Russian Woodworking Market

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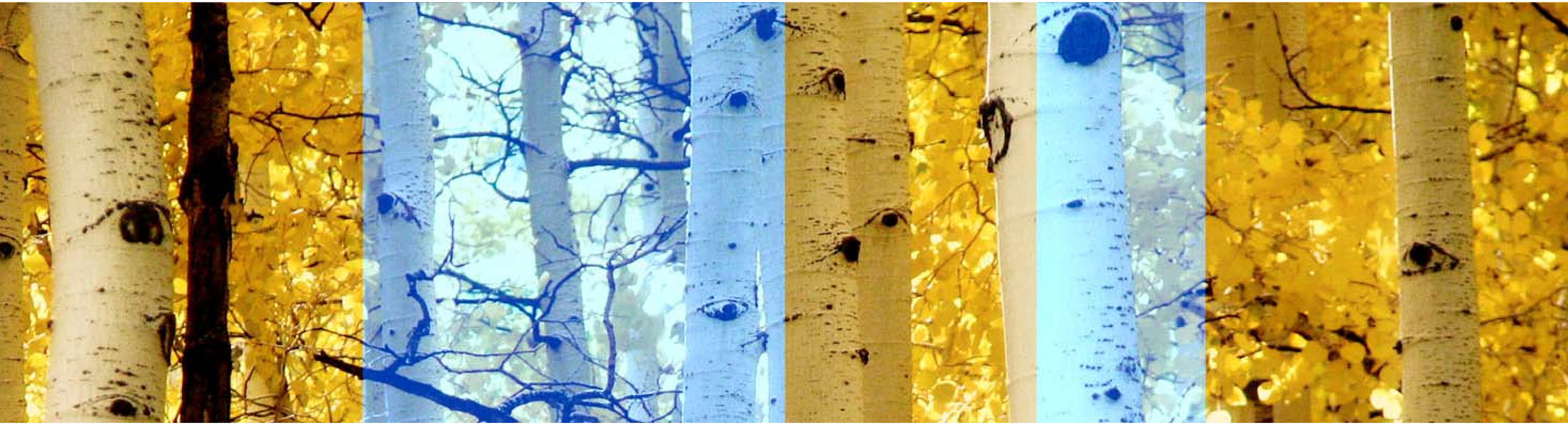

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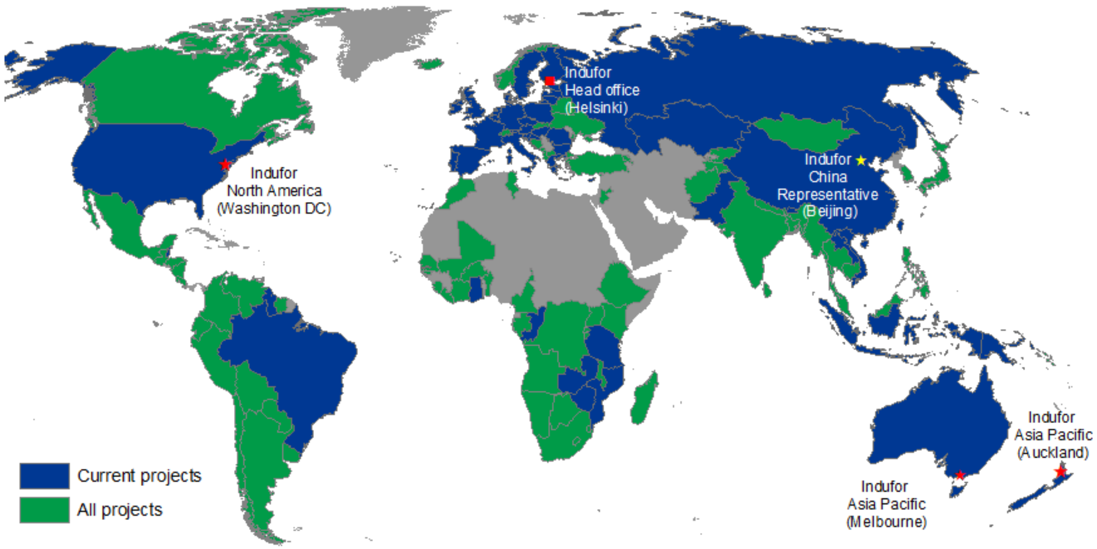
Content

- Indufor
- Russian Woodworking Market:
  - Wood Processing Industry at a Glance
  - Sawnwood
  - Wood-based Panels – Plywood
- Investments and Developments
- Take-away Messages

Indufor – Quick Facts

- Independent international consulting company based in Finland, New Zealand, Australia, the US, and representation in China with over 35 years of experience in the field of forestry, forest industries and natural resources
- Provide world class advisory services to a wide range of private and public sector clients
- More than 350 clients in over 900 projects in 5 continents



Indufor – General Service Offerings

- Sustainable sourcing
- Business strategies
- Industrial development
- Investment advice
- Due Diligence
- Sustainable finance
- Green bonds
- Natural capital valuation
- ESG assessments

Indufor – General Service Offerings
Experience in Russia

Indufor has a long history of wood-based industry projects and has accumulated a wealth of global knowledge and experience in both strategic and operational projects in several wood products producer countries with a large number of companies.

