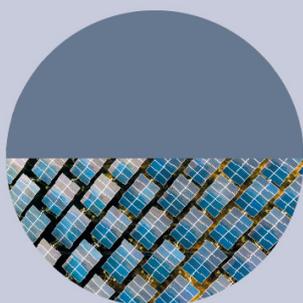


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Economic priorities of the strategic planning of forest sector in the Russian Federation

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Abstract. Branch and regional prioritization of the forest sector is a necessary condition for its development and compatibility growth. It allows to plan and forecast the forest management activities and their allocation across the country. Strategic planning and forecasting should use the following methodology. Firstly, it is necessary to rank the priority branches of the forest sector according to the criterion of their income (for example, wooden housing construction, packing paper, furniture, bioenergy, etc.). At the next iteration, economic regions are to be ranked according to the transportation cost criterion (for example, North-West, West, Center of Russia, Siberia, the Far East etc.). Merging both iterations in a single matrix will show the direction of diminishing effectiveness of the managerial solutions. The most effective solutions will be in the upper left corner of the matrix. The least effective solutions will move to the lower right corner. This matrix should serve as a conceptual basis of the methodology for the long-term strategic planning and forecasting of the forest sector in the Russian Federation.

1. Introduction

The basic documents for the strategic development of the forest sector in Russia is the “Fundamentals of state forest policy in the field of use, conservation, protection and reproduction of forests in the Russian Federation for the period until 2030” [1], State program “Development of forestry” (amended in March 2020) [2] and Order of the Government of the Russian Federation “On the strategy for the development of the forest sector of the Russian Federation until 2030” [3]. The approved documents are elements of the long-term strategic planning and forecasting system in the country. They materialize in the forest sector a concept of the long-term socio-economic development of the Russian Federation for the period until 2030 [4].

According to these documents, the main objectives of the state forest policy are: (1) Improving the management of the forest sector of the economy, (2) Intensifying the use and reproduction of forests, (3) Developing the domestic market for paper and paper products and (4) Improving the competitiveness of the domestic (national) forest sector.

Russia's strategic goals related to forests are the following:

- improving the forest sector management,
- intensifying the use and reproduction of forests,



- developing the domestic market for paper and wood products, including stimulation of consumer goods and formation of a market for the forest ecosystem services,
- increasing the global competitiveness of the Russian forest industry, including increased production of high value-added wood and paper products,
- maximally satisfying the needs of the domestic market in high-quality competitive wood products from the Russian producers and increasing their export volumes,
- improving the efficiency of forest fire, pest and diseases protection and suppression, as well as combating illegal logging and other adverse factors,
- increasing productivity and improving the forest species composition for various purposes,
- maintaining and improving the ecological potential of forests,
- increasing the scientific, technical, technological and personnel potential of the forest sector,
- developing the international cooperation and negotiation process on forest and forest industry,
- creating better conditions to involve citizens in the decision-making processes on forests.

The resolution of these tasks and goals is only possible under the condition of the long-term strategic planning of forest sector [5]. The need for the long-term strategic forest planning requires to address the following priority problems:

- to bring the forest sector out of the systemic crisis and unfavorable economic situation in which it stagnated for the past 30 years following the collapse of the planned administrative economy,
- to build a modern and competitive forest sector that would make a solid contribution to the national and the global economy,
- meet requirements of the globalization era, especially in terms of ecology and global warming,
- harness the potential of international timber trade meeting the Russian forest resource potential,
- reap the benefits of on-going globalization. Russia has significant competitive advantages for the forest sector development. They should be put in use. Otherwise, with the weakening of customs barriers in the future, the country's domestic market will be littered with the foreign forest products from the Western Europe and China, which will use cheap Russian wood raw materials.

2. Methods and Materials

Achieving the stated goals is a multifactorial and multivariate task [6]. This task requires a creation of effective branch (sectoral) and regional structures of the forest sector. The branch structure of the forest sector is effective when distribution of the wood resources among the forest sector branches yields maximum income to the forest owner [7]. Efficient branch structure is not possible without the effective regional governance structure. The latter is achieved by a minimum share of transportation costs in the final product price of the forest sector. Achieving maximum income while minimizing transportation costs and considering known limitations (environmental, social, material, etc.) poses a complicated practical optimization problem. Its solution should use both mathematical and heuristic research methods.

An effective branch structure of the forest sector is determined by the priorities of different forest economic branches. They are based on the economic assessment of generated forest income in a branch. Forest income stems from the balance between the supply and demand in the domestic and foreign markets. The result for assessing economic priorities should be presented as ranking of the forest sector branches according to their contribution to the socio-economic development. The ranking is to be based on the criterion of forest income (gross product, value added, profit or taxes to the state budget).

