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SPATIAL FEATURES
OF SECTORAL DEVELOPMENT

# Geographical Conditions for the Development of the Russian Timber Industry in a Market Economy

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**Abstract**—The article covers geographical and technological factors which determine the location and development of Russia's timber industry in the market environment. Trends in the spatial pattern of Russian timber and pulp-and-paper exports in 2000–2010 are analyzed. The production pattern of timber and pulp-and-paper products is analyzed for Russia's largest interregional timber industry manufacturers. The post-Soviet shifts in the geographies of timber resources and the relevant demand are evaluated. Synthesis of three sets of factors helps formulate a long-term forecast of the future spatial shifts in the location of the timber industry's production facilities. Development centers are expected in regions adjacent to Irkutsk oblast that have a common border with China—the largest importer of Russian timber and pulp-and-paper products—and combine significant timber resources with a relatively dense population and infrastructure.

*Keywords*: timber industry, pulp-and-paper industry, timber harvesting, forest roads, raw materials, procurement strategy, vertical integration, transportation costs.

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## INTRODUCTION

Russia has the world's largest reserves of timber, but the timber industry could hardly be called an important sector of Russia's economy: its share in GDP and exports does not exceed a few percentage points. In terms of revenues from timber exports, Russia lags behind developed countries, including those with less timber harvesting.

Given a steadily rising global demand for forest products, especially high-value softwood, which abounds in Russia, the low costs of Russian labor and the ease of market entry for foreign investors, the industry could have been developing vigorously over the last decade. However, there has not been much development but rather growth in some, not always desirable, indicators without any qualitative change. The country has been extending its harvesting and exports of raw materials due to logging in the most degraded and easily accessible forest areas located close to processing facilities and importing countries (Western Europe and China).

This unsustainable growth cannot continue forever. This article attempts to define the territorial vector of the industry in the future and, accordingly, the factors that determine the spatial pattern of the industry. The analysis is based on a geographical approach, which means, in particular, that the physical and financial indicators of the timber industry, including the raw materials base, are analyzed comprehensively, i.e., in the context of territorial units, subsectors (where permitted by statistics), and individual companies, considering the location of their production facilities. The company-based analysis is confined to the major manufacturers, because they account for the bulk of profits in the Russian timber industry [7].

The spatial pattern of the timber industry and the commodity cash flows generated by it are analyzed from three aspects: (1) sales markets and exporting regions, (2) production facilities of the timber industry, and (3) raw materials base of the industry and its development. This sequence is designed to emphasize the importance of sales markets. The author proceeds from the understanding that the global contraction of space, which is manifested in a reduction in transportation costs and an increase in the mobility of production factors [20], leads to demand in international markets, more easily shaping the territorial configurations of production. Therefore, an analysis of changes in the geography of exports would help identify the potential vectors of transformation of the spatial pattern of the industry. The analysis considers the fact that Russia's timber industry has no shortage of raw materials and is heavily export-oriented.

## SALES MARKETS AND REGIONS EXPORTING TIMBER PRODUCTS

The analysis of exports and imports of Russian timber and pulp-and-paper products, including by

**Table 1.** Trends in the production of various types of timber and paper products

| Product type | 2007/2000, % | 2009/2000, % |
|---|---|---|
| Lumber, $m^3$ | 122 | 95 |
| Fiberboard, thous $m^2$ | 173 | 169 |
| Glued plywood, thous $m^3$ | 187 | 163 |
| Pulp (cooked), thous t | 120 | 112 |
| Newsprint paper, thous t | 117 | 115 |
| Cardboard, thous t | 176 | 169 |

regions, is based on official statistical data of Rosstat [10–19]. It also uses analytical materials of federal agencies [6, 7].

### *Role of Russian Timber Products in the World Market*

The low significance of the Russian timber industry in the world economy, as well as in the Russian economy, is indicated by the fact that, given the export orientation of the industry, it does not play any significant role either in global markets of timber products or in the total value of Russian exports.

Worldwide, Russia is only viewed as the largest (44% of the market) exporter of unprocessed wood. Since it is the cheapest product of the timber industry [18, 19, Table 25.25], the large value of the natural indicator does not mean large currency earnings. Russia is also a relatively large supplier of lumber (12% of world exports), but specializes in supplying cheap products of low quality (the price per cubic meter in 2007 was 200–280 USD, given an average price of 325 USD in the world market). In the world market of
3 flat timber (fibreboard, chipboard, and plywood), which requires deeper processing, Russia's share is only 3%; in the export of pulp, which requires an even higher degree of processing, Russia's share is about 1%; and in the market for paper and paper products—the next technological stage—Russia is a net importer.

### *Role of Russia's Timber Exports in the Total Volume of Russian Exports*

Russia's timber exports were growing from 1995 to 2007 (a maximum of 12.3 billion USD was reached in 2007, followed by a decline to 8.4 billion USD in 2009), but the growth rate was weaker compared to that of the total volume of exports (the share in export earnings fell from 5.6 to 2.5%).

### *Changes in the Export and Manufacture of Russian Timber Products*

The trend in the export of timber and pulp-and-paper products (growth, which was especially rapid in 2007, and a sharp drop in 2008–2009) reflects the development trends in the Russian economy as a whole and in the timber industry in particular (Table 1).

The production of lumber was hit the hardest by the recent crisis (this industry is distinguished by a low concentration and a low threshold value of fixed assets). The pulp-and-paper industry (PPI), which is characterized by a high concentration and large businesses, suffered the least.