Our developed network consists of all the parties throughout wood products value chain: technology providers, wood and other raw material suppliers, producers (including world leaders), traders, industrial consumers in various segments.

Indufor has completed consulting assignments in Russia since 1989.

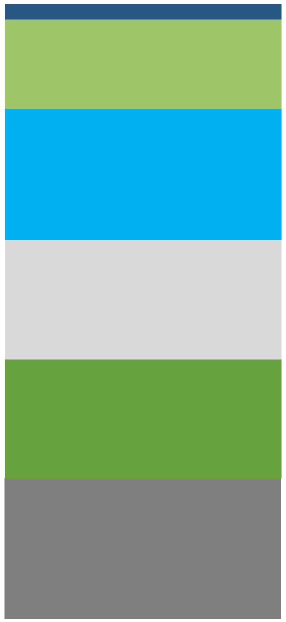
Russian Woodworking Market

Wood Processing Industry at a Glance

Wood Processing at a Glance

Russian wood processing industry is one of the most dynamic globally caused by increasing domestic roundwood processing and production of higher value-added products oriented on exports. Roundwood, sawnwood, wood-based panels and pulp & paper remain the main wood products. However, bioenergy sector is also growing, represented mainly by wood pellet production.

Production share in absolute values, millgate prices USD 2018



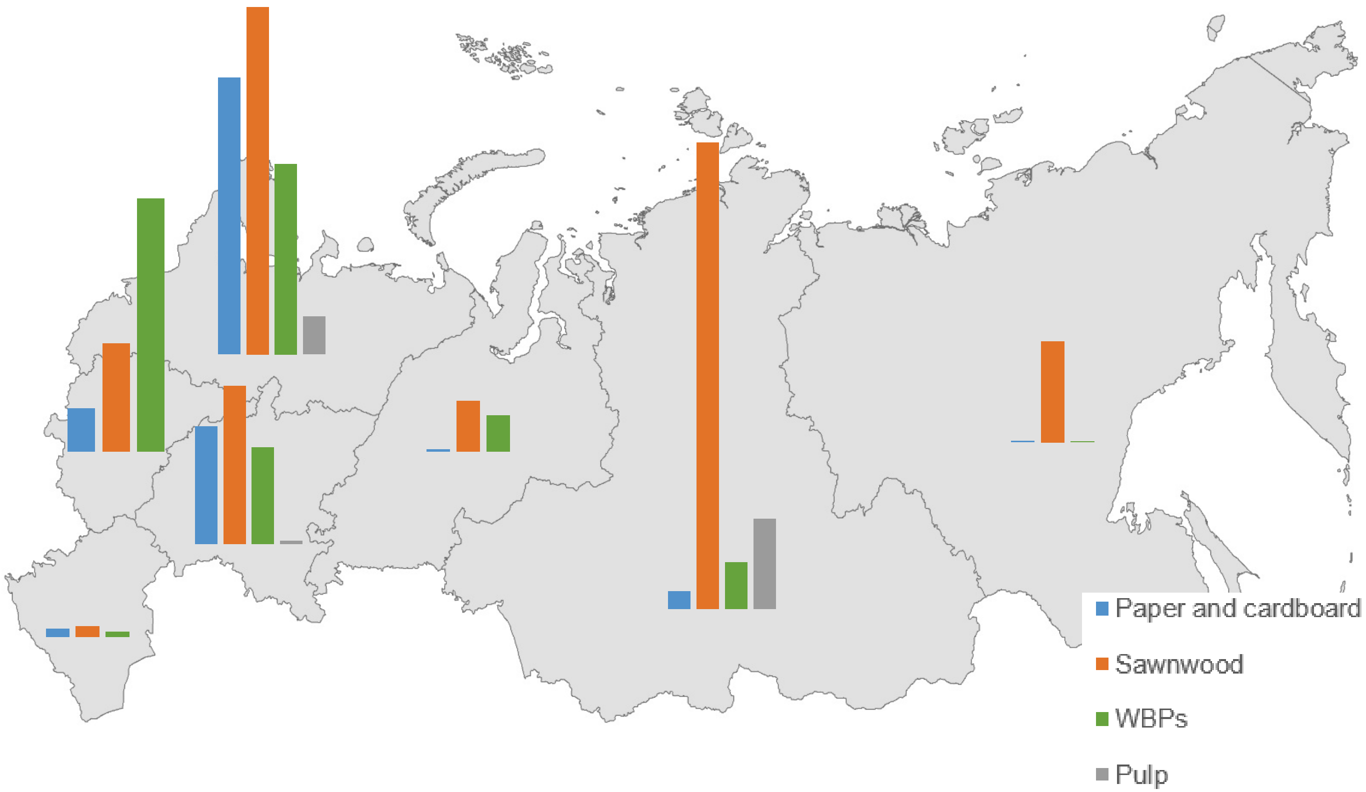
Wood-based energy	
Pellets	>1.36 M tons
Briquettes	~0.1 M tons
Chips	>1300 solid m^3

