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Priorities in forestry planning

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Abstract. The main objective of the federal strategy for forestry development is setting industry (what should be done?) and regional (where should it be done?) priorities. We need a scientific approach, which would facilitate strategic decisions incorporating a complete set of criteria and indicators available in a market economy. The industry priority should be based on the industry's capability of innovation-driven growth and manufacturing competitive products for domestic and export markets. In addition to industry priorities, federal strategic planning in the forest sector implies responsibility for location of industries and production facilities across the country.

1. Introduction

Planning in the forest sector is of great practical importance [1-2]. There are various approaches to the forest planning related to the value chain of forest products with the development of programs for the conservation and use of forest resources [3] and with the rationale for promising areas for the forest sector development [4].

The Russian Federation (RF) is currently discussing the new federal strategy for the forest sector development. The content of the document must be in line with the objectives set for implementation of the Fundamental Principles of the National Policy in Forest Use, Conservation, Protection and Regeneration to 2030 [5] approved by the RF Government in 2013. In our opinion, setting industry and regional priorities based on economic criteria should be a primary objective of federal strategic planning in the forest sector. Setting industry and regional priorities cannot be delegated to public authorities in constituent entities of the Russian Federation. The established industry priorities will lay the foundation for creating an efficient forest production structure in terms of distribution of industries and production facilities, and, eventually, for creating an efficient wood consumption structure.

The federal strategy should accept the forestry production and wood consumption structures as key output (target) indicators, which should be monitored and checked [6].

The existing distribution of forest resources across the country, along with assessment of industry priorities, requires decisions on efficient distribution of industries and production facilities across macro-regions and constituent entities of the Russian Federation. The decisions must be incorporated into the forest sector development strategy through setting regional priorities, and the results must be integrated in a general location pattern for forest industries, as it was done in the Soviet economy.



The aim of the study is to substantiate the methodological foundations of strategic planning in the forest sector. This kind of predictive work can be performed only on a multivariate basis using the methods of economic and mathematical modeling.

2. Industry priority

The industry priority means an estimation-based preference to develop a particular industry in the forest sector with consideration of an achievable economic outcome. In its turn, development of an industry means production growth, including identification of growth areas and markets.

The forest income estimated by using the market mechanism of supply and demand for particular products on domestic and export markets serves as the criterion for setting industry priorities. Quantitative indicators are used to assess industry priorities and to rank forest industries by their contribution to the national economic growth. The algorithm for industry priority assessment in strategic forest planning is shown in figure 1.