### *Contribution of Different Types of Timber Products to Russia's Timber Exports*

The export of raw materials and unprocessed products is so large compared to that of more expensive products that they dominate in the revenue breakdown (Fig. 1).

### *Importance of Exports for the Russian Timber Industry's Subsectors* 2

Russia's entire timber industry is largely export-oriented. Thus, in 2007, 54 out of 106 million $m^3$ of commercial timber were exported unprocessed. In the same year, Russia exported 18.5 out of 24.3 million $m^3$ of lumber. Data on the proportion of exports in the manufacture of other timber and pulp-and-paper products are shown in Fig. 2.[1]

The low value of the pulp export indicator shown in the chart should not be misleading because it reflects the proportion of exports in the total cooked pulp yield (not market pulp). A significant portion of cooked pulp is not available for sale because it is processed locally to produce paper or cardboard. It is not possible to calculate the share of exports of market pulp from the statistics, but the data on individual companies show that roughly four-fifths of Russian market pulp may be exported.

Only fiberboard and cardboard are mostly consumed domestically. Due to poor quality, fiberboard is only competitive in the domestic market and in CIS countries. The cardboard that is produced in Russia is mostly of poor quality and is used for the mass production of packaging.[2] More expensive paper products are both consumed domestically and exported (office paper) or recycled on-site to produce export commodities (e.g., paper bags of the Segezha PPM in Karelia). Neither printing not coated paper is produced in Russia; these products are imported.

[1] It was not possible to do a comparative study for all products due to differences between the production and export statistics in terms of product classification and measurement units.

[2] In particular, for the manufacture of cardboard boxes from generic cardboard produced from unbleached pulp (see the product range on the official websites of the largest pulp-and- 4
paper mills listed in Table 4).

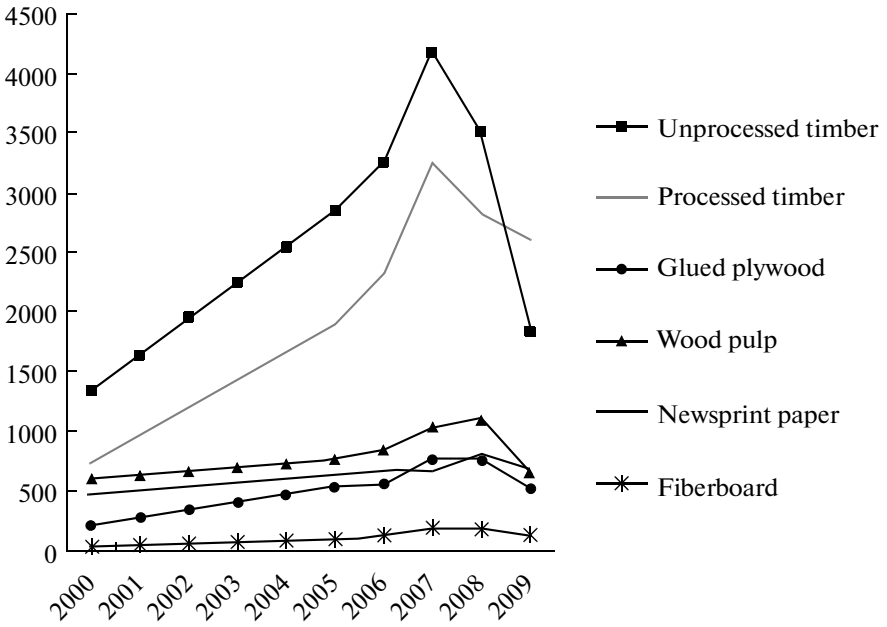


**Fig. 1.** Trends in the value breakdown of exports of timber and paper products, million USD at current prices.*
*The values for 2001–2004 were obtained by the interpolation of data for 2000 and 2005. The figure is based on calculations using the data in [10–19].

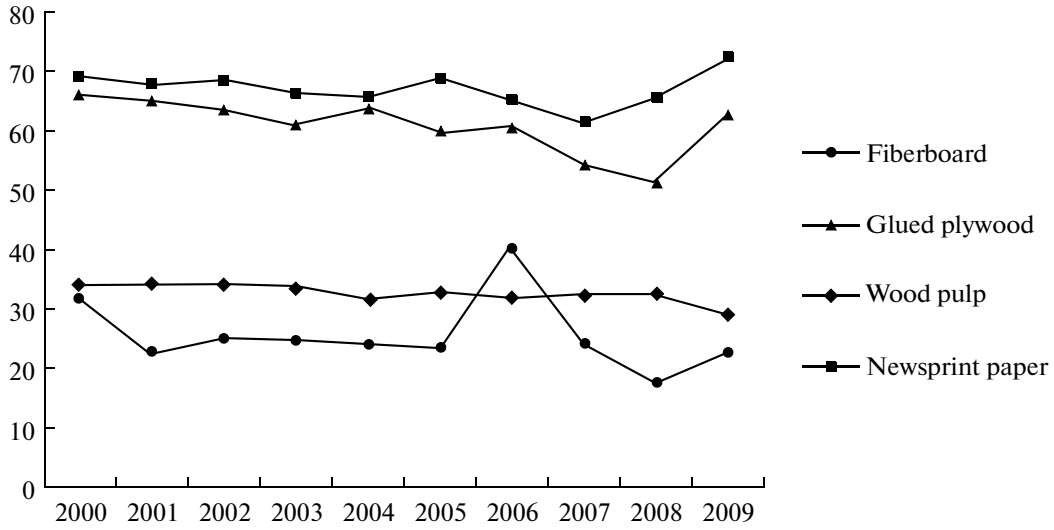


**Fig. 2.** Trends in the share of exports in the production of some types of timber and paper products* in real terms, %.
*Commercial timber, lumber, and cardboard are not shown because the official statistics is insufficient to build series of comparable indicators of production and exports of these products. The figure is based on calculations using the data in [10–19].