Wood Panels	
Plywood	>4 M m^3
Veneer	>1.4 M m^3
WPB	~9.5 M m^3
OSB	>1.1 M m^3
WFB	~650 000 conv. m^2
MDF	>3 M m^3

Paper	>9 M tons
Pulp	>8.5 M tons
Sawnwood	>41 M m^3
Roundwood	>228 M m^3

Wood Processing Industry at a Glance

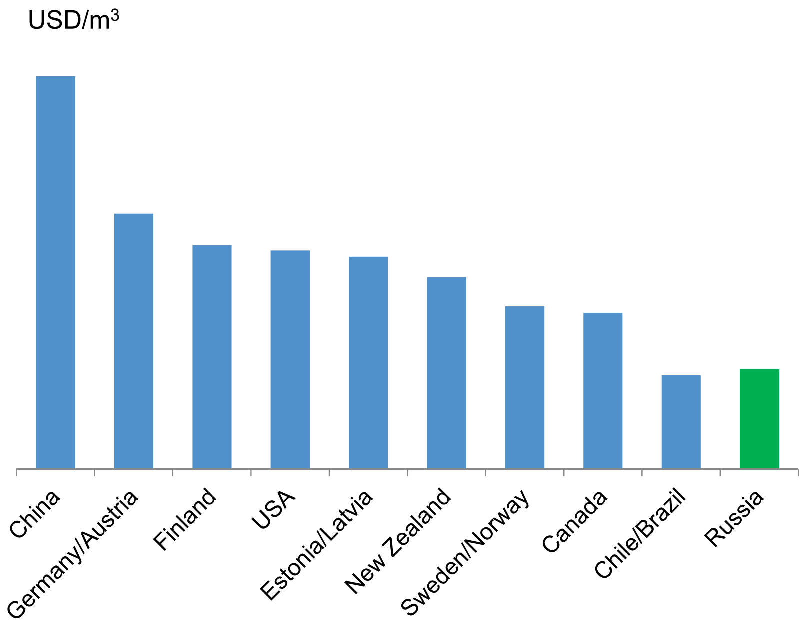
North-West shows the highest total industry output but being #1 only in P&B output. Siberia is the largest producer of both pulp and sawnwood whereas wood-based panels are produced more in western parts of the country.



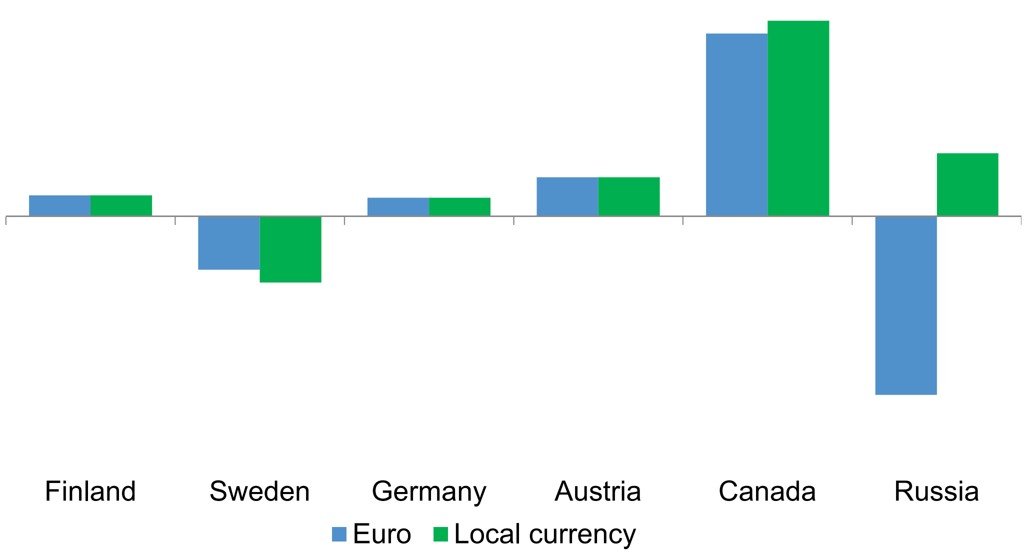
Wood Processing Industry at a Glance

The key factor in competitiveness of the Russian wood processing industry still remains the cost on raw material. Russia has one of the lowest log costs among the main competing suppliers, but…

