

Sustainable regional development in the context of bioeconomic trend: Pskov Region

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Abstract. The article presents arguments for the strategy of regional sustainable development (on the example of Pskov region), based on the implementation of the forest potential of the territory on the principles of bioeconomy with a cluster approach to the organization of regional space. The expansion of the biofuel market is a key external factor for the production of pellets made from low-grade wood and forest waste in countries and regions with an appropriate natural, economic and geographical potential. The parameters of the objective trend - transition of Russian regions to bioeconomy, which will allow them not only to increase regional incomes by expanding opportunities for public-private partnership, but also to improve their own competitiveness in the national economy, are outlined. In addition, due to cluster approach, the prerequisites for the formation of regional space network structure are obvious. Methods of logical and substantive, strategic, statistical, regional, technical and economic analysis, as well as content analysis and SWOT analysis are applied in the study.

1 Introduction

The modern world is in the process of building a new economic structure based on bioeconomy [1, 2] and the use of bio-renewable energy sources [3]. The forest sector is an important element in the formation of bioeconomy, in particular, in the context of creation and expansion of biofuel market, which is currently expanding, within its framework the market of wood pellets is growing [4]. This trend is evidenced by the growth of their consumption in the EU countries over the past two decades. The reason for the growth of economic interest in wood pellets is that they are much more environmentally friendly than traditional hydrocarbon fuel. The policy of the EU countries supported by science [5, 6], is aimed at supporting the use of biofuels through subsidies and grants, as well as investments in the construction of large biofuel stations.

Due to the need for biofuels in European countries, new aspects of development of priority, according to modern estimates, forest potential are opening up for Russia. The possibilities of modern participation in the European biofuel market for Russia and its regions are determined by both national forest policy and regional determinants - proximity to sales markets, availability of low-value forest resource base free of rent, the possibility of attracting already existing suppliers, conditions for small and medium businesses, convenient production sites. Commercial interest in the production of biofuels from business becomes a factor of regional economy reorganization.

The location of modern enterprises for production of wood pellets in Russian regions is associated with the

presence of low-grade wood reserves, wastes of previously created timber industries, with relative position of external consumers, domestic consumption opportunities. New production of this profile and modernization of existing production will allow to solve problems not only optimization of use of regional forest potential, but also the structure of regional space.

2 Methods and model

Allocation (or formation) of forest production cluster [7] as a spatial component of the regional cluster system [8] based on the advantages of deep energy wood processing is presented on the example of Pskov region - the middle wooded region of the European part of Russia.

The emphasis on deep energy wood processing in Pskov region, proposed by the author, is implemented in the model of forest production cluster formation - a key component of the regional cluster system. Objective internal prerequisites, at the same time, are that the forest fund of Pskov region is formed mainly (more than 60%) by deciduous species that are non-sought-after in the market for commercial wood. The predominant species for energy processing in the considered area are birch - 33.1%, aspen - 15.9%, alder - 16.9%, pine - 15.4% and spruce - 18.7% (as a percentage of total forest resources). Comparison of the allowable amount of wood removal and actual harvesting indicates significant reserves. The current interest in the forest industry of the region from foreign companies should be noted, in particular, from Dula-Werke Dustmann & Co.GmbH (Dortmund) - the leader of the European market of individual furniture finishing of commercial, office and

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residential premises. Saw logs and lumber are sold mainly to the Baltic states, birch and aspen balances are delivered to Sweden and Finland.

Recycling of forest industry waste is quite a serious problem in the region. Felling residues are not removed from the forest due to economic inexpediency. According to experts, from 20% to 60% of each tree goes to waste. Thus, in the plywood industry, products are obtained from only 40% of wood used.

The main priority of the region's life is energy supply. The peculiarity of investment policy of Pskov region is the emphasis on internal cooperation. Thus, we are talking about embedding new investors in the operating production chain. Traditionally, we are talking about development of the entire complex of woodworking: logging, primary processing and furniture production.

SWOT analysis of the region was carried out to identify strategic preferences, advantages and limitations of forest potential development of Pskov region.

3 Discussion of the results

The following advantages of the Pskov region (strengths) are necessary to emphasize:

- 1) a unique economic-geographical and geopolitical position, which opens up significant opportunities for inter-regional and inter-country relations;
- 2) large stocks of deciduous wood, non-sought-after by the forest industry: economically accessible forest resources of Pskov region are estimated at 3.3 million m³ per year, which indicates good prerequisites for implementation of investment projects in the forest sector;
- 3) relatively high transport development of the region;
- 4) progressive regional energy policy - the use of local fuels, including chips, wood pellets.