*Russian Timber Exports by Importing Countries*

Below is an analysis of 2001–2009 data on six commodity groups for 26 countries—the key trading partners of Russia—according to [10–13]. For clarity, in Table 2, which gives data for 2009, the countries are ordered by their share in exports of commodity groups.

For all products, except for fiberboard, the countries listed in the table account for an overwhelming or substantial part of Russian exports. Within this group of countries, by the end of the 2000s, the vast majority of exports of *unprocessed timber and pulp* were going to China (76 and 65% in 2009, respectively (for the listed countries), whereas in 2001 China's share was 27 and 45%, respectively). The increase in exports to China was due to the rechanneling of product flows that had been previously sent to other foreign (non-CIS) countries. As concerns pulp, the growth in China's share was not accompanied by the dropout of individual

**Table 2.** Russian timber exports in 2009 to 26 key trading partners

| Country | Unprocessed timber, thous $m^3$ | Processed timber, thous t | Fiberboard, thous $m^2$ | Glued plywood, thous $m^3$ | Wood pulp, thous t | News print paper, thous t |
|---|---|---|---|---|---|---|
| China | 16460 | 2212 | 0 | 8 | 1021 | 7 |
| Germany | 45 | 300 | 1884 | 132 | 26 | 201 |
| Finland | 2876 | 241 | 743 | 68 | 7 | 61 |
| Turkey | 109 | 84 | 276 | 43 | 27 | 150 |
| United States | 0 | 9 | 0 | 175 | 3 | 1 |
| Japan | 789 | 407 | 0 | 0 | 42 | 0 |
| United Kingdom | 1 | 139 | 1004 | 60 | 1 | 41 |
| Italy | 0 | 94 | 100 | 78 | 8 | 34 |
| Poland | 3 | 43 | 304 | 28 | 81 | 22 |
| Republic of Korea | 540 | 64 | 0 | 5 | 56 | 0 |
| France | 0 | 157 | 135 | 15 | 5 | 39 |
| Sweden | 328 | 7 | 792 | 26 | 0 | 0 |
| Romania | 0 | 0 | 1653 | 2 | 17 | 15 |
| Denmark | 0 | 7 | 121 | 46 | 0 | 0 |
| Netherlands | 0 | 107 | 0 | 28 | 2 | 2 |
| Czech Republic | 7 | 17 | 0 | 23 | 4 | 15 |
| Switzerland | 0 | 7 | 0 | 1 | 46 | 0 |
| Hungary | 0 | 25 | 0 | 12 | 24 | 3 |
| Bulgaria | 0 | 0 | 73 | 1 | 0 | 31 |
| Belgium | 0 | 96 | 0 | 7 | 3 | 7 |
| Austria | 1 | 76 | 0 | 11 | 3 | 2 |
| Slovakia | 0 | 2 | 0 | 5 | 14 | 1 |
| Canada | 0 | 1 | 0 | 18 | 0 | 0 |
| Norway | 0 | 1 | 0 | 9 | 0 | 0 |
| Spain | 0 | 1 | 0 | 3 | 2 | 1 |
| Cyprus | 0 | 4 | 0 | 2 | 0 | 0 |
| Total exports to all countries | 21657 | 9065 | 84637 | 1334 | 1583 | 1447 |
| Share of the countries in total export, % | 98 | 45 | 8 | 61 | 88 | 44 |

countries from the list of importers. As for raw timber, the increase in China's share was accompanied by a complete cessation of exports to a number of countries since 2007, which is understandable: in 2007 there was a sharp increase in customs duties on unprocessed exported timber.

The new customs policy, which lifted tariffs on exports of some timber products and imports of a wide range of equipment, have been inconsistent and unproductive. The duties on exports of raw materials have not been raised to a prohibitive level because of pressure from Finland and other stakeholder countries of the European Union. The mere threat of raising tariffs, which persists, forced these countries to switch to tropical timber. As a consequence, Russia's northwestern regions, the softwood reserves of which are already depleted, have lost the last incentive to cut birch, the reserves of which are redundant. At the same time, Chinese contractors have started to widely use sham timber-processing schemes, e.g., logs are put together into fake commodity items, which are immediately taken apart on the other side of the border.

According to the 2009 results, among the countries in the table that imported more than 50000 $m^3$ of unprocessed timber in 2001, three countries—Nor-

way, Belgium, and Hungary—completely stopped imports. Many large importers cut their imports manifold (million $m^3$): Finland, from 10.72 to 2.88; Japan, from 5.32 to 0.79; Sweden from 2.41 to 0.33, the Republic of Korea, from 1.56 to 0.54, and Germany, from 0.78 to 0.45. Meanwhile, China increased its purchases by a factor of 2. It is necessary to point out the difference in the profile of products purchased by China and Finland (the former leading importer). Supplies to China are dominated by softwood sawlogs harvested in Siberia, while Finland continues to be the largest importer of birch pulpwood (raw material for pulp production) delivered from Russia's northwestern territories. Prioritizing sawlogs, China is more similar to Italy: the former has recently been pushed from first to second place in the value of sawlog exports [2].

The decline in the share of the listed countries in imports of Russian sawn timber (lumber) was accompanied by a growing proportion of CIS countries (from 13% in 2001 to 31% in 2009), which indirectly characterizes the low quality of these products.

