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Study on the competitiveness of Russian-made wood panels in the development of import-substituting industries

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Abstract. The article examines the competitiveness of Russian-made wood panels in the world market, analyzes their competitiveness factors and determines the development paths of wood panels production within the framework of the import substitution policy. Today in the Russian Federation, there are tendencies towards the construction of competitive production of wood panel products. A few years ago, the Russian Federation was the clear leader in the import of these goods from the European Union. In view of the change in the foreign trade policy of the Russian Federation for the export of industrial wood such industries began to develop within the country. As a result, we analyzed the dynamics of the development of production and consumption of wood panels, conducted analysis of strengths and weaknesses of the competitiveness of wood panels. We have developed a mechanism for increasing the level of competitiveness of Russian-made wood panels. Within the framework of the mechanism, we propose to give a current assessment of the level of competitiveness of wood-based panels, using tools to conduct information monitoring, which allows predicting the values of the competitiveness of wood-based panels in the future and adjusting these values.

1. Introduction

There have been tendencies towards building very serious globally competitive wood particleboard production today in the Russian Federation. In this regard, some types of wood products were included in the List of high-tech products of the Ministry of Industry and Trade of the Russian Federation. When exporting this product, the manufacturer can expect to reimburse up to 80% of the cost of delivering goods to foreign buyers. Wood particle board (WPB), oriented chipboard (OSB), medium density fibreboard (MDF), high density fiberboard (HDF) were among the types of products indicated in the document. In particular, Russian producers of wood-based panels can be competitive in Europe and Asia due to its lower production costs than foreign competitors. A draft of the Ministry of Industry and Trade Strategic Development of the Forestry Complex until 2030 was developed. This document, which sets the benchmarks for the development of the domestic timber industry complex, promises serious changes in the volumes of production and consumption of wood products. It reflects the



current global trends in the consumption of environmentally friendly materials for life.

The purpose of this article is to investigate the competitiveness of Russian-made wood-based panels on the world market and analyze the existing competitiveness factors and identify ways to improve the development of the production of wood-based panels as part of the import substitution policy. Thus, the purpose of the article is to develop tools for managing the competitiveness of Russian-made wood-based panels, including identifying the strengths and weaknesses of competitiveness and the factors that directly affect this indicator. The issue of competitiveness of export products often rises because of the great importance of exports for each country. Expansion of sales markets and sales of high-tech products with high added value is a priority task within the framework of the concept of ensuring the growth of the economy of any country. In Russia, the policy of import substitution began to develop in 2014, when tough sanctions were imposed by Western countries. The Russian Federation (in response) decided to close its markets to import a number of goods. Wood-processing enterprises started this even earlier, when increased duties on raw wood were introduced in 2008. The question of processing wood domestically and exporting finished products arose. In this connection, competitive woodworking industries, in particular the production of wood-based panels, began to develop. Along with this, according to Proskurina S, Junginger M, Heinimö J, Vakkilainen E [1, 2] export of biomass seems to be beneficial. Many countries are trying to export this product to European countries that are interested in using biomass as energy. Others authors analyze about benefits and implications of practices of forest exploitation in priority investment projects [3]. The countries such as Turkey are actively engaged in promoting its products in the markets for wood-based panels. They increase the competitiveness of woodworking machinery [4] and try to strengthen its positions in this market. Kashbrasiev R V, Stepin A G, Shtanchaeva M R, Maklakova N V [5] consider the typology of export specialization of Russian regions. Pryadilina N, Semin A [6] explore the state and prospects of the woodworking sector in Russia. Lin Y, Zhang D [7] analyze the imposition of customs duties on Russian raw wood. Van Kooten G C, Johnston C [8] consider the global consequences of Russian restrictions on the export of logs and the dispute between Canada and the United States. E A Yakovleva, A Y Nebesnaya, N N Fomina, N A Azarova consider the role of green development in the regional economy and ways of further innovative development scenario of the entire Russian economy [9, 10].

Thus, the issues of wood processing product competitiveness arise in different countries. The tendencies of time related to the development of a green economy, the tightening of environmental standards of production, the development of more environmentally friendly energy sources contribute to the relevance of the consideration of this research topic. The wood-based panels are modern materials used both in construction, in interior decoration, and in furniture production. In this regard, improving the competitiveness of Russian-made wood boards is not only an important task for the Russian economy, but it can also make a significant contribution to the energy-efficient developing economy of the whole world.

