperatives for the development of international cooperation in the field of foreign trade. The USSR continues to be mainly a world supplier of sawn wood and roundwood, but the growth of production and consumption of timber products obtained from the intensive chemical and chemical-and-machining conversion of wood will stimulate both the export and import of these goods, thus further developing the mutually advantageous exchanges based on the rational international division of labor in the timber industry.