The Russian plywood market was growing rapidly in the 2000s, especially in the first half, when exports were increasing. Given a certain decline in exports by the end of the 2000s (1.33 million $m^3$ in 2009 against a maximum of 1.57 million $m^3$ in 2006), the market continued to diversify. There were first small shipments to countries that had not purchased Russian plywood, e.g., the Republic of Korea. The share of CIS countries increased from 2% in 2001 to 12% in 2009. The share of the United States—the main importer of Russian plywood—fell from 27 to 13%.

Exports of Russian newsprint paper have been increasing slowly and steadily over the past decade, even during the crisis years of 2008–2009. The demand for newsprint, as opposed to expensive printing paper, does not react strongly to the level of economic activity (in particular, due to the large circulation volumes of national newspapers and low costs of newspapers compared to other media). The entire Russian newsprint production is limited to three very large companies with a long history (Kondopoga, Balakhna, and Solikamsk PPMs[3], which have stable well-established supply chains. Newsprint exports rose by slightly less than a quarter from 2001 to 2009, which reflects the sluggish growth in the Russian pulp-and-paper industry due to the mere desire of companies to modernize production facilities, without building new businesses from scratch. Stable importers (for at least a decade) of Russian newsprint are Germany, Turkey, and the United Kingdom. The supplies to the first two countries were growing in the study period, and those to the United Kingdom were going down. From 2001 to 2007 inclusive, there was an increase in the share of newsprint supplies to CIS countries from 9 to almost 18%. Then their share fell sharply to 11.5% in 2009.

During the 2000s, *fiberboard* supplies were increasingly focused on neighboring countries. In 2000 (the earliest data available), these countries accounted for 27% of its exports, and in 2009 their share reached 85%. The data provided by the Russian Federal Tax Agency [7] allow one to identify the main importers of fiberboard that are not included in the above list of 26 countries. In 2007 34.1% of Russia's fiberboard exports went to Uzbekistan, 7.1% to Kazakhstan, 7.3% to Ukraine, 5.7% to Azerbaijan, and 4% to Poland.

Fiberboard, plywood, and newsprint were and still are of no interest to the Chinese market (China buys less than 1% of Russia's exports of these products).

The analysis of Russian timber exports shows that developed countries (including Asia Pacific countries) are turning away from Russia in favor of other suppliers, while the fast-growing manufacturing industry of China is wide open for any Russian raw materials and intermediates. Since Russian timber products (sheet timber) do not meet high quality standards, they are mainly sold in CIS countries. The share of these products in the value of exports is small (about 1/12 in 2007); so the Russian timber industry can be safely described as a single-purpose supplier of cheap raw materials to China.

The analysis of exports would not be complete if it was confined to the demand side, i.e., consumer countries, and did not mention the supply side, i.e., regions supplying timber (Table 3).

Given the availability of data on timber and pulp-and-paper exports (imports) for individual regions of Russia for a number of years, this study uses data for two years: 2007 (the peak of economic growth) and 2009 (the peak of the economic crisis). A comparison of the data for these extreme periods allows one to use changes in exports to identify the potential changes in the industry's production facilities in the future. Short-term changes caused by sharp fluctuations in market conditions can be used as indicators of the sustainability (vulnerability) of the timber-processing complexes of individual regions. For comparability, the analysis used monetary indicators (at current prices).

In 2009 the total value of Russian *exports* was 86% compared to 2007, while the share of timber products in the value of exports fell from 3.5 to 2.8%, which means that the industry suffered more than the economy as a whole. This decline is especially palpable for industry due to its predominant focus on the international, rather than domestic, market.

Russian exports as a whole are centralized, which is not explained by the limited number of profitable shipment channels (terminals, ports, etc.) but the features of the formal registration of export transactions. Given the underdevelopment of small and medium entrepreneurship in Russia [3], large companies shap-

[3] There is a fourth producer—the Syktyvkar PPM—but its share in newsprint production is negligible and it is not specialized in this type of manufacture.

**Table 3.** First ten regions of Russia in terms of timber and pulp-and-paper exports in 2009 and their ranks in 2007 and 2000

| Region/Year | 2000 | | | 2007 | | | 2009 | | |
|---|---|---|---|---|---|---|---|---|---|
| | exports, million USD | share in exports, % | rank | exports, million USD | share in exports, % | rank | exports, million USD | share in exports, % | rank |
| Russia | 4105 | 100 | – | 12258 | 100 | – | 8437 | 100 | – |
| Irkutsk oblast | 738 | 18 | 1 | 2101 | 17 | 1 | 1808 | 21 | 1 |
| Karelia Republic | 357 | 9 | 3 | 762 | 6 | 4 | 658 | 8 | 2 |
| Khabarovsk krai | 258 | 6 | 4 | 978 | 8 | 2 | 567 | 7 | 3 |
| Krasnoyarsk krai | 155 | 4 | 9 | 708 | 6 | 5 | 557 | 7 | 4 |
| Arkhangelsk oblast | 468 | 11 | 2 | 927 | 8 | 3 | 521 | 6 | 5 |
| Komi Republic | 149 | 4 | 11 | 474 | 4 | 8 | 378 | 4 | 6 |
| Perm krai (Perm oblast) | 154 | 4 | 10 | 359 | 3 | 10 | 354 | 4 | 7 |
| Leningrad oblast | 245 | 6 | 5 | 591 | 5 | 6 | 354 | 4 | 8 |
| St. Petersburg | 161 | 4 | 8 | 574 | 5 | 7 | 267 | 3 | 9 |
| Primorskii krai | 180 | 4 | 6 | 404 | 3 | 9 | 232 | 3 | 10 |