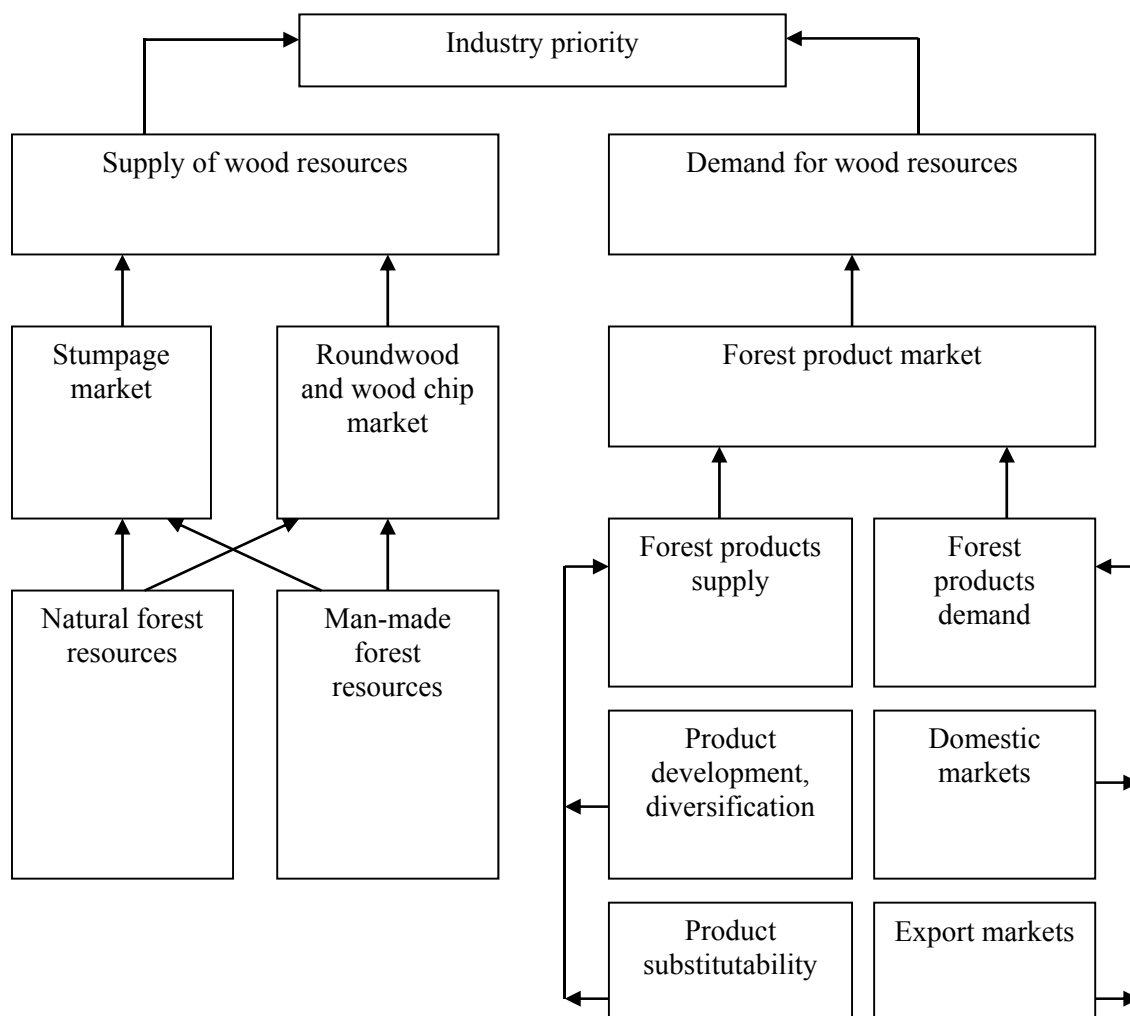


Figure 1. Algorithm for industry priority assessment in forest sector strategic planning.

The industry priority is identified for basic timber products — consumer products either on a product-by-product basis or for groups combining products with similar consumer properties. Coniferous sawnwood products can be combined in one group, though the consumer can be interested only in pine or spruce sawnwood.

Figure 1 clearly shows that the decision on choosing an industry priority is based on comparison of the supplied resources having the required consumer properties and the resources having actual demand. The resulting conclusion for strategic planning of forest sector development implies that the demand for wood resources depends on the demand for forest products.

Identification of industry priorities must be seen as an objective of strategic planning at the federal level. This objective cannot be delegated to regions — constituent entities of the Russian Federation, to federal districts and economic areas, as the behavior of consumer markets is influenced by national and/or international factors. Identification of industry priorities serving as long-term benchmarks for forestry development is essential for channeling investment funds to innovation-driven industries during financial instability and shortage of funds.

The industry priority is identified by a group of factors affecting both the supply of forest resources and the demand for them in terms of end products. This is what makes the offered conceptual approach fundamentally different from the approaches underlying *The Strategy for Development of the Forest Sector to 2020*, which was approved jointly by the Ministry of Agriculture and the Ministry of Industry and Trade of the Russian Federation in 2008 [7], as well as from the approaches used by RF constituent entities in mapping out forest plans [8] represented by regional forest management projects. The supply of wood resources cannot be formed only by using forest resources inventory data, while neglecting the on-going forest resources management, which should be based on statutorily prescribed forest management tools, methods and procedures governing the access of businesses to exploitation of these resources.

Forest resources management is aimed at creating a competitive environment in resources supply, where all forest sector players are interested through motivation in sustainable forest management and exploitation. In addition, the assessment of industry priorities (especially in industries targeted at export markets) must take into consideration the uniqueness of qualitative characteristics inherent in certain types of forest resources. Forest resources management is closely connected with management of the demand for roundwood and wood products.

