

Why forest economy can become a driving force of the development of BRICS cooperation

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Abstract

The changing global geopolitical and economic landscape generates growing interest in new strategic alliances among the world's fastest growing economies. This is certainly true for the BRICS countries, whose importance for the contemporary world cannot be overestimated. As soon as the group begins to turn into a more institutionalized organization, the question of establishing closer and more numerous economic and social ties will arise. The paper analyzes the trends in the development of the forest economy in Brazil, Russia, India, China and South Africa over the past two decades. It assesses each country's share in the global timber harvesting and its position on the international market for forest products. Accounting for slightly less than 1/3 of the global annual harvest, the BRICS countries have boosted production and export of their forest products in the XXI century. According to our calculations, only India and China's production and export of sawn timber and wood panels increased tenfold. The paper examines conditions for turning the forest economy into one of the drivers of cooperation between the BRICS countries and the existing financial, political and environmental constraints. Such cooperation will be possible if there is sufficient demand for forestry products in BRICS; it will require measures to radically improve the logistics of trade between the countries, given their great mutual remoteness. The important role of the BRICS countries in the global forest economy can become an important factor in the further development of cooperation within the group, especially after the expansion expected in 2024.

Keywords

forest economics, BRICS, forest products trade, timber harvesting, foster cooperation.

JEL: Q23, F13, F15.

Introduction

The structure of the world economy is increasingly drifting towards high fragmentation and polycentricity. The political or economic dominance of a single country with a de facto loss of sovereignty of dependent states will soon become impossible. For this reason, the importance of network associations such as BRICS is growing rapidly.

Founded less than 20 years ago as a communication platform for Brazil, Russia, India and China, with South Africa joining later in 2010, the community of nations has not been fully institutionalized and still operates mainly in the format of regular summits. Yet, given the economic and geopolitical importance of the BRICS member countries, it is not surprising that the union tends to expand its membership. At the BRICS's most recent summit in the Republic of South Africa, it was announced that six more countries were invited to join: Argentina, Iran, Saudi Arabia, Egypt, Ethiopia, and the United Arab Emirates.

Even before the accession of the new members, the BRICS group includes very influential players in the world economy and politics. The interdependence of the BRICS countries is obvious: they exchange natural resources and manufactured goods, which helps them maintain high rates of economic growth. The relationship between China and Russia is an excellent example of such interaction. The world's second largest economy is keenly interested in supplies of oil, gas, coal, timber and other natural resources, which are abundant in the world's largest country. In return, Russia receives a wide range of products from Chinese manufacturers of consumer goods and industrial components. The high resource dependence of the BRICS countries is likely to continue indefinitely. (Fu & Zhu, 2023; Fu et al., 2023; Wang & Razaq, 2022).

Up to now there has been no formal mechanism to harmonize the interests of individual countries within the BRICS and so the common view is that the union is unlikely to go beyond the format of a heterogeneous coalition (Jordaan, 2021; Li, 2019). The expansion of BRICS, however, in the medium term could lead to the establishment of full-fledged administrative coordinating bodies of the organization (Lissovolik & Vinokurov, 2019) with subsequent creation of mechanisms for the interaction within the BRICS, which can significantly change the nature of global trade.

Although academic economists have shown certain interest in the issues connected with the group and its future, there is very little research on individual sectors of the economy. This is particularly true for the forest sector.

Some of the differences between the BRICS countries are indeed radical. Russia and Brazil, for instance, have roughly comparable populations, but very different climates, geographies and economies. The neighboring India and China are the world leaders in terms of population, but their economic systems are differently organised.

What the BRICS countries really have in common is the acute problems, such as those related to sustainable development (Awosusi et al., 2022; Lagutina & Leksyutina, 2019; van der Ven et al., 2021).

International efforts to reduce greenhouse gas emissions will be virtually meaningless without the participation of the BRICS countries, which together account for 41% of the world's carbon emissions (Azevedo et al., 2018; Bhan et al., 2017; Caglar et al., 2022; Shvarts & Ptichnikov, 2022; Wei & Khan, 2023). In this context it is important to note that BRICS have large reserves of forest resources and areas suitable for their replenishment. This potential can be used to implement forest climate projects aimed at increasing carbon sequestration by natural ecosystems (Vaganov et al., 2021).