Delivered log costs in 2018



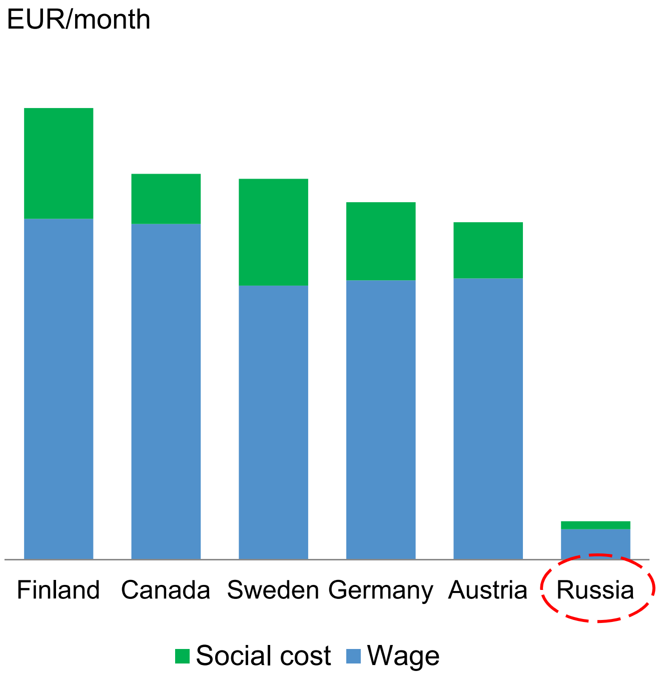
Annual softwood log price changes in 2010-2018



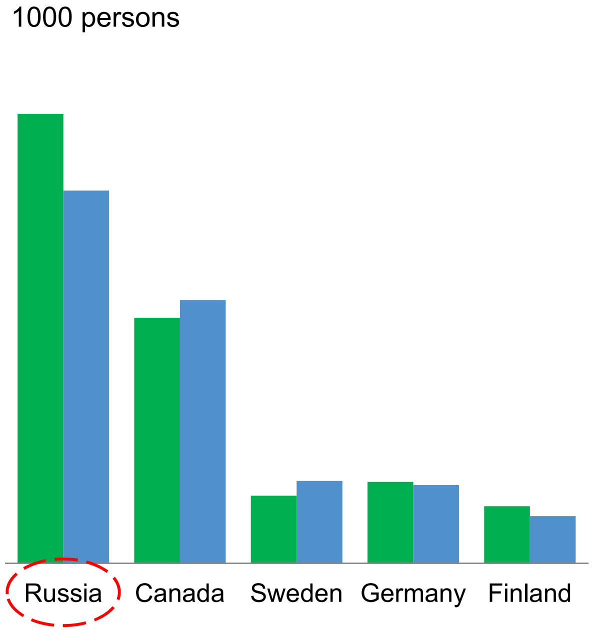
Wood Processing Industry at a Glance

Labor cost has the same trend as the log cost. Despite the favourable development versus the main competing countries, Russian wood processing industry is still heavily labor intensive (albeit is on a declining trend for the past decade). Anyway, it has an impact on final productivity of the production forces.