2. Method and materials

The board segment includes 3 production groups: fibreboard (MDF, HDF), chipboard (WPB) and OSB. Chipboard remain the main structural material for the manufacture of furniture. One of the areas of MDF and HDF application is the production of floor laminate and wall panels. Oriented chipboard is used primarily in low-rise construction for the construction of frame houses, as well as used for the production of containers and packaging. The global demand for wood-based panels in 2016 was 225 m³ and it was distributed as follows: MDF/HDF – 43%, WPB – 39% and OSB – 13%. The most dynamic development in the world from 2007 to 2016 was the production of MDF and HDF: the growth of their volumes was 75%. The advantage in production here belongs to the market leader, China (figure 1).

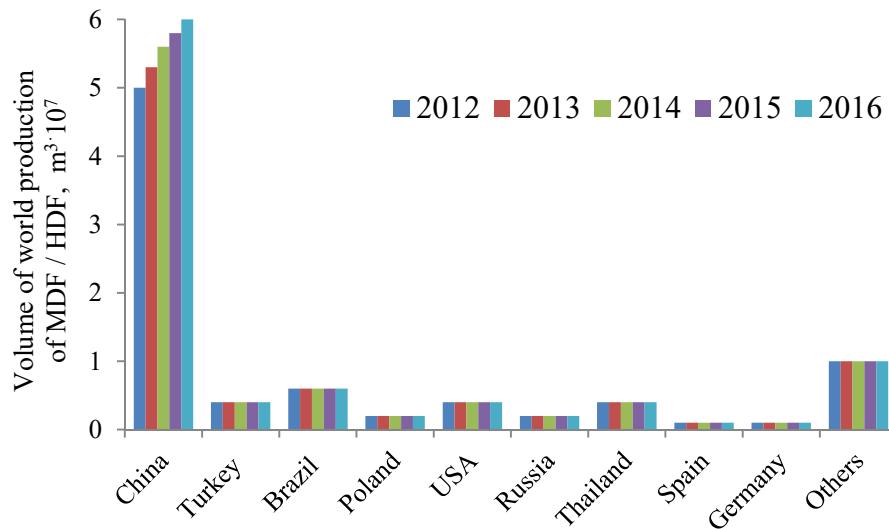


Figure 1. World production of MDF / HDF.

The production of chipboard compared to the production of MDF and HDF grew at a slower pace - only 14% from 2007 to 2016. China does not have the same advantage here as in the MDF and HDF board industry (figure 2). OSB remains predominantly a North American product to this day - even in 2016, 68% of global production was concentrated in the United States (12.3 million m³) and Canada (7.9 million m³) (figure 3). Over the years, the production of oriented strand boards has appeared in Romania, Russia, China and Belarus. Germany, Latvia and the Czech Republic have noticeably increased output.

