

# Changes in the Territorial Clusters of the Russian Timber Industry

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**Abstract**—The article provides results of the field study undertaken to research the timber industry clustering across Russian regions. The major advantage of the cluster approach is integration of all members, from regional authorities to industry firms and infrastructure facilities. The cluster-based development of the Russian timber industry, high investment and long payback period for projects will provide production stability, increase exports of wood-based products with higher value added and enhance import substitution of end-use products across the industry. The results will comprise the innovational level of the Russian technological base for the timber industry enterprises, access to modern technologies, financial and investment resources, competitive global markets. Additionally, it will provide integration with international timber industry corporations, which is essential in current development. The field study was conducted to identify the scale of clustering, taking place in the Russian timber industry, prerequisites and factors of further development of regional timber industry clusters. Data collection was done by surveying and interviewing respondents at dedicated industry events of the international significance, as well as interviewing experts working for cluster members in two regions. SPSS program was used for input and statistical processing of data. The significant result of the study is identification of the timber industry cluster formation slowing, established clusters across regions face challenges when reaching the cluster aims and implementing joint projects.

**Keywords**—*production, clusters, integration processes, scale of timber industry clustering, survey, interview, statistical methods of analysis*

## I. INTRODUCTION

Core cluster activities are generally focused on modernization and diversification of the industrial sector [1–3], establishment of new research and development competences, launch of innovational products and technologies and promotion in domestic and international markets [4–6]. Cluster formation in Russia follows the international clustering experience of developed countries, which demonstrated efficiency of networks in enhancing economic competitiveness of regions and countries in theory and practice [7–9]. In this regard, innovative territorial clusters are viewed as growth points, competitiveness poles for national economies, regions' development drivers. Given current digitalization in Russia, when the whole economy undergoes institutional transformation, economic diversification of regional timber industry should be paid special attention to, which is an

essential prerequisite for establishing and developing the balanced forest management system. Institutional transformation can be driven by clustering in different spheres, economic sectors and regions. Cluster development across different economic sectors is associated with advantages, provided by the interaction of firms and integration of various activities: current, investment and innovational ones. Cooperation creates synergy, involves reduction of costs, higher profits and implementation of large-scale investment projects [10]. Development of new regional clusters is a global trend. Clustering of the Russian timber industry supports production stability, increasing exports of high added value products [11]. Despite its significance, clustering in the timber industry has currently suspended, causing concerns among many industry experts and officials. Experts think that it can be explained by imperfect legislation, challenges in its application to form clusters in industries, which are based on extraction and processing of natural resources.

## II. RESEARCH PROBLEMS

### A. Problem statement

During fifteen years since 2000 clustering processes were initiated and actively developed across the Russian timber industry [2, 11]. They are currently at the regression stage, raising concerns among both cluster organizations and stakeholders, interested in the timber industry development. A halt in clustering is due to the fact that planned results were not achieved or efficiency was low, whereas introduction of structural, technological and other measures was time-consuming, which did not satisfy cluster members.

The timber industry clustering was aimed at innovational development, rapid production growth, adoption of new technologies of complex raw material harvesting and processing to give high added value wood and paper-based products [12]. The transition period before the Russian timber clusters' development saw the establishment of vertically and horizontally integrated timber firms, which exhausted possibilities for further structural transformation of the industry. At present new drivers of cluster development are searched for, as initiating associated regional complexes will enable the Russian timber industry to compete with large global alliances, to increase its share at the competitive global market of timber products. The development of timber clusters in Russia could have integration in the global trans-national processes of wood-

based production as an advantage [13]. The Russian timber industry clustering will result in achieving the innovational level of enterprises' technological capability, access to new technologies, the global resource portfolio, advanced management methods. This process is relevant due to uncertainty of wood and paper-based production market development, caused by unsustainable economic situation for global consumers and demand fluctuations, as a result.