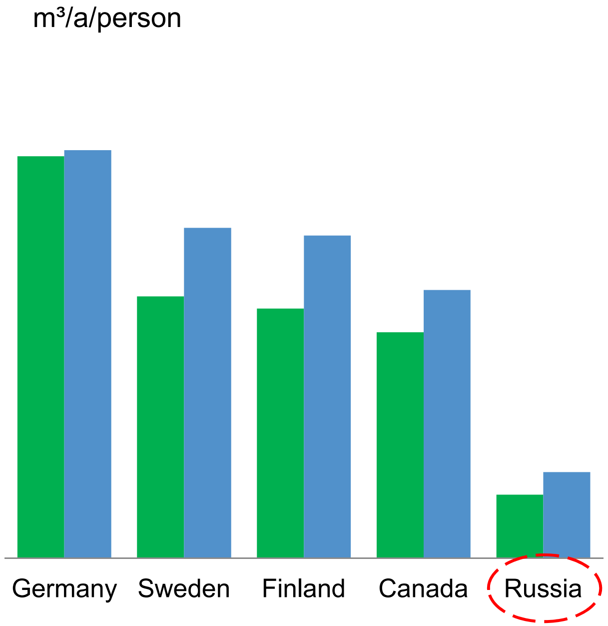
Indicative labor cost



Number of employees



Production per employee

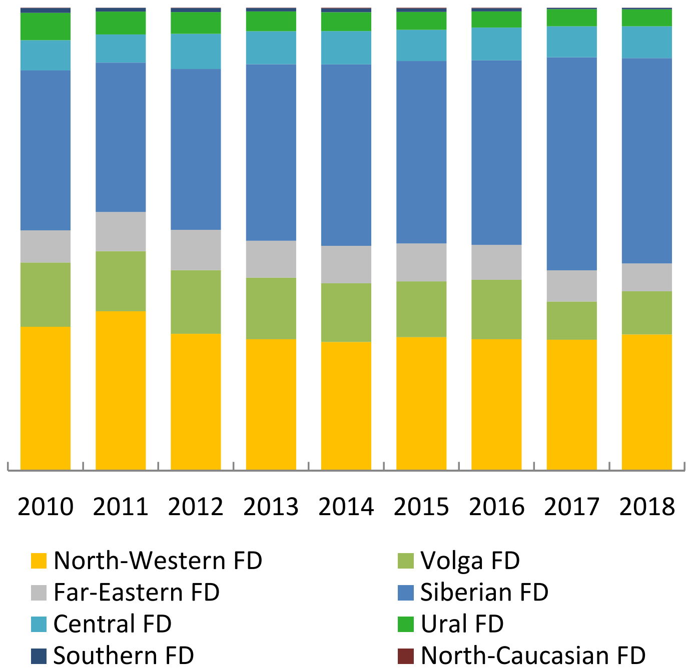


Russian Woodworking Market
Sawnwood

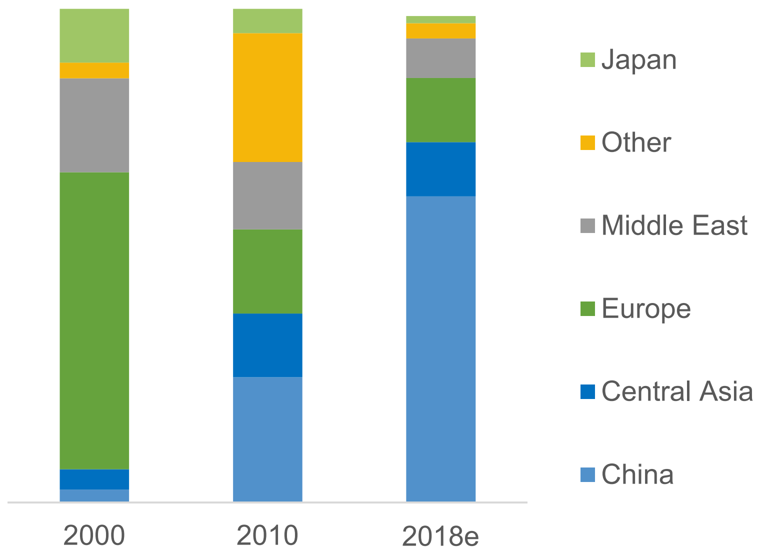
Sawnwood

Sawn softwood production has more than doubled since 2000, and has been almost 40 million m^3 in 2018. Siberian and North-Western account for over 2/3 of the total output. Most of the mills, especially big scaled, focus their sales on export market. China, Central Asia and the Middle East account for over 80% of total export volume.

Regional shares of sawn softwood production



Sawnwood export destination

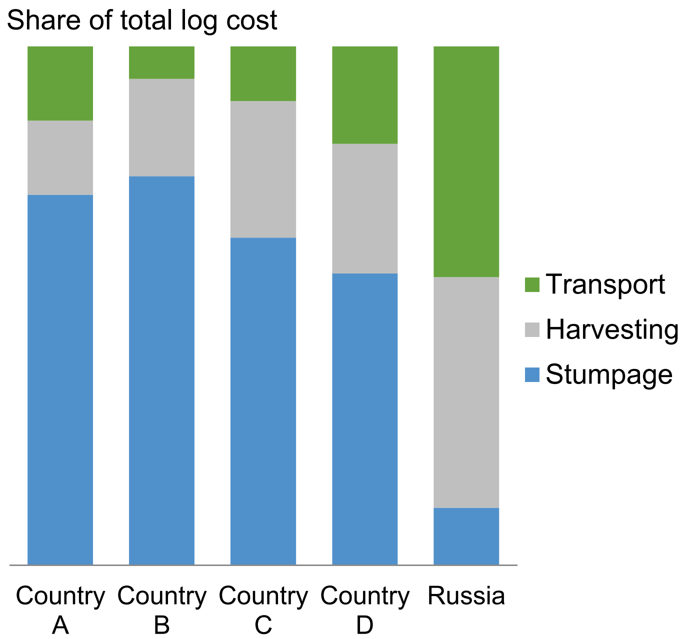


Sawnwood

Despite the obvious raw material competitiveness, several factors put pressure on sawnwood production that may lead to serious challenges for the sector in the next several years

- Unlike in many competing areas, stumpage value in Russia is low, and log cost consists mainly from harvesting and transport factors
- Thus, market driven impacts that decline the stumpage price level are smaller than in competing countries
- Furthermore, inflation will increase input costs in harvesting and logistics
- Road infrastructure will continue to pose a challenge. Capital investments in forest infrastructure are needed.

Indicative log cost breakdown

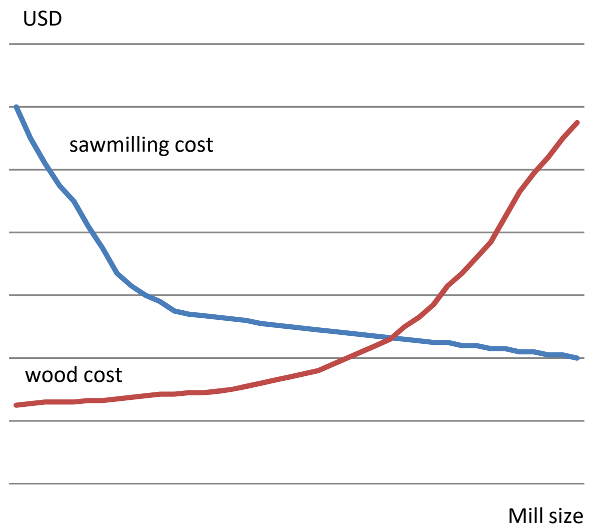


Sawnwood

To handle possible challenges, the sector must aim on improving the productivity of labour, invest in infrastructure, try to increase the value of its products and utilise by-products more efficiently. These all call for substantial investments into the sector.