The above approach should be seen as a distinguishing feature of long-term planning in the Russian forest sector as compared to the countries focusing their management efforts on supply of resources on forest markets.

3. Regional priority

Along with assessment of industry priorities, the distribution of forest resources across the vast territory of the country requires assessment of conditions for efficient distribution of industries across economic regions and constituent entities (the regional priority in forestry development). The conditions are different both in terms of resources (densely and sparsely wooded regions) and in terms of consumption of forest products on the domestic market and their export potential.

The regional priority means preference in locating forest product industries in a particular region, when economic outcome serves as the principal criterion. Thus, regions are ranked by their economic attractiveness to new production facilities, though it may also imply closing down inefficient factories operating in a particular industry. In real life, it means identification of regions with the most favorable conditions for wooden house building, bioenergy, pellet production and other industries. The most efficient wood-processing operations selected for each region will result in the optimum forest sector structure based on distribution of wood resources to intended use areas, while reaching the best economic outcome. The above objective should be seen as the main goal in strategic planning of forestry development at the territorial level.

Transportation conditions on markets for wood resources and wood products are the key factor determining regional priorities in forest sector development. Figure 2 shows what factors are essential for identification and assessment of regional priorities when making decisions on location and further expansion of production facilities and operations in the forest sector.

Transportation costs are the key factor determining regional attractiveness for development of the forest sector. Transportation costs are incurred when roundwood is delivered to wood-processing

facilities producing semi-finished and finished products as well as when the above products are exported or delivered to organizations under government contracts, or delivered to wholesalers and retailers.