The paper contributes to the main objective of the journal, i.e. the expansion of knowledge about current economic trends in the BRICS countries (Sheresheva, 2020). Based on the analysis of production trends and international trade in forest products in Brazil, Russia, India, China and the Republic of South Africa, it shows the importance of the forestry sector as a potential factor in the development of internal cooperation among the members of the BRICS association.

Data and Methods

To ensure comparability of data, the research uses statistics from international organizations rather than the national ones. Despite the disadvantages of such aggregation, this approach prevents the more serious errors associated with heterogeneous approaches to measuring many characteristics at the national level (Pyzhev et al., 2020).

The shortcomings of the forest statistics collected by Food and Agricultural Organization of the United Nations (FAO) have been extensively discussed in academic literature (Buongiorno, 2018) but, thanks to the time series studies, distortions and lack of observations for certain periods are now smoothed out and this allows us to successfully analyze not only the trends, but also the structure of the processes in question.

International trade data are available in the United Nations Comtrade Database (UN Comtrade). When working with international trade statistics, one should never forget about the possibility of significant distortions, such as underreporting of some trade flows caused by the trade through third countries (Eba'a Atyi et al., 2013). Calculations show that for the trade in timber, underestimation can reach one third to one half of the volume reflected in the statistics (Bösch et al., 2023; Dieter, 2009; Suárez-Varela & Rodríguez-Crespo, 2022).

Primary data obtained from the UN Comtrade and FAOSTAT contain value and other quantitative estimates of production, exports and imports by country, year and product type. For the purposes of the study, these data are grouped for each of the BRICS country and then aggregated and visualized depending on the calculation task. All currencies are converted to US dollars (USD).

The analysis methodology is based on the widely used approaches to statistical data analysis, including aggregation and visualization.

Timber harvesting and forest products manufacturing

The BRICS countries are characterized by high rates of economic development. However, the proportions and structure of this growth remain highly uneven (Huang & Osborne, 2017).

Brazil, Russia, India, and China are major players in the global forest products market, with South Africa acting as a mid-tier producer. In 2021, they harvested about 1.2 billion cubic meters of timber, or 30.2% of the global total. The influence of the BRICS countries on the global timber industry is thus more significant than on the much more discussed oil and gas industry: the share in it before the accession of the new members did not exceed 20% (Blackmon, 2023).

Global consumption of forest resources is generally stable over time. This is primarily due to the high degree of maturity of the market, which has developed to its current state over centuries. The geographical distribution of forest resources is not subject to significant changes, as the natural and climatic conditions for forest growth on the planet are changing very slowly. Even the notorious forest degradation in Brazil is largely compensated by rapid growth of trees. In the countries situated in the boreal or temperate zones, even under the most predatory forest exploitation regimes, the sensitivity of the size of raw material base is not very high. It is therefore not surprising that timber harvesting in the BRICS countries has remained virtually unchanged for many years (Figure 1). In some cases, the stability of forest resource status data is also due to the heterogeneity of forest resource assessment systems in individual countries.