The supply of forest resources depends primarily on the extension and condition of forests in the country. Their assessment requires reliable information on the quantitative and qualitative characteristics of the forests. This information should be supported by forecasts of forest development in the short and long term. It is necessary for making managerial decisions [8]. For this purpose, the following forest management tools exist, which are reflected in the Russian Forest Code 2006:

- forest management (Articles 67-70),

- state forest inventory (Article 90),
- State Forest Register (Article 91),
- state cadastral registration of forest plots (Article 92),
- state registration of the rights on forest plots and registration of transactions with them.

Forest management in market economy converts the forest biological resources into a raw material as an object of economic activity. It must meet requirements of the intensive and sustainable forest management [9]. It should stimulate a healthy competitive environment to increase production efficiency and competitiveness of the Russian manufacturers in the global market. The competitive environment in forest markets is created and supported by the following mechanisms and tools:

- forms of access of economic entities to the forest use (leases, concessions, selling contracts, transfer of forests to state organizations),
- methods and procedures establishing the legal rights of forest users to utilize forests (auctions, tenders, bids, and direct negotiations),
- pricing methods for the forest products that the state establishes by law (administrative prices, negotiation mechanism, regulated prices, liberalized market prices, etc.).

Investment resources expand economic accessibility and are divided into the two main groups, depending on the investment subject:

- investments ensuring the commissioning of new production facilities for harvesting and processing of wood, reconstruction and modernization of existing production facilities, creation of innovative technologies and new types of products,
- investments in transportation, social and cultural infrastructure.

Large number of conflicting factors presents the development and allocation of the forest sector facilities and activities as a multi-factor optimization task. Like any other classical optimization task, it requires a criterion, limitations, and priorities for evaluating optimal solutions.

When assessing the forest sector priorities, it is necessary to consider certain limitations, such as uniqueness of the individual types of forest resources [10]. This is especially necessary when it comes to export the forest products. An example is the large-sized coniferous round wood (pine, spruce). It is used in mechanical wood processing and manufacturing of products that preserve properties of natural wood polymer. These properties may not be simulated by synthetic products.

Unique wood with high-quality fibrous characteristics should not be used in pulp and paper industries that can produce competitive products from lesser quality raw materials. Modern pulp plants can process cheaper raw materials, including fiber of fast-growing species, wood waste and wastepaper, without compromising product quality. Higher prices for quality timber is an effective economic barrier to the inefficient use of wood raw materials. They effectively impede the use of high-quality resources in the industries where fiber quality does not significantly affect the finished products. Economic restrictive methods, as a rule, are more effective than regulatory measures. This does not exclude their combination and complementarity.

The facts convincingly show that it is impossible to carry out long-term planning for the development of the forest sector using the existing forest management, in which there is no assessment of the sector regional and branch priorities. Improving forest management must necessarily be carried out in parallel with measures to manage demand for round timber and wood products. Such an approach should be considered as a fundamental feature of the long-term planning for the development of the Russian forest sector. This distinguishes Russia from those countries where the main managerial obstacle is resource supply. China is an example. This country is increasing the woody fiber supply from the fast-growing plantings. These plantations primarily produce woody fiber for the pulp and paper industry. For more demanding industries, China buys more expensive wood abroad, including Russian wood.

The increase in demand for the Russian forest products implies increased sales in the export and domestic markets. Russia's influence on the export markets is now limited due to certain historical,

economic and technical issues. The forecasts for the development of these markets are associated with many uncertainties and risks.

Unlike foreign markets, domestic Russian markets contain essentially fewer and lower risks, uncertainties and limitations. Therefore, they could be effectively addressed. The domestic automobile industry is an excellent confirmation of this thesis. The governmental programs to support automotive producers give impressive positive results in a short time. Such programs are quite capable to pool the Russian forest out of the current long-lasting stagnation phase.

Demand management of timber products in the domestic market should go in two directions: (1) increasing the supply of forest products by administrative regulations in the state budget organizations. In this case, it is necessary to ensure quality and environmental certification. Consumption of forest industrial products by the budgetary system will depend on the budgets availability to purchase furniture, building materials, paper and other wood and forest products; (2) increased sales of forest products in the market.

Market capacities are essential for assessing forest sector priorities. Population in the market act as an investor. People should invest their savings in the forest products market. Currently, these savings are accumulated in the bank deposits. Banks often use them to inflate financial bubbles and speculate with foreign currency. Using public investment to stimulate demand for forest products will reduce the risks of financial bubble burst and will positively impact the budgetary financial health. It would lower the inflation expectations of the population in the country.