Note: Calculated from the data in [14–17].

ing the profile of the economy tend to locate their head offices in Moscow. This leads to an extremely high proportion of Russia's capital city both in tax revenues and the value of exports. In 2009 the share of Moscow in exports was 38%; that of the first three regions was 49%; and that of the first ten regions was 70%. The positions of the key exporting regions are stable: the ranks of the first five regions (Moscow, Tyumen oblast, St. Petersburg, Khanty–Mansi Autonomous Okrug, and Tatarstan) have not changed after the crisis. The situation with timber exports is fundamentally different. Moscow is only at the 11th place, while the share of Irkutsk oblast—the leading exporter (supplying most timber products to China)—is 21%; that of the first three regions is 36%; and that of the first ten regions is 65% of Russian timber exports. Thus, Russian timber companies to a much lesser extent tend to register their foreign trade transactions in Moscow, and the geography of exports reflects the geography of production (among the first ten exporting regions, only St. Petersburg does not have a strong timber industry). The positions of the leading regions in timber exports may be unstable: as a result of the crisis, Karelia moved from the fourth to the second place in the value of timber exports, while Arkhangelsk oblast fell from the third to the fifth place. There are no clear geographical patterns in the state of regional timber exporters. Thus, both in the European part of the country and in Siberia, there are regions that improved or worsened their positions (e.g., Novosibirsk oblast dropped from the 20th to the 28th position, while neighboring Omsk oblast rose from the 44th to the 35th position; Novgorod oblast (Russia's western region), like Far Eastern Transbaikal krai, significantly worsened its position; etc.).

Russian timber *imports* are even more centralized than exports. In 2009 the share of Moscow in timber imports was 47%; that of the first three regions was 70%; and that of the first ten regions was 83%. This is not only explained by the economic concentration and population density, but also by transportation costs: Kaliningrad oblast, which is close to European suppliers, ranks fifth in the value of imports. In the prosperous year of 2007, Kaliningrad oblast ranked fourth (ahead of Leningrad oblast). The ranks of the first three regions—Moscow, St. Petersburg, and Moscow oblast—remained unchanged.

Although Russia exports cheaper types of timber products and imports expensive high-tech items, it is still a net exporter. However, the gap between exports and imports fell sharply as a result of the crisis due to a drop in exports given the almost unchanged level of imports. In 2007 exports amounted to 12.3 billion USD and imports constituted 5.3 billion USD; in 2009, 8.4 billion and 5.1 billion, respectively.

In general, an analysis of the foreign trade indices of the Russian timber industry suggests that there is no pronounced macroregional trend in the advantaged (disadvantaged) positions of the industry in regions. However, the leading regions in terms of manufacture have shown much greater strength in exports than a number of average regions, which may be indirect evi-

dence of the importance of production capacity concentration for the competitiveness of regional timber-processing complexes. According to the analysis, the Russian timber industry may be described as a sector of little importance to the country's spatially dissociated economy (not for individual regions).

## PRODUCTION CAPACITY OF THE RUSSIAN TIMBER INDUSTRY

For a detailed study of the production geography, data were collected on Russian timber companies, including their specialization and production volumes. To analyze the interconnections between the structure and functioning of the industry, it is necessary to know not only the capital stock, but also the trade flows generated by the industry. Under market conditions, product flows between enterprises can be managed either through relations between independent economic entities or through the hierarchy between units of one company. Due to the high cost of fixed assets providing the greatest economic benefit, the timber industry tends towards owner-based centralization. Today in Russia this centralization is very high and increasing. Under these circumstances, it is not only necessary to consider the geographical structure of fixed assets, but also the owners of assets.

The information on the production capacity of the ten largest timber companies in Russia, which is presented in Table 4, is sufficient to characterize the industry, because these companies account for the bulk of the value in the industry and there is not a single large pulp and paper mill that does not belong to one of these companies.[4]

An analysis of the data in the table has revealed a number of patterns in the functioning of the Russian timber industry.

—The core of all major companies are PPMs.

—The owners of the majority of large PPMs in European Russia are foreign companies (mainly from the United States and Germany).

—All of the most valuable assets of the pulp-and-paper industry in Asian Russia are consolidated in the Russian–American Ilim Group, which is focused on the Chinese market. The assets that do not belong to this holding company are mostly "bad assets," e.g., the Baikalsk, Yenisei, and Selenga PPMs. They are unlikely to attract foreign investors, who prefer to buy liquid, albeit expensive, assets (Kotlas PPM Svetogorsk PPM, etc.). Hence, there are three ways to further expand foreign presence in the timber industry of Eastern Siberia: by increasing foreign participation in the Ilim Group's capital, through the acquisition of small sawmills and plywood and timber panel factories by western companies, and through the purchase of distressed companies by Chinese businesses that are interested in the forest plots in the long-term leases of these companies.

The fact that the Kotlas PPM, which belongs to the Ilim Group and is located in the northwest of Russia, supplies almost all market pulp to China demonstrates the dominance of the demand factor over transportation costs. However, this local manifestation cannot always be generalized. First, a big role is played by the high value of pulp and the high specific volume of raw materials needed for its manufacture (the value of Russian exported pulp is on average seven times higher than that of unprocessed timber [18, 19]). The second organizational factor is the impact of the spatial strategy of the Ilim Group, which is focused on China. Third, large companies find it easier to get access to rail transport on acceptable terms, which reduces significantly transportation costs.