- Future mills will require
  - more automated systems (e.g grading, moisture control)
  - more independence by employees – flexibility to change tasks, learn new skills
  - more high skilled labor – e.g. electronics specialists
  - attractive salaries to retain skilled people to remote locations
- However, since the log transport costs are considerable and infrastructure limited, the correct mill size has to be considered carefully
  - Log cost per m^3 increases with mill size and other cost savings become marginal once a certain size has been passed.

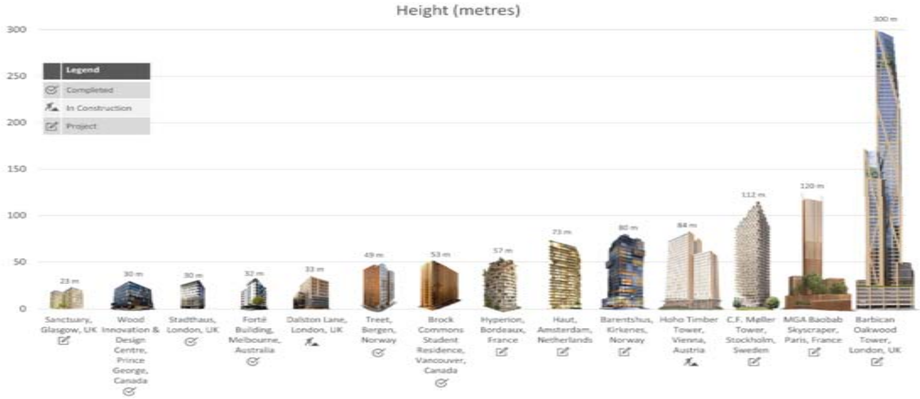
Mill size analysis



Sawnwood

Product value increase is an important approach to support Russian producers. The current raw material quality is high and allows to produce higher value specialties – planed, machine stress rated (MSR), modified/treated products, CLT, EWPs, etc.

- Investments in grading optimization technology can also increase values
  - especially in North-West Russia to succeed with a competition from other producers
- The new drivers:
  - Demand for wood products in high-rise construction is emerging globally
  - Becoming the key driver for Western countries, but what place will Russia occupy in this trend?



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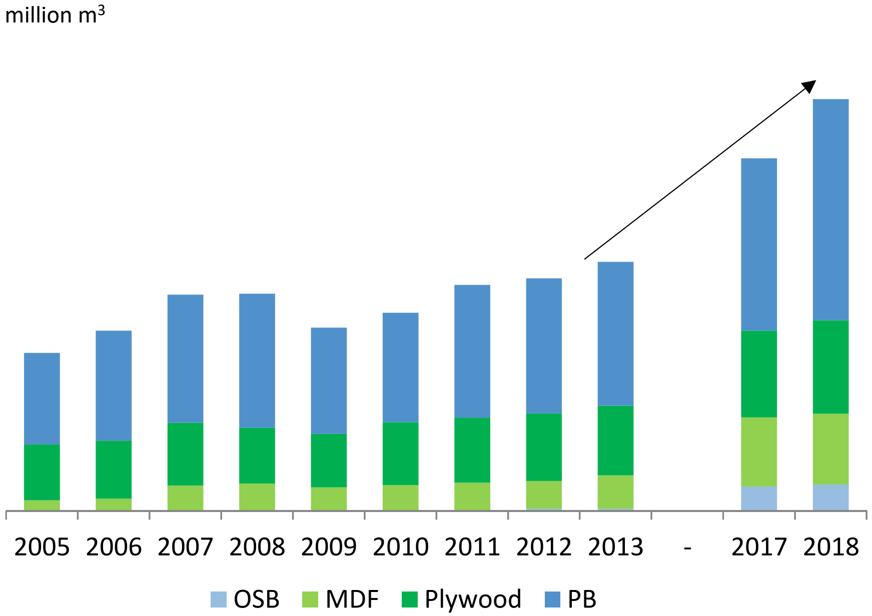
Russian Wood Market