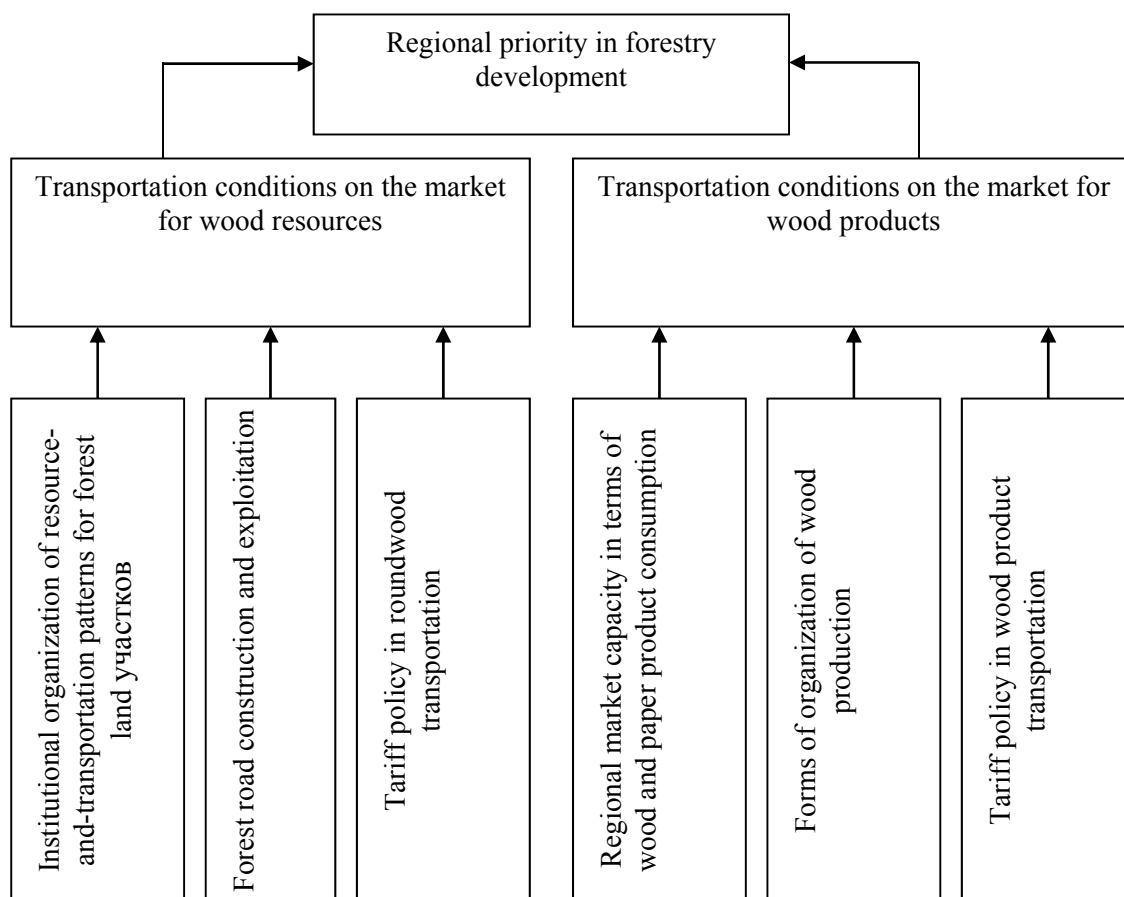


Figure 2. Algorithm for assessment of regional priorities in forestry development.

Roundwood transportation costs depend on the following factors: transportation logistics as well as resource-transportation patterns as mandatory components of territorial forest plans; institutional organization of forest road construction and exploitation through public-private partnerships; rates for transportation of roundwood by different types of transport. Transportation costs for semi-finished and finished wood products delivered to buyers in importing countries or to points of sale under government contracts, or to wholesalers and retailers depend on the organizational form of a forestry business (horizontal and vertical integration, communication patterns) and on rates for transportation of forest products, taking into account any subsidies granted by the government. Thus, the efficiency of location of forest industries in regions will be assessed by the percentage of transportation costs in the product cost in two segments (transportation of roundwood and wood products). This indicator is known as transportability.

Forest industries are located efficiently when the minimum transportability or minimum transportation costs are reached for 1 cubic meter of cut wood in the region. The above indicators provide the basis for ranking of economic regions or constituent entities by the regional priority.

4. Results and discussion

Industry-specific and regional priorities make it possible to make strategic decisions on development and location of industries of the forest sector, so that the best economic outcome could be achieved.

Table 1 shows the pattern for making decisions combining interests of the Russian Federation (sectoral planning) and constituent entities of the Russian Federation (regional planning).

In Table 1, the columns show industries and production operations in the forest sector (A, B, C, D.. i); where, for example, A- wooden house building, B - furniture production and etc.; in their turn, the rows show categories of regions (constituent entities, federal districts, economic areas) (1, 2, 3, 4.. j). The economic outcome from development of production i in region j is shown at the intersection of the columns and rows.

For example, index R_{A1} helps to assess the economic outcome when production operation A is located in region 1, while R_{C3} assesses the outcome when production operation C is located in region 3, etc. Index 0 means that the region does not have conditions for production development for different reasons (absence of raw wood materials of the required quality, high costs of finished product transportation, etc.).

Table 1. Decision-making matrix for strategic planning of forest sector development.

Regional priorities: regions (constituent entities, federal districts, economic areas)	Industry priorities: industries and production operations in the forest sector				
	A	B	C	D	i
	Industry indexes				
1	R_{A1}	R_{B1}	0	R_{D1}	0
2	0	R_{B2}	R_{C2}	0	0
3	0	0	R_{C3}	0	R_{i3}
4	R_{A4}	0	0	R_{D4}	0
j	0	0	R_{Cj}	0	R_{ij}

The application of the aforesaid approach in practice requires a considerable amount of information about expenditures and revenues in the forest sector, which, in its turn, calls for coordinated efforts and long-term commitment from scientific and planning organizations [9].

4. Conclusion

The above matrix implements a conceptual approach to strategic planning for the development of the forest sector based on the assessment industry and regional priorities.

Eventually, establishment of industry and regional priorities should provide efficient industry and regional structures facilitating profitable forest exploitation supported by sustainable forestry and environmental measures. This will help to bring the forest sector out of the unfavorable economic situation that has accompanied its development in recent decades and will provide benefits from the participation of the Russian Federation in world trade in forest products.

The presented ideas about the procedures for developing priorities in forest planning can be the basis for making decisions on the strategic planning of the development of industries and productions taking into account the characteristics of forest resources not only in the Russian Federation, but also in other countries.

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