—Russia's largest timber companies have started to incorporate in their spatial development strategies the deployment of packaging production sites near the consumer, i.e., in densely populated areas with high demand for packaging materials on the part of the food industry, storage facilities, and trade. So far, however, this only applies to the largest agglomerations, i.e., corrugated-board production facilities in Leningrad and Moscow oblasts, which belong to the Ilim Group and the Arkhangelsk PPM.

—Speaking about completed, not proclaimed, investment projects, so far only the largest companies with significant foreign participation have invested heavily in production. All the investment projects are aimed at expanding the production capacity or, in exceptional cases, at launching new production projects within the manufacturing site of the main production unit. The development of new production facilities at new localities is limited to lower capacity auxiliary plants. In such circumstances, it seems dubious that the authorities of some timber regions would claim to plan to attract investors for building large pulp and paper mills from scratch.

## RAW MATERIAL BASE OF THE RUSSIAN TIMBER INDUSTRY

Assessing the potential of timber production development in Russia, we need to consider the location of forest resources. First, most forest resources are located to the east of the Urals, while most of the harvesting is carried out in European Russia. Second, the huge forests of Siberia are, in large part, not only inaccessible because of a lack of transport infrastructure, but also unattractive because of the species composition and low site quality (e.g., pine forests in the

[4] The most complete information is available on joint stock companies (OAOs) because they are required to publish quarterly securities issuer reports. Companies usually do not publish reports on the volume of production in kind, especially for individual production units, but the information available in mass media and on official websites can as a rule help determine the spread of these values. There are no data available on importing countries for participants in foreign holding companies, the products of which are sold through holding traders.

**Table 4.** Ownership structure in the Russian timber industry (ten major companies)

| Company | Approximate annual turnover in 2007–2009, million USD | Owners: Russian/foreign (%) | Regions of operation | Production units | Products (annual production, thous t) | Consumers | Investment projects |
|---|---|---|---|---|---|---|---|
| Ilim Group | 1000 | 50/50 (United States) | Arkhangelsk (Koryazhma) and Irkustk oblasts; Leningrad oblast | Kotlas PPM; Ust'-Ilim Timber Complex; Bratsk PPM; Corrugated-board plant | Market pulp (approximately 1000): sulphate, bleached and unbleached; cardboard (approximately 400); paper (approximately 250); Market pulp (approximately 600): sulphate, bleached and unbleached; Market pulp (approximately 300–500): sulphate, bleached and unbleached; cardboard (200–300); Corrugated cardboard | China; China and Germany; Italy; China | Production of 350000 t of semichemical pulp per year (1500 million USD; completed in 2009); Production of 750000 t of sulphate pulp (up to 700 million USD; started in 2010); Construction completed in 2008 |
| OAO Mondi; Syktyvkarskii LPK | 700 | 0/100 (Austria) | Komi | Syktyvkar PPM | Paper (approximately 350): office and newsprint; cardboard (150–200) | n/a | Expansion of pulp production from 0.6 to 1 million t per year (approximately 700 million USD; completed in 2010) |
| International Paper | 500 | 0/100 (United States) | Leningrad oblast | Svetogorsk PPM | Pulp (300–400), paper (approximately 250), and cardboard (approximately 50) | n/a | |
| OAO Kondopoga | 400 | 76/24 (Germany) | Karelia | Kondopoga PPM | Paper (600): newsprint from local bisulfite pulp | Russia (30%), Finland, Sweden, Norway, and Germany | |
| OAO Arkhangel'skii TsBK | 400 | 3/97 (Germany) | Arkhangelsk oblast (Novodvinsk); Moscow oblast | Arkhangelsk PPM; Corrugated-cardboard plant | Market pulp (200–300): sulphate, bleached and unbleached; semichemical pulp; cardboard (400–500) and paper (approximately 100); Corrugated cardboard and packaging | Russia, Belgium, United Kingdom, Hungary, and Germany | Expansion of pulp production from 800000 to 900000 t and cardboard production from 500000 to 600000 t (200 million USD; not started) |
| OAO Volga | 300 | Formally, 1/99 (Cyprus); actually, 100/0 | Nizhnii Novgorod oblast | Balakhna PPM | Paper (500–600): newsprint from local bisulfite pulp | Russia (40%), Germany, United Kingdom, Ukraine, and Belarus | |
| OAO Solikamskbumprom | 200 | 100/0 | Perm krai | Solikamsk PPM | Paper (400–500): newsprint from local unbleached bisulfite pulp | Russia (<50%), United States, Brasilia, United Arab Emirates, and Egypt | Expansion of paper production capacities from 600000 to 950000 t (450 million USD; not started) |
| ZAO Investlesprom | 100 | 100/0 | Karelia; Perm krai | Segezha PPM; Krasnokamsk PPM | Paper (200–350), processed locally into approximately 300 million paper bags; Paper from sulfite pulp (less than 250) | Russia (20%); Only Europe (United Kingdom, etc.) | Expansion of sulphate pulp production capacities from 410000 to 850000 t (1 billion USD; not started) |
| OAO LPK Kontinental' Menedzhment | n/a | 100/0 | Irkutsk oblast; Krasnoyarsk krai; Buryatia | Baikalsk PPM; Yenisei PPM; Selenga PPM | Pulp (200 or less): sulphate bleached; Stopped. Capacity: 100?000 t paper; Cardboard (140 or less) | China (100%); Russia; China | |
| OAO Solombal'skii TsBK | n/a | 100/0 | Arkhangelsk oblast; Arkhangelsk | Solombala PPM | Pulp (240 or less): softwood sulphate unbleached | Russia (<20%); Over 30 countries worldwide | |