Wood-based Panels

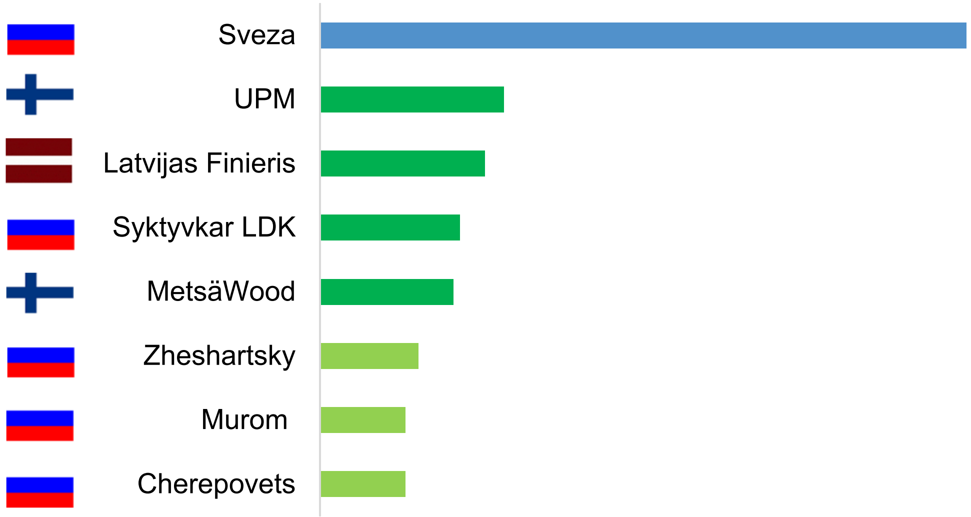
Wood-based Panels

*The wood-based panel market is developing quite rapidly in Russia, almost doubled over the last 5 years, with strong production and high demand for particleboard, growing share of MDF and OSB, and **well-established plywood manufacturing**.*

Production of wood-based panels in Russia



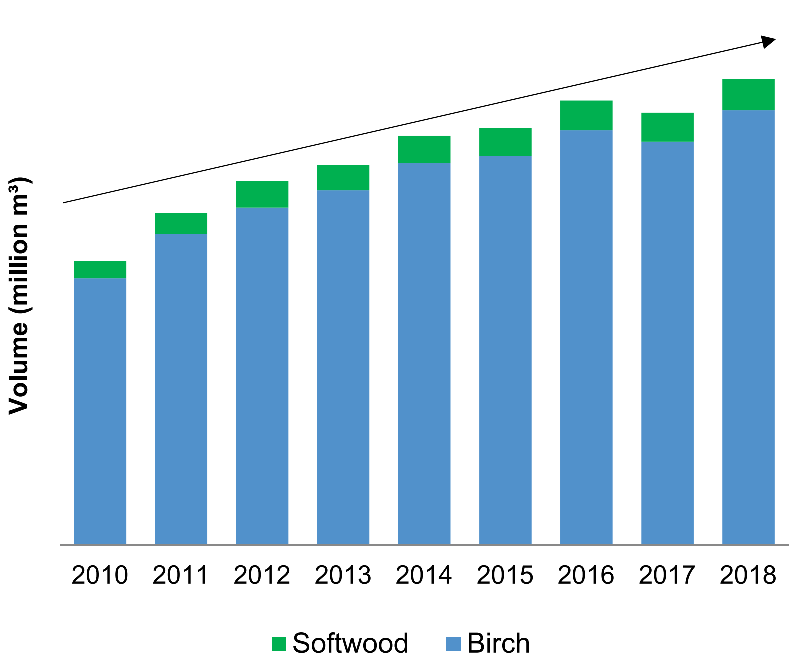
The largest global birch plywood producers



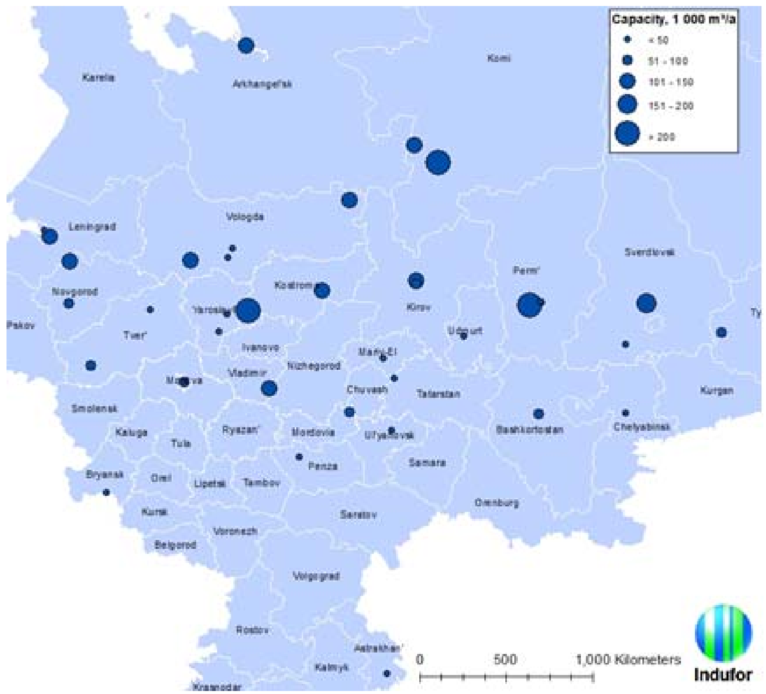
Wood-based Panels – Plywood

Russian birch plywood production is concentrated in the European part of the country in connection to "birch belt". Since 2010, plywood output increased from 2.3 million m^3 to more than 3.5 million m^3 (CAGR – 5%), which corresponds to about 3 million m^3 of birch logs domestic consumption increase.