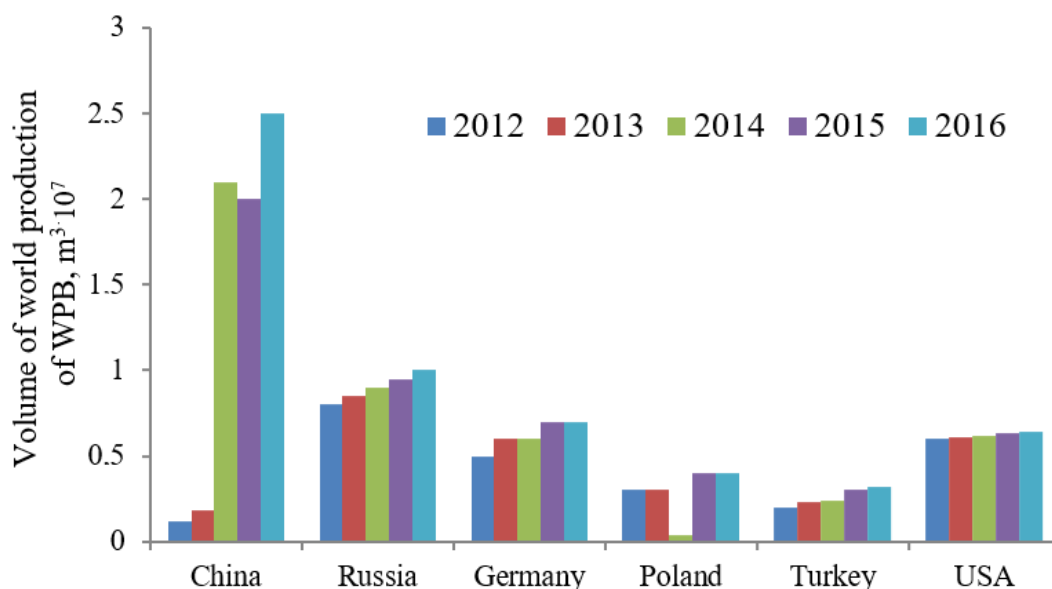


Figure 2. World production of WPB.

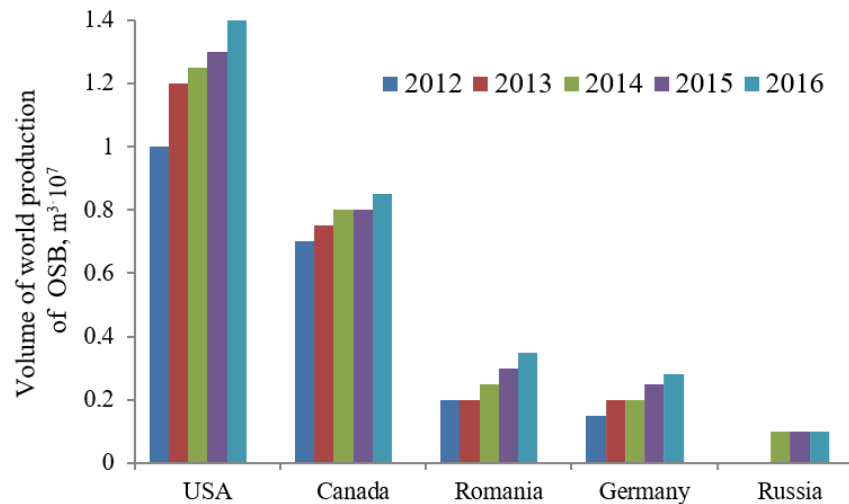


Figure 3. World production of OSB.

Based on the presented statistics of production and consumption of wood-based panels, we conducted a SWOT analysis of the competitiveness of wood-based panels production (table 1) in the Russian Federation and identified strengths and weaknesses, considered the development opportunities and potential threats to the competitiveness of Russian-made wood-based panels.

As a result of the SWOT analysis, the strengths and weaknesses of the competitiveness of the production of wood-based panels, as well as factors reflecting the opportunities and threats for the further development of competitive industries, were identified. The indisputable strength of the formation of the competitiveness of wood-based panels is a powerful raw material base, a weakened exchange rate of the national currency, environmentally dependent norms of product consumption that are forming all over the world, and the presence of a developed logistics infrastructure. The first two conditions form a low production cost, the third condition contributes to a high demand for wood products. The fourth condition creates low logistics costs.

Among the weaknesses and threats, one can note: a slowdown in the growth of the world economy, especially in the wake of the Covid 19 pandemic, a lack of raw materials caused by the depletion of reserves in developed forests, the use of physically and morally obsolete technologies and equipment, and an insufficient number of qualified specialists.

Thus, further development of competitive production of wood-based panels is possible.

The slowdown in global economic growth caused by the COVID 19 epidemic will undoubtedly have a negative impact on exports of wood-based panels. This is due to both logistic aspects and aspects of consumption of wood products during the crisis. The construction sector, which is the main market for the timber industry, has taken a hit in many countries of the European Union. The furniture industry has also been hit by the crisis. On the other hand, the pandemic forced people to change their outlook on life, on their own health, so a boom in demand for wooden housing construction is coming, which is a factor in the growth of demand for wood-based panels.

Table 1. SWOT-analysis of the competitiveness of the wood-based panel production.