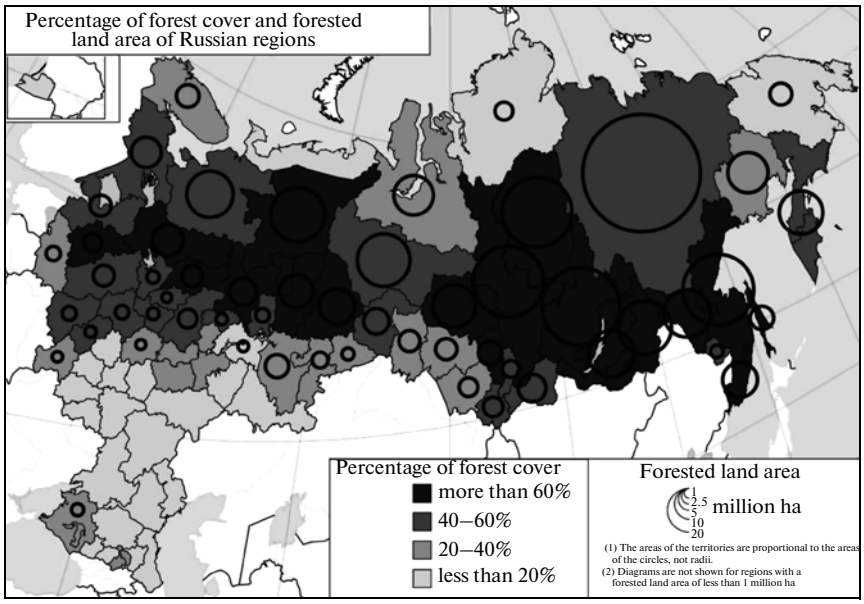


**Fig. 3.** Forest cover percentage and forested land area of Russian regions.

swamps of Western Siberia or larch forests in Yakutia with a low stock per unit area). These macroregional trends are reflected in the statistics of Rosstat [14–16] and FAO [1].

An analysis of the prospects for the timber industry, like almost any other sector of the economy, should not overlook the "three main characteristics of Russian space," which are formulated by G.A. Privalovskaya and I.N. Volkova as follows: "the northern position, low population density on vast territories, and large distances given a low and unevenly developed transportation network" [8].

The geographical features of forest resources in Russia make it unreasonable to consider the possibility and necessity of their full exploitation (i.e., strictly periodic cutting of all mature and overmature forests). For a visual representation of the location of forest resources in Russia, this article presents maps of the distribution, scope, and exploitation of forest resources by regions (Figs. 3–5).

The source of data on rated wood-cutting areas and their development are the forest plans of Russian regions, which are required to issue these documents in accordance with the 2006 Forest Code of the Russian Federation. These forest plans use the year 2007 as a baseline; therefore, all the data used to make the tables and maps pertain to 2007.

For 49 out of the 59 regions for which the rated wood-cutting areas are known, it was possible to find (or calculate) the development indicator for the softwood section. The latter is very important because softwood is significantly more valuable and in higher demand and regions with processing facilities focused primarily on hardwood are extremely rare (examples include Kostroma oblast and Perm krai). It should be mentioned that statistics by sections do not always adequately reflect the situation with softwood and hardwood harvesting. An example of this is the remark in the forest plan of Primorskii krai: *The division into forestry sections and units in the Amur–Primorie coniferous–deciduous forest region is highly conditional and is solely based on the slight predominance of one tree species in a stand. Therefore, conifers can be harvested at hardwood forestry sites and deciduous trees in coniferous forests. The use of rated wood-cutting areas by sections is not always indicative of individual tree species. This is especially true for the hardwood industry because most oak and ash is harvested in coniferous forests* [5, p. 155]. However, this situation is the exception rather than the rule. Out of the 48 regions included in the study, only three (Karelia, Perm krai, and Udmurtia) demonstrate a lower development level of rated wood-cutting areas for coniferous species than for small-leaved deciduous species. In Karelia and Perm krai, this can be explained by the dominance of softwood forests due to climatic conditions, provided that, in the first region, there is higher demand for birch pulpwood from Finland and, in the second region, there are advanced plywood production sites consuming birch. The situation in Udmurtia cannot be currently explained without further investigation. In all other regions, softwood-cutting areas are developed much more (on average, by a factor of 1.5–2) intensively than hardwood areas. Not surprisingly, in the long run, this situation leads to a reduction in softwood reserves in the majority of forest regions of Russia. This trend is well illustrated by the data on Irkutsk oblast: the proportion of softwood in the rated cutting area was 73.6% in 1970, 72.4% in 1975, 72.3% in 1980, 72.2%