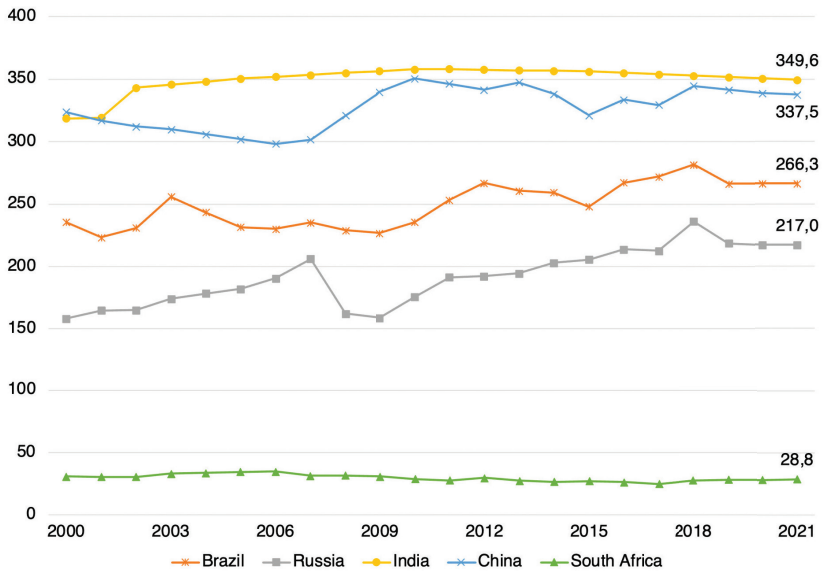


Figure 1. Timber harvesting volumes in BRICS countries: 2000-2021, mln cub. m. *Source:* FAOSTAT. URL: <https://www.fao.org/faostat/en/#data/FO>

Three clear clusters stand out in terms of timber harvested by BRICS countries: Brazil and Russia (266.3 mln and 217 mln cubic meters, respectively), India and China (349.6 mln and 337.5 mln cubic meters, respectively), and the Republic of South Africa with a gap down the order of magnitude (28.8 mln cubic meters).

At the same time, there is no pronounced dynamics in the volumes of timber harvesting. Over the 20 years, harvesting has increased slightly in Brazil (+13.1%), India (+9.7%), China (+4.3%) and decreased in the Republic of South Africa (−7%). Only Russia saw an impressive growth of 37.3%, which was explained by the recovery growth of the national economy after the crisis caused by the collapse of the USSR.

Although the amounts of harvested forest products in the BRICS countries have remained virtually unchanged over the past two decades, the processing of forest products of most types has increased by multiples (Table 1).

Table 1. Production volumes of major forest products in BRICS countries in 2021 (growth rates to 2000, %)

	Brazil	Russia	India	China	South Africa
Wood fuel, mln cub. m	123.3 (−6.9%)	15.1 (+20.6%)	300.1 (+8.2%)	155.8 (−31.5%)	12.6 (+5%)
Sawnwood, mln cub. m	10.2 (−51.9%)	41.8 (+109%)	24 (+203.5%)	84 (+1,159%)	2.1 (+40.5%)
Wood-based panels, mln cub. m	13.4 (+158.1%)	15.9 (+238.4%)	12.6 (+3,665.3%)	178.7 (+845.8%)	1.5 (+277.4%)
Paper and paperboard, mln t	10.7 (+49.9%)	9.5 (+79.4%)	17.3 (+355.6%)	125.2 (+255.7%)	1.8 (−25.8%)
Wood pellets, briquettes, and other agglomerates, mln t	2.9	3.6	NA	0.9	0.015

Source: FAOSTAT. Note: Data on wood pellets, briquettes, and other agglomerates for 2000 are not available.

Wood processing developed most notably in India, where the production of panel products alone grew more than 36-fold in twenty years, and paper and paperboard more than doubled. (Chaturvedi & Saha, 2019). The Chinese forestry sector has shown great success: production of paper and paperboard increased 3.5 times, and wood-based panel products — by 9.5 times. China's success in building a thriving forestry sector is attributed to the same factors that have driven the highest growth rates of its entire economy. A huge supply of hard-working and cheap labor ensured that virtually all types of production in China were highly competitive (Su et al., 2020).

Brazil and the Republic of South Africa were the worst performers. In some areas there was a deep drop in production volumes: for example, sawn timber in Brazil declined by 51.9% (Armijo & Burges, 2010) and paper and paperboard in South

Africa by 25.8%. Russia is roughly in the middle here: all categories have seen growth in production, but it is not as impressive as that of China and India (Chu et al., 2022; Gordeev, 2020).