### B. Research Questions

The objective of the fieldwork was to identify the level of the timber industry clustering in Russia, to determine the prerequisites for further development of regional clusters found in the wood production industry. The fieldwork was part of Project № 18-010-00147 "Theoretical and methodological approaches to the functioning of clusters in the territorial wood production complex as a tool of spatial development of the Russian Federation". The following major tasks were accomplished:

hypothesis specification, collection of supplementary information;

analysis of awareness and opinions related to the issue of clustering performed by economic agents;

identification of clustering initiatives in the timber industry across Russia;

determination of major interests that members possess when entering clusters.

### C. Purpose of the Study

The field study findings comprise identification of the scale that the Russian timber industry clustering process achieved and outline of prerequisites and factors to develop regional clusters in the timber industry. The necessity of clustering as a factor of interaction between the state and economic agents was justified for the market economy, which is a significant result of the research. The current state and capabilities of the timber industry clustering were assessed, which demonstrate the research impact.

## III. RESEARCH METHODS

The research object was timber clusters across Russian regions. The research methods comprised questionnaires and interviews. The questionnaires were administered at the PAPFOR exhibition and business forum in St. Petersburg, at the Russian Forest exhibition and forum in Vologda. Information was collected through structured questionnaires with open and closed questions. The first stage of the research involved designing of questionnaires by the method of factor analysis to determine aggregate variables, which have an impact on respondents' answers. Questions in the first part refer to variables, representing the general characteristics of the timber industry agents' activities. The input data for factor analysis included answers to questions in the second and third parts of questionnaires. Quality control was paid special attention to when selecting methodology, quotas, assessing the optimal volume for the research. The survey sample size amounted to 25 per cent of the exhibition participants. Given the fact, that

the exhibition participants represented leading firms of the timber industry, the sample was considered to be representative. The second stage of the research on the timber industry clustering involved interviews based on both electronic questionnaires (in CAPI answers are collected and stored online by interviewers using tablets and smartphones) and paper ones (PAPI). In general, we selected the second option. The survey resulted in identifying the following advantages of face-to-face interviews: a high degree of accessing respondents; a wide reach; high quality and completeness of answers; statistical character of the data obtained. The third stage involved the following activities: setting filters, calculating quantitative data, developing analytical tables and data set in general. SPSS program was used to input and process data. The following data processing methods were used: univariate frequency distributions, correlation table design, graphical representation of data. The final stage involved the analysis of the obtained data, contrasting, comparing, systematizing of the information, preparing the report with illustrative diagrams. The survey analysis instruments comprised calculation of descriptive statistics indices, grading and scaling, examination of correlation between separate features, graphical processing of information. The research findings refer to universe too, as participants of exhibitions and forums represent large businesses in the timber industry.

Expert focus groups, interviews and discussions were conducted in two regions, where the timber industry makes an important contribution to the economy and regional gross turnover. The regions' selection was based on the fact that timber clusters were established and function there. The Arkhangelsk Province was the first region to conduct interviews in, where PomorInnovaLes Cluster containing 30 firms was established in the local timber industry. Interviews, arranged as business discussions with official representatives, were held in the Komi Republic, Russia, where at first the timber and education cluster was established, then in 2015 it was converted to the timber cluster [16].

## IV. RESULTS AND DISCUSSION

The surveying resulted in a brief performance specification, characterizing the timber industry organizations and firms, which was significant for determining the sample representation and possibility to apply the results to the universe estimates. The surveying showed that fifty per cent of the respondents represented commercial enterprises from Russia and overseas. Almost 88 per cent of the respondents had been working in the timber industry for a long period of time, therefore, had a clear idea of problems, development dynamics and trends. In terms of company staff number, respondents worked in medium-sized and large businesses (69 per cent), which fact was supported by data obtained from the question about their company's annual turnover. In terms of their annual turnover, participants from large and medium-sized businesses prevailed, their total share being 64 per cent. 28 per cent were undecided, the reason being confidential business information. One third were the global market participants and had long-term relations with international partners. 47 per cent were the domestic market participants, but they noted that they were

planning to enter the CIS or international markets with products and/or services (Fig.1).