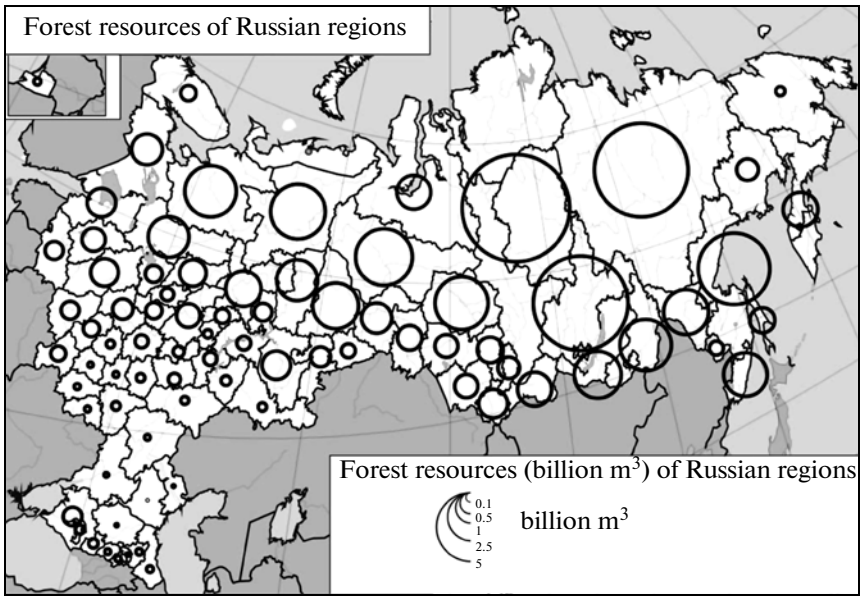


**Fig. 4.** Forest resources of Russian regions.

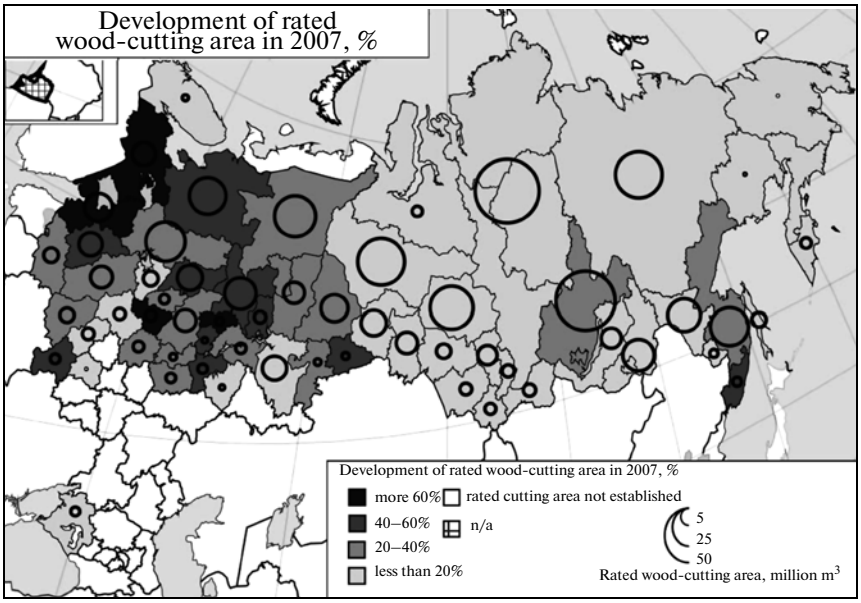


**Fig. 5.** Development of rated wood-cutting areas in 2007 according to the data of the forest plans of Russian regions.

in 1990, 68.3% in 1995, 66.8% in 2000, and only 64.9% in 2007 [3, pp. 292–294].

An analysis of the regional distribution of forest resources in Russia and their development confirms the conclusions drawn by Privalovskaya and Volkova: *The determination of the difference in ranks in the rating assessment based on the total stock of standing timber and the volume of timber production in Russian regions confirms the macrogeographical inconsistency, which is typical of the country as a whole, between the actual location of resources and that of production sites exploiting these resources, including final consumption. Thus, in almost all regions of European Russia, the ranks in rating assessment of timber production exceed the estimates for timber reserves (the maximum differences were found for Kaliningrad, Bryansk, Vladimir, and Ivanovo oblasts). The situation is different in Siberia and the Far East: here the regional ranks based on timber reserves far exceed the ranks in timber exploitation* [9].

In relation to the above, I would like to add the following. In Russia there are three centers of increased industrial demand for timber resources: first, the

northwestern regions near the border with the European Union; second, Irkutsk oblast; and, third, the southern coastal regions of the Far East. At the same time, despite the concentration of huge and almost undeveloped reserves of mature timber in the territories of Siberia and the Far East that are far from the southern border of the country, these territories are unlikely to become timber-harvesting areas in the foreseeable future. Their reserves are often technically inaccessible due to a lack of roads; harvesting is hampered by physical and geographical conditions (forests on swampy soils or forests on rocky soils in the mountains); the population density is extremely low; the regions are too far from both Asian and European markets; and a priority is given to the exploitation of other, more expensive resources.

An analysis of the demand of timber companies for the forest resources of individual regions should also consider the regional forest policies, which became important after the introduction of the 2006 Forest Code. The state continues to be the owner of all forest plots, but regional authorities were given the right of disposition, including the right to conduct their own rent price policies. However, the analysis of this factor is beyond the scope of this article.

## CONCLUSIONS

A study of the configuration of the Russian timber industry and the respective export flows in relation to the geography of demand for raw materials, which was carried out on the basis of Rosstat's official statistics, official data of companies, media publications, and field studies of the author, suggests an increasing shift of priorities towards exports, with China being a leading export destination. The regions of Russia that are located near the border with China and possess significant forest resources, infrastructure, and labor force are likely to become centers of harvesting and primary processing of timber resources in the long run. Such a future is particularly likely in the context of the policy of the largest European wood-processing countries to reduce the procurement of timber in Russia due to the growth in other sources and the depletion of softwood resources in the northwest—the key timber-harvesting area—given the relatively low competitiveness of the existing timber-processing companies. Thus, it would be natural to expect Southern Siberia to become a new center of timber industry development as a consequence of the geographical combination of international trade flows and location of assets and natural resources.

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SPELL: 1. unsustainable, 2. subsectors, 3. fibreboard, 4. websites