The recently growing interest in the development of bioeconomy has so far had little impact on the BRICS countries. There is an opinion that the bioeconomic development in the Western countries has more disadvantages than advantages for developing countries since it can lead to even greater social injustice (Bastos Lima, 2022). It means that the BRICS countries will retain their role not only as an important conglomerate of owners and harvesters of forest resources, but also as dynamically growing producers of forest products.

International trade in forest products of the BRICS countries

The large domestic markets of the BRICS countries are needed not only as the drivers of demand for the products of their growing industries. They are also crucial for the inter-BRICS trade, which, through the gradual diversification of exports, will contribute to both quantitative and qualitative growth of the economy (Sharma et al., 2021).

Analysis of the production dynamics of the BRICS forest economies has shown that large gains in certain sectors have been achieved not through increased consumption of primary raw materials or increased labor productivity, but through intensification of foreign trade. The example of India shows that it was precisely the increase in external demand for forest products and the purchase of foreign raw materials abroad (Tandon, 2022).

An important consequence of the growing foreign trade in BRICS forest products will be the associated greenhouse gas emissions (Zheng et al., 2023). A decision to introduce cross-border carbon trading mechanisms may become a key issue for future policymaking.

The analysis of the structure of exports and imports of forest products is based on the approach that was developed in my previous work (Gordeev & Pyzhev, 2023): to calculate the values of exports and imports of forest products, the sum of four HS codes is used: 44 (Wood and articles of wood; wood charcoal), 45 (Cork and articles of cork), 47 (Pulp of wood or other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard), 48 (Paper and paperboard; articles of paper pulp, of paper or paperboard).

Excluding South Africa, all the other BRICS countries have significantly increased their exports of forest products over the past twenty years. Moreover, the growth of exports to China has been truly explosive: in 2021 it reached 43 bn USD, a +1,119.7% increase compared to 2000. Such dynamics correlates well with the growth of China's sawn timber production, which increased 13-fold. It means that part of the additional forest product was consumed domestically, but the growth of its export was also impressive. Exports grew even more strongly in India, which can be explained

by the slower increase in domestic consumption of forest products. The Indian economy is at an earlier stage of growth compared to the Chinese economy, so, despite the comparable population size, per capita consumption of various products there is still significantly lower than in more developed economies. Russian and Brazilian exports grew at much lower rates (+314.5% and +226.8%, respectively). The economies of these countries grew much slower than those of China and India over the twenty-year horizon, resulting in weaker domestic demand. The markets for foreign sales were more limited because the largest consumers of forest products tended to buy mainly raw materials from foreign partners, while developing the production of higher value-added products at home.

Table 2. Imports and exports of forest products to and from BRICS countries in 2021, bn USD (growth rates to 2000, %)

	Imports	Exports
Brazil	1.3 (16.3)	13.1 (226.8)
Russia	3.8 (335.4)	16.3 (314.5)
India	7.4 (510.0)	3.7 (1,754.5)
China	53.3 (413.8)	43.0 (1,119.7)
South Africa	1.5 (167.4)	2.0 (63.9)

Source: author's calculations based on UN Comtrade data.

Imports of forest products were also growing in all the countries of the group. In Brazil such growth was insignificant (+16.3 %), but in China, India and Russia it was enormous (+413.8 %, +510 %, +335.4 %, respectively). While for China and India export growth significantly exceeded import growth, in Russia both indicators were comparable in value, i.e. there was actually a parity increase in exports and imports of forest products.

The opposite trend was observed in the Republic of South Africa: exports grew three times slower than imports of forest products: +63.9% vs. +167.4%. Against the background of constant logging rates and modest economic growth, the country was becoming more dependent on imports of forest products.

What is the intensity of trade in forest products between the BRICS countries? Calculations show that the volume of mutual trade here is substantial, albeit not very large (Table 3).

Table 3. Share of trade between the BRICS countries in their total forest products foreign trade, %

	Imports	Exports
Brazil	23,7	25,6
Russia	13,6	32,0
India	15,9	12,6
China	21,8	4,1
South Africa	22,5	33,9

Source: author's calculations based on UN Comtrade data.