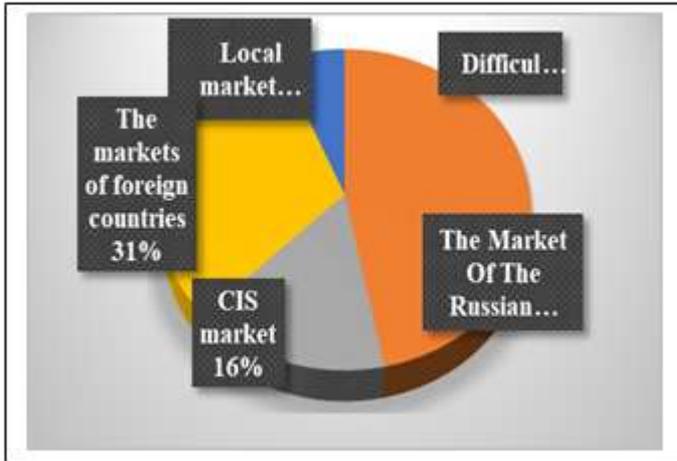


Fig. 1. Results of distribution of survey participants by market activity

Up to 62 per cent estimated the wood production market to be highly competitive. A small percentage of the surveyed considered competition in their sector to be low, remarkably, foreign suppliers of equipment thought so. The main set of the survey questions aimed to discover opinions of the clustering process. Almost 80 per cent were aware of enterprises forming a cluster to a degree, and up to 31 per cent of respondents (Fig.2) gave a positive response to cluster activities. These respondents included members or partners of clusters. 10 per cent had no experience of interacting with this kind of enterprises' association; therefore, they failed to provide an unambiguous response.

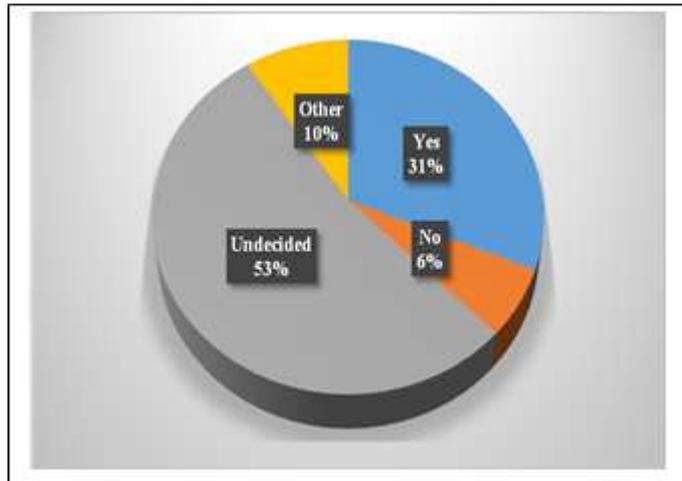


Fig. 2. Results of the opinion survey concerning the effective form of clusters

The specialization of questions about the activities of clusters and the forms of relations between the participants showed that 67 per cent of respondents would like to receive financial, material and technical resources from the association of enterprises, i.e. specific assistance for the development of activities, expansion of production capacities and implementation of investment projects (Fig. 3). Detailed

answers of survey participants showed that some enterprises have difficulties with highly qualified personnel and narrowly focused specialists. Therefore, they would like to receive assistance in provision of labor resources and conducting training, retraining and further training of specialists. This opinion gained 17 per cent of positive responses from the respondents. The respondents are least interested in "personal connections" – 8 per cent.

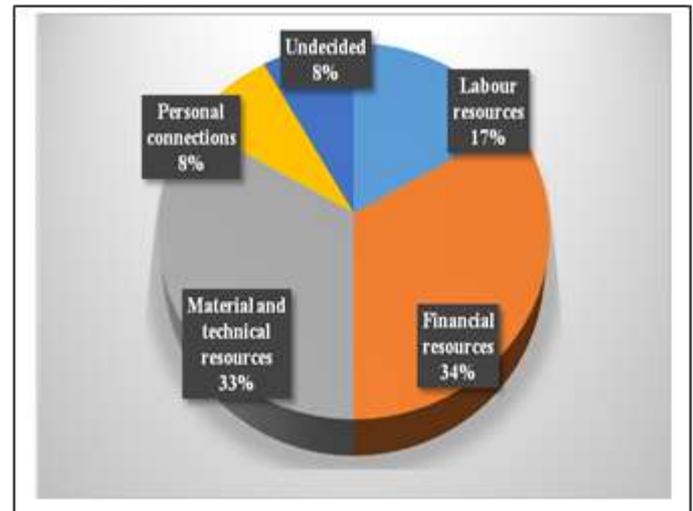


Fig. 3. The results of the opinion survey concerning the specific forms of interaction of cluster members

The willingness of the enterprises to provide financial, material and technical resources is not high enough, as evidenced by 22 per cent of the respondents who answered "yes" to this question. The same number of answers was taken up by the positions "labor resources" and "personal connections". The same number of respondents found it difficult to answer the question.