Strengths	Weaknesses
Powerful raw material base	The lack of raw materials associated with its depletion
Introduction of a large number of new high-tech production of wood-based panels in the Russian Federation	In the Russian forest complex, physically and morally obsolete technologies and equipment are used, including those with a high proportion of manual labor and low productivity.
Development of forestry clusters	Physically and morally outdated equipment and technologies are used in forestry and logging production.
Transport infrastructure development	Insufficient number of qualified specialists who are ready to work on the introduced high-tech industries
Development of logistic container hubs	
Tightening of environmental standards of consumption and the introduction of restrictions on the use of substitute products (plastic containers and packaging that do not meet modern environmental requirements)	
Weakening of the ruble exchange rate and thus increased price competitiveness of products	
Opportunities	Threats
Further weakening of the ruble exchange rate	Reducing demand from domestic consumers for forest products
Stimulation of domestic demand, concessional lending to producers and the provision of tax incentives to them.	Slowdown in the global economy, including the Chinese economy and pandemic Covid 19
The development of new forests	The growth of the ruble exchange rate may lead to a decrease in the attractiveness of Russian enterprises for foreign buyers
Some types of wood products were included in the List of High-Tech Products of the Ministry of Industry and Trade of the Russian Federation. (When exporting reimbursed up to 80% of the cost of shipping goods)	Implementation of barrage risks associated with the possibility of introducing restrictive measures in key foreign markets, including an increase in duties and taxes on imported goods of Russian manufacturers
	Restrictive measures may concern the supply of technology and equipment to Russia, which will lead to an increase in the costs of domestic producers, or to a reduction in production.
	Tightening environmental and technological requirements in the field of logging, mechanical and chemical processing
	Raising taxes and fees to regional and federal budgets and extra-budgetary funds.
	Lack of financing and subsidies, late introduction of tax benefits, refusal to provide guarantees and the use of other incentive financial instruments
	Reducing the competitiveness of domestic products due to the support of industries producing substitute products.

3. Results and discussion

At present, the Russian manufacturers of fibreboard, chipboard, oriented chipboard have a significant advantage (up to two or more times) in the cost of production compared to foreign players. However, the expediency of export largely depends on the value of logistics costs. The price advantage is preserved, mainly, if the location of manufacturing enterprises is close to the border with the export market, or near the seaport or a transport container hub. That is why the development transport infrastructure in places of concentration of a large number of manufacturing enterprises will largely determine the prospects for Russian exports. Now, some Russian plate makers do not consider the possibility of exporting due to the location of production in the interior of the country, or remoteness from the developed logistics network.

Figures 4 and 5 show the forecast values [11] of the future production and possibilities of export of wood-based panels. Chipboard in terms of production and consumption remains the most sought after wood plates.

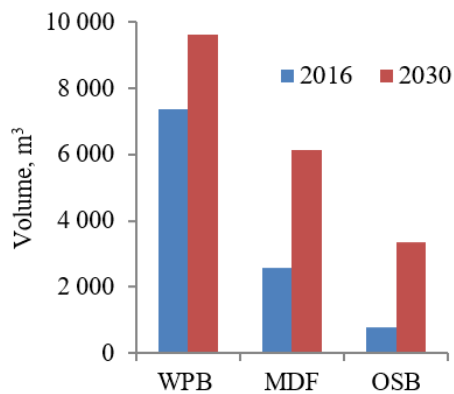


Figure 4. Forecast values of production of wood-based panels in the Russian Federation in 2016-2030.

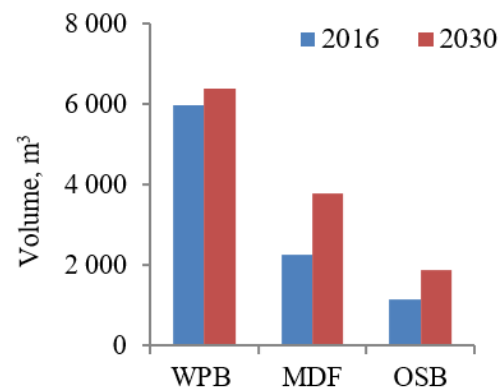


Figure 5. Forecast values of consumption of wood-based panels in the Russian Federation in 2016-2030.

The chipboard products are in great demand among wood-based panels both within the Russian market and as exported products. It is expected that by 2030 this segment will also grow on an equal footing with fibreboard and oriented chipboard segments. Such predicted values follow from the draft Strategy for the Development of the Forest Complex until 2030, which is also coordinated with the development strategy of the entire world market for wood-based panels.

It is expected that Russian manufacturers of wood-based panels will increase its export capacity to an impressive size by 2030 (figure 6).