There is a pattern of interaction between the BRICS countries and the rest of the world, which is characteristic of many sectors of the economy. The demand for final products, including those of the highest quality, is still concentrated in Western countries: the United States, Europe, Japan and South Korea. The same countries are interested in buying raw materials, which they often no longer have due to the small area of their territory (Japan, South Korea) or depletion of their own resources (European countries). For this reason, internal trade between the BRICS countries is usually limited to the exchange of missing resources and orientation towards the export of finished products to the world's leading economies.

This logic can be clearly seen in the example of the largest BRICS economy. China remains the world's main production factory, meeting not only the large domestic demand, but also supplying major consumers of forest products abroad. The bulk of exports of forest products from China goes to developed countries. For example, 21% of China's total timber exports (\$3.7 billion) are sent to the US, 7.5% (\$1.5 billion) to Japan, and 5.5% to the UK. Similarly, the USA is the largest consumer of Chinese paper and cardboard, buying \$4.2 billion (13.2%) worth of these products. The next largest importers are Vietnam (\$2 bln), Australia (\$1.5 bln), Malaysia (\$1.3 bln). Russia buys \$913 mln worth of Chinese paper and paperboard, despite its own impressive domestic production.

An important limiting factor for foreign trade in forest products is transportation. Shipping large and bulky forest products over long distances can increase their final cost many times over, especially when it comes to transportation between continents. Therefore, it is not surprising that, for example, the turnover of trade in forest products between India and Russia, which are far from each other, is only 174 million dollars a year, and between India and Brazil – just over 100 million dollars. At the same time, the flows of forest products between Brazil and Russia are virtually non-existent: the total turnover in 2021 amounted to only \$32.7 billion.

Despite high dependence of Russian exports of forest products on supplies to China, its share does not exceed 32%. The situation is likely to change according to the statistics for 2023, given the European Union sanctions against imports of certain

categories of Russian goods (R. V. Gordeev & Pyzhev, 2023). However, with the generally diversified supply structure of the Russian timber complex and high competition in the market, the dependence on the Chinese direction is unlikely to turn into a dominant one. In all other cases, the share of intra-BRICS trade is even smaller. Nevertheless, this structure allows us to assert that there is a sufficient concentration of mutual interests in trade in this sectoral market.

Conclusion

It is expected that in the coming years the BRICS will gain importance not only as a political association, but also as a mechanism for sustainable economic development of the member countries. In this case, the development of cooperation within BRICS in specific sectors will be of particular importance.

The BRICS countries are major players in the global forest industry, accounting for slightly less than one-third of the world's timber harvest. In other words, the impact of the BRICS on the forest industry is no less significant than that of the more widely discussed oil and gas industry, despite the fact that their cost parameters are not comparable.

The rapid growth of the economies of China and India, and the less pronounced but significant growth of Russia and Brazil over the past twenty years, have led to a sharp increase in international trade in forest products, both within the BRICS countries and with other countries. The role of the Republic of South Africa in this context is more about increasing imports of forest products, as the country's capacity to develop its own production is limited by the available resources and the small size of the domestic market. Nevertheless, the limiting factors that will hinder the unrestricted growth of intra-BRICS trade cannot be dismissed. First of all, it is the still high share of Western countries in the global demand for forest products. Next, the great mutual remoteness of the BRICS countries and high relative transportation costs of moving forest products will significantly hinder the redirection of foreign trade flows.

The forestry sector may become an important area of cooperation between the BRICS countries as multilateral relations develop and contribute to further fragmentation of the centers of political and economic power. However, in order to increase this cooperation, it is necessary to boost domestic demand for forestry products and introduce measures to simplify the logistics of goods between the countries, taking into account their great mutual remoteness.

It remains to be understood how such relations can be built on a basis favorable to all parties, taking into account the wide diversity of interests, the geographical distance of the countries from each other, the radically different trends and proportions of development. If these issues are not addressed, cooperation may be trapped in the existing, rather ritualistic format, which is clearly insufficient for serious influence on economic development.

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