Production of birch plywood in Russia



Russian birch plywood producers

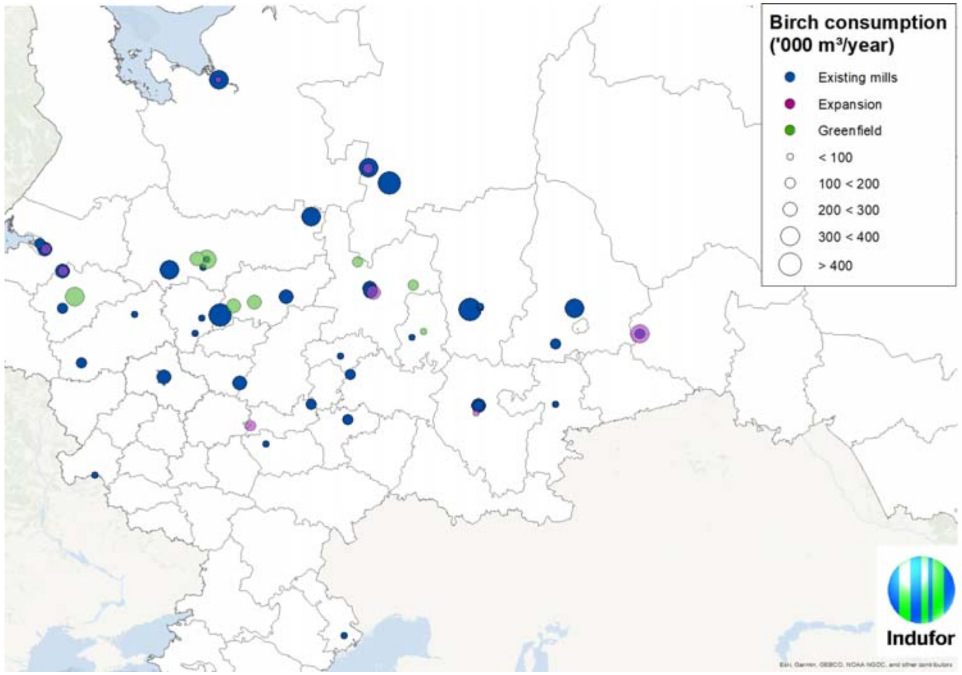


Wood-based Panels – Plywood

Global birch plywood consumption is expected to grow from the current 4,5 million m³ to nearly 6 million m³ in 2030 (CAGR 2%). Most of this demand is expected to be satisfied by Russian plywood.

- There are more than 10 announced birch plywood production projects in the pipeline
  - Most of them are expansion of existing facilities and greenfield sites, initiated by already operating plywood companies
- Producers, especially the bigger ones, have high aspiration towards product differentiation and introduction of new products
  - e.g. new films and special products and services like cut-to-size and CNC
- This helps in reaching industrial customers
  - The number of certified birch plywood suppliers to the LNG shipyards has doubled since 2016 incl. two companies from Russia.

Investments in birch plywood production

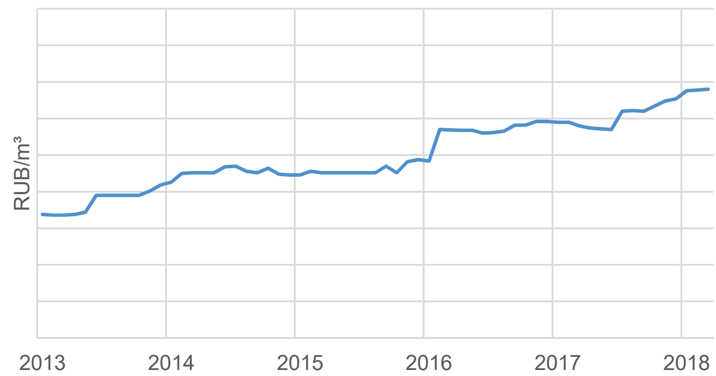


Wood-based Panels – Plywood

In case all publicly announced projects materialise, total birch plywood log domestic consumption will nearly grow by 30 % and may impact on the birch log deficit already tormenting the industry. Russian plywood producers are already facing challenges in the availability of high-quality raw material with several reasons:

- Increasing birch plywood production by existing players
- Greenfield investments in medium and large plywood facilities
- Emergence of small birch logs processors (sawnwood, veneer, plywood)
- Increasing birch log exports especially to China (currently more than 80%)
- Supply & availability of birch logs:
  - Lack of reliable forest inventory data
  - Remoteness of forest stands, poor infrastructure
  - Extensive forest management model
  - Imbalance between supply and demand (e.g. location of the processing facilities, consumed species and assortments).
  - "Climate change" (shorter winters)
  - High logistic costs of transporting wood to mills
  - Short-term