Internal weaknesses of the region:

- 1) maintenance of regional and supra-regional trends in the use of carbon energy sources;
- 2) depopulation - the demographic situation prevailing in the region requires the search for new ways of energy supply based on local energy, so as not to spend large amounts of money on the maintenance of electrical networks;
- 3) low level of utilization of forest resource potential;
- 4) relatively low rates of GRP per capita;
- 5) rise of unemployment rate and decrease in living standards of the population;
- 6) lack of sources of regional budget revenue part formation.

Striving for realization of external development prerequisites can help to reduce intra-regional risks and overcome development constraints. It should be assumed that the focus on external markets of forest products contributes to realization of spatial opportunities while limiting internal risks.

External opportunities include, firstly, the growing demand for biofuels in Western Europe, EU policy, and the stable trend of rising prices for solid biofuels. Secondly, reduction of employment in the megalopolises

of Moscow and St. Petersburg can be interpreted as an opportunity to return the active population to the region and increase the influx of qualified personnel. Thirdly, in context of implementation of the national project "Ecology", it is possible to substantiate the strategy of attracting additional private funds for the formation of innovative industries within the framework of ecological economy development in the region. Thus, there is an opportunity to increase the region's presence in foreign markets and thereby ensure regional development.

The external threats of regional development (they can be distinguished by scale - national and supranational, and by genesis - natural and anthropogenic) should include:

- 1) increase in prices for traditional energy sources (in particular, natural gas) - with an increase in the cost of gas by 2 times the fuel component of the cost of heat produced by gas boiler equals that of the boiler, operating on fuel pellets;
- 2) climatic anomalies, which result in destruction of forest resources - from fire, reproduction and introduction of harmful organisms-pests of forests (insects);
- 3) risks of political and economic instability.

4 Conclusion

Based on external opportunities and internal advantages, as a priority for the region, Pskov region should put forward activities related to deep energy wood processing, as priorities for the region, which is primarily determined by the following arguments:

- involvement in the processing of low-grade wood [9];
- development of production using hardwood;
- ecological and economic feasibility of wood pellets production.

These prerequisites indicate the need of attracting investments to create a large pellet system, including logging and deep processing of non-sought-after hardwood raw material, logging wastes and wood processing. Pellets, which should be produced in Pskov region, must meet the requirements of the European biofuel market, which will increase the region's export component, and will make the region's economy more financially sustainable.

Placement of new production intersects a number of activities: modernization of service production, development of human resources, innovative activities, tourist and recreational opportunities, social and environmental responsibility of business. In addition, we are talking about monitoring risks, creating (and improving) regional governance institutions, formation of information space, raising social and environmental responsibility, interdepartmental and interregional cooperation.

The forest potential development strategy of Pskov region is based on the cluster approach. Taking into account regional determinants, it should be considered as the most optimal way to develop the region's forest potential.

Biofuel vector should be treated as a global challenge for reforming national forest management and solving regional socio-economic and environmental problems [10,11]. Production of biofuels should be included in the number of promising areas of the national economy. It also appears to be one of directions of innovative development in relation to the implementation of forest potential of the regions of Russian European part and at the same time as a factor in the spatial reorganization of the regional economy (in particular, due to the transfer of housing and communal services to wood pellets). Against the background of the continuing dominance of anti-ecological hydrocarbon and nuclear energy, when energy and industrial enterprises continue to pollute the environment (air, water), energy has emerged as an important vector for developing Russia's forest potential. This vector can be considered as a challenge for traditional raw regional forest management [sustainability and efficiency], as well as a driver for solving regional environmental problems [1, 13] and business partnership projects [Makar, Makar ; Nosova, etc.] [15, 16]. Regions of Russia that can integrate into the current bioeconomic trend should objectively become the most competitive subsystems of the national economy. At the same time, for the development of the national forest sector, the importance of production with deep mechanical and chemical processing of wood, also organized on the principles of bioeconomics, will remain.

Thus, the uniqueness of the article consists of argumentation of business cooperation development in the Pskov region through introduction of component of the sixth technological structure and network spatial interaction. The author's contribution is concluded, in particular, in substantiation of the strategy concept of forest potential of the Pskov region realization, as a middle-forest region, and also in construction of transformation model of "weaknesses" of this region (excess of low-grade wood and forest waste) in a basis for poliresultative business cooperation.

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