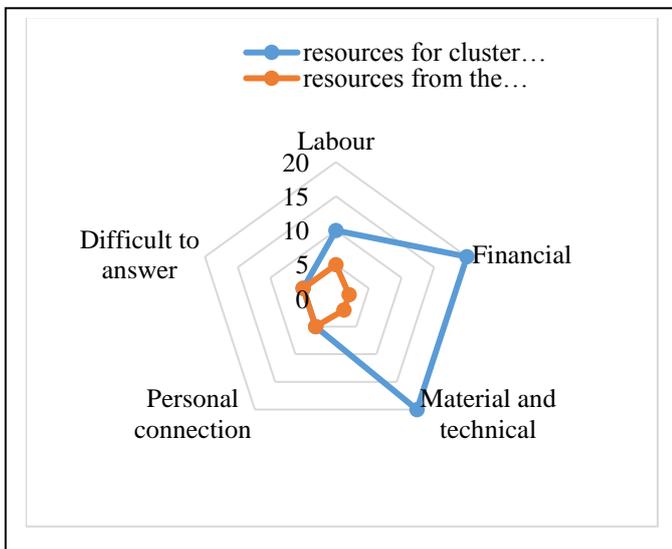
Thus, the analysis of the respondents' answers shows that the absolute majority of survey participants believed that the cluster should provide practical assistance in the form of material and financial resources, but at the same time they were not ready to provide such assistance themselves.

When being asked about the expectations of joining the cluster and what main tasks the cluster should have, most of the respondents could not give a concrete answer (65 per cent). The rest of the respondents gave brief answers, which reduced to the opinion that effective measures are needed to develop the timber industry complex and other industries with which the development of the regional economy is connected. Here are some respondents' statements:

- Expansion of the sales market by attracting (exchanging) customer databases.
- Synergy for the benefit of the industry.
- Financial injections.
- Increase in the number of customers and sales.
- Development of mechanical engineering in the Vologda Province.

- Information exchange.

The majority of the respondents expressed their opinion on improving professionalism, enhancing experience exchange activities among existing clusters and other forms of associations of enterprises of the timber industry complex. This is undoubtedly an important and not quite expected conclusion. It also shows that many market participants are ready for action and the implementation of changes. Market participants believe, perhaps, that it is after such changes that the change of the framework conditions will become just a necessary and independent action from the state (that is, it will be prompted by the need and the new reality of the education market). The cluster as the most influential organization on the market has the opportunity with the help of its products and services to become the unifying driver that will be the source and provider of all these changes in the timber industry complex. The interaction of business, science and government in clusters receives a structured organizational design. The task of the cluster is to assist in the preparation and the initiation of new projects and start-ups using intellectual activity results, in creating a communication platform and conditions for the development of enterprises. Promising technological innovations of startups are difficult to integrate into business plans of large companies. Clusters should help create innovative structures with a maximum set of various services, equipment and links with scientific and educational



organizations (Fig. 4).

Fig. 4. Results of the opinion survey concerning the effective form of clusters

Consequently, the respondents' answers show that there is no clearly established opinion and proposals on the work of the cluster. Additional questions were answered by the respondents touching upon the issues related to strengthening control over reforestation and infrastructure creation.

Therefore, analysis of the respondents' answers shows that the majority of them think that clusters should provide practical assistance, material and financial resources, though in their turn, they are not ready to contribute.