To attract the money of the population in the real sector of the national economy, the state must stimulate demand of the population for forest products. First, it is necessary to stimulate industries where the interests of the population are long-term, rather than opportunistic. Wood housing construction may well play this role according to the global experience and observations. In most western countries, where there sufficient forest resources, homebuilding is a locomotive for the entire forest sector. Wooden buildings are a priority type of housing construction for the "middle class" in the United States. A sharp drop in demand for wooden houses in the US triggered global financial crisis in 2008-2009. This fact indicates vital importance of the wooden housing for the most developed western economies. In Russia, despite its colossal wood resources, wooden housing construction is a highly underestimated resource for the national economic development.

Wooden housing construction should become a leader in the development of the forest industry and the country's economy. None of the other industries can replace housing construction in this capacity. Bioenergy or pulp and paper industry cannot fulfill the role of an economic development leader and attract public money on the same scale as housing construction. Financing of these projects is possible only with the involvement of municipal budgets and private business, but not of the population.

Assessing the population investment resources for the development of forest sector requires determining the demand for forest products in the wholesale and retail markets. The state can stimulate the demand for wood through several programs and legislative initiatives. Supply and demand management of forest products should be built by ranking the economic branches of the forest sector based on their ability to produce maximum forest income.

3. Results and Discussion

Along with the assessment of the forest branches priorities, the regional priorities should also be assessed. They are needed for the efficient allocation of the forest sector branches in the country. These conditions will be different from the standpoint of supply (multi-forest and low-forest areas), and demand (in the national and global forest product markets).

The main factor determining the regional attractiveness for the development of the forest sector and its allocation across the country is the factor of transportation costs. They take place in two cases:

- roundwood supply to enterprises that process wood into market products,
- semi-finished and end-use products delivery from the producers to consumers (wholesale, retail, and export).

The transportation cost of the round wood is determined by the following factors:

- optimization of transport while minimizing transportation cost as an obligatory component of the forest plans,
- institutional organization of the construction and operation of the forest road network based on public-private partnerships,
- transport tariffs on the roundwood by various types of transportation.

Supply of the forest products (semi-finished and final products) to the destination points proceeds via the governmental orders, market wholesale, retail, and export. Delivery costs depend on the following:

- forms of organization of the forest goods production (scale of horizontal and vertical integration of industries, their technological ties),
- transport tariffs for the forest products deliveries, considering some possible state subsidies.

Based on the foregoing, the effectiveness of the allocation of the forest sector branches among the regions will be determined by the share of transportation costs in the final market pricing of the above-mentioned segments (transportation of round timber and wood products). This indicator is called transportability.

The indicator with the minimal transportability (minimal transportation costs per cubic meter of timber harvested in the region) corresponds to the most efficient allocation of forest branches in the country and its regions. The transportability index provides basis for the priority ranking of the economic regions and subjects of the Russian Federation.

After the sectoral and regional priorities are defined, it becomes possible to carry out predictive assessments of the development and allocation of the forest branches [11]. To do this it is firstly necessary to prioritize the forest sector branches, using the criterion of income (for example, wooden housing, furniture, pulp and paper, bioenergy, etc.). The next step is to rank the economic regions according to the transportability criterion (for example, the Northwest, Center, Siberia, the Far East, etc.) Combining both iterations into a single matrix will show the direction of reducing efficiency of production and management decisions across the country. The most effective solutions will be in the upper left corner of the matrix. The least effective decisions will be reflected in the lower right corner. The effectiveness of managerial decisions will diminish while moving from the upper left to the lower right corner of the matrix. On this basis, the strategic decisions should be made on the prospects and limits of development and allocation of the Russian forest sector. This matrix illustrates a conceptual approach to strategic planning of the forest sector. It is based on assessment of the branch and regional priorities. This platform should constitute the methodological basis for the long-term planning and forecasting of the Russian forest sector. Practical application of the above approach will require certain information on the costs and revenues in the forest sector. It will also require coordinated efforts of scientific and project organizations over a period of time.

4. Conclusion

The hypothesis is put forward based on expert assessments on strategic planning. It states priority of wooden housing construction for the forest sector development in Russia. It emphasizes the demand of the Russian middle class for the low-cost and comfortable wooden housing. Expanding wooden construction in the country will solve a big social, economic, and monetary problem. The bet on bioenergy or furniture production does not realize the competitive advantages of Russia. Only the wooden housing industry will trigger speed development of the other forest industries, including plywood, boards, furniture, insulation materials and bioenergy. Wooden houses can be heated with the renewable wood energy. Wood fuel favorably compete with the non-renewable hydrocarbon resources, which bring about green house effect and global warming. Realization of the broad scale wood housing construction will allow to use a huge mass of wood waste in fuel, hydrolysis, pulp and paper production and biorefining. Wooden housing construction is a strategic link in the chain to lift the entire chain of the forest sector branches off the deep and serious structural crisis.

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