Thus, we see that in terms of price, our wood-based panels have a significant competitive advantage in the global market. This is affected by the weakening of the national currency, partial compensation of the costs (up to 80%) from the state for transporting products to the final consumer and the location of export-oriented industries near the state border of the Russian Federation and next to potential sales markets (Eastern and Western Europe).

According to the second main indicator - the quality of wood-based panels, Russian-made products are also not inferior to its Western counterparts. As we have already said, four of the world's leading manufacturers of wood-based panels, such as Kronospan, Egger, Swiss Krono and Kastamonu, have already launched its production facilities in the Russian market. That is, the production uses Western technology and all the necessary equipment for the production of competitive products. Thus, the folding factors of the competitiveness of Russian-made wood stoves have a very positive effect on its assessment.

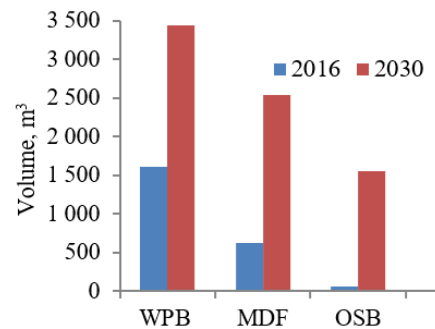


Figure 6. Forecast values of export of wood-based panels in the Russian Federation in 2016-2030.