The second part of the field survey allowed us to find out opinions of highly professional specialists of the industry, managers related to the timber industry, who are ready and able to highlight the topic of the creation and functioning of the timber industry cluster. In the form of a joint face-to-face discussion, the experts considered the problems of the clustering process in order to identify the factors that determine this process and to establish relationships. So, according to S.V. Shevelyov [15], Deputy Minister for Natural Resources and Environmental Protection of the Komi Republic, "the goal of creating and functioning of timber industry clusters is the development of enterprises, their economic efficiency, increasing income and budget revenues, promoting import substitution and transition to the digital economy. Often, we have artificial obstacles between enterprises that cannot reach an agreement, because the interests of the larger one turn out to be more important than the interests of other participants in the timber products market. The cluster just allows you to avoid this - to equalize the rights of market participants and build a fair pricing policy".

S.A. Malyarov [15], Head of the Department of Timber Industry, Machine Building and Consumer Industry of the Ministry of Investment, Industry and Transport of the Komi Republic, believes that "creation of the timber industry cluster in the republic will help to establish more effective interaction between enterprises. As a result of collective labor in the framework of industrial cooperation, a synergistic effect arises when combining multidirectional production processes of deep processing of all timber raw materials into one technological scheme. At the same time, non-core wood processing directions are used economically efficiently". Specific projects are presented by A.G. Bayborodov, the head of the specialized organization of the timber industry cluster, based in the Komi Republic.

N.B. Pinyagina [16], Director for Interaction with State Authorities of OJSC "Arkhangelsk PPM", believes that the creation of production clusters in the timber industry complex of Russia is almost stopped. This is explained by imperfect legislation, difficulties of its application for creating clusters in industries based on harvesting, extraction and further processing of natural resources. Joint cluster projects with the participation of logging enterprises are not covered by state support measures stipulated by the RF Government Decree No. 41 "On Approval of the Rules for Providing Subsidies to Production Clusters from the Federal Budget for Reimbursement of Part of Costs when Implementing Joint Cluster Production Projects". This situation does not allow implementing measures of state support for joint cluster projects for the production of machinery, mechanisms and equipment for timber companies, since, according to Government Decree No. 41, they only concern the production of import-substituting products. All these restrictions do not motivate timber enterprises to participate in the creation of territorial production clusters. For this reason, creation of a network of large timber industry clusters, stated in the approved by the RF Government Strategy for the Timber Complex Development, requires special regulatory and legal support. Considering the current situation, the Department of Consumer Industry and Timber Industry Complex of the Ministry of

Industry and Trade of the Russian Federation intends to draft and submit to the Government of Russia a decree establishing rules for the creation and state support of timber industry clusters taking into account their industry specifics. The implementation of these intentions will give a powerful impetus to the creation of territorial production clusters in the timber industry complex, which, of course, will significantly improve the economic situation in the regions.

Thus, the opinions of specialists of enterprises that are cluster members and managers of the regional timber industry show that the industry clustering process can provide significant advantages and will allow switching to an innovative type of development.

## V. CONCLUSION

Summarizing the results of the field survey in the framework of the project, the following conclusions should be made:

1. The processes of cluster formation in the timber industry complex have slowed down, and the created clusters in the regions experience problems with solving the main tasks of unification and the implementation of joint projects.

2. The slowing down of clustering is due to the imperfection of the regulatory and legal framework, the difficulties of its application for creating clusters in branches based on harvesting, extraction and further processing of natural resources.

3. Among the reasons for the clustering decline, the lack of theoretical studies on cluster processes and a clear understanding among business entities and representatives of state bodies of cluster essence is important. There is a problem of separation of business and science.

4. There is a lack of readiness of the majority of the subjects of the state, commercial and non-profit sectors to partnership and cooperation in the association.

5. There is no practical information about the processes of creation and functioning of associations of timber industry entities

Weak cooperation and lack of integration among timber enterprises, which jointly use timber supply areas, public transportation and energy infrastructure, research and education sectors' services, hinder development and competitiveness of the Russian timber industry. The international experience shows that the cluster approach tends to be most effective and progressive in terms of regional development. The results will comprise the innovational level of the Russian technological base for the timber industry enterprises, access to modern technologies, financial and investment resources, competitive

global markets and, what is essential in current development, integration with international timber industry corporations.

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