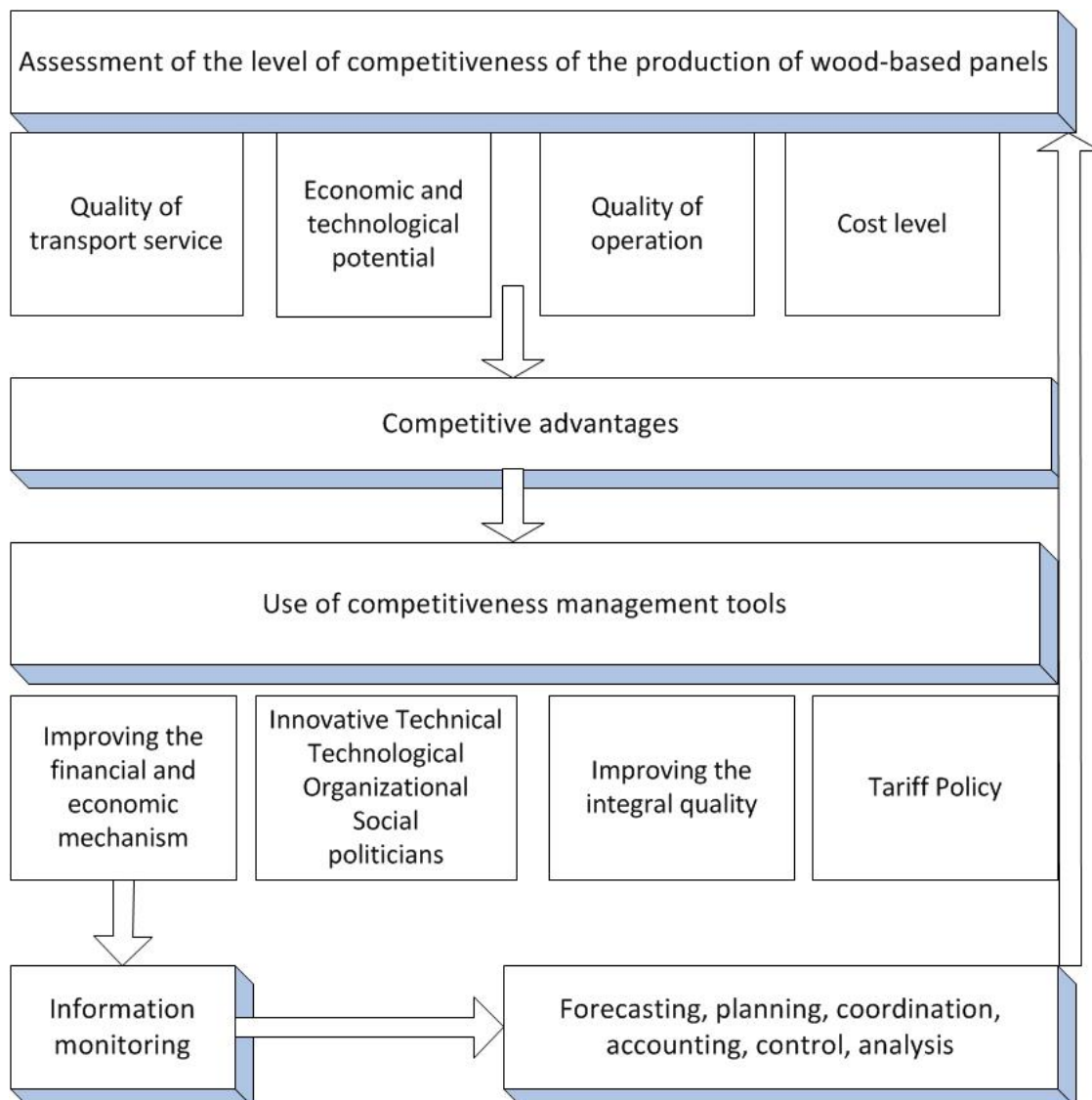


Figure 7. Ways to improve the competitiveness of Russian-made wood plates.

Figure 7 shows a mechanism for improving the competitiveness of Russian-made wood-based panels, in which we focused on the integral indicators of competitiveness. In order to meet the quality of competitors in the western market, it is not enough to use its equipment and technology. It is necessary to have the high level of personnel competence, it is necessary to maintain the high control over the management at the enterprise and tirelessly monitor the quality of the products produced. In order to continue to pass all the necessary levels of control required for export products.

Thus, note the trends in wood-based panels.

Chipboard:

- are the main structural material for the manufacture of cabinet furniture;
- due to a decrease in the growth rates of the world economy and the economy of China, there may be a decline in demand for this type of wood-based panels.

Fibreboard:

- production of laminate flooring and wall panels;
- due to the coronavirus pandemic, a prolonged recession in the global construction sector may occur and the demand for this species may decrease.

Oriented chipboard:

- applied primarily in low-rise construction for the construction of frame houses;
- use for the production of containers and packaging;
- due to the growth in demand for low-rise housing construction within the country, caused by the coronavirus pandemic, there may be a significant increase in demand for these types of wood-based panels;
- stable demand for containers and packaging.

Thus, we can conclude that due to the latest trends in the world, stable demand can be expected for oriented chipboard: wood-based panels. This type will be least susceptible to a drop in consumer demand.

4. Conclusion

Since the main source of growth in demand for Russian plates will be export markets (mainly far abroad), the location of new plate production should be made taking into account not only proximity to wood raw materials, but also achieving an acceptable level of transportation costs for export. This should be provided either through the creation of production facilities near the borders of export markets, or near developed logistics container hubs.

We have conducted a study of the competitiveness of Russian-made wood-based panels on the world market, analyzed the existing Russian and global competitiveness factors and identified the ways to improve the development of the production of wood-based panels as part of the import substitution policy.

Thus, we see that the main competitors for domination in world markets for wood-based panels are China and the countries of Eastern and Central Europe. But the Russian Federation has an indisputable advantage in a powerful raw material base and proximity to markets compared to its main Chinese competitors. Wood-based panels from Western Europe and North America certainly have an undeniable quality, but lose in pricing due to the high dollar and euro rates.

It is believed that the competitiveness of products is estimated by the two most succinct indicators, it is price and quality. The cost is directly affected by the cost of production and all associated costs associated with marketing activities. The quality is influenced by the technologies and equipment used, as well as the qualifications of the personnel and the observance of all stages of quality control of products.

In terms of price, our wood-based panels have a significant competitive advantage in the global market. This is affected by the weakening of the national currency, compensation for part of the costs (up to 80%) from the state for transporting products to the final consumer and the location of export-oriented industries near the state border of the Russian Federation[12], then revenge directly next to potential sales markets (Eastern and Western Europe).

According to the second main indicator - the quality of wood-based panels, Russian-made products are also not inferior to its Western counterparts. As we have already said, four of the world's leading manufacturers of wood-based panels, such as Kronospan, Egger, Swiss Krono and Kastamonu, have already launched its production facilities in the Russian market. That is, when production uses Western technology and all the necessary equipment for the production of competitive products. Thus, the folding factors of the competitiveness of Russian-made wood stoves have a very positive effect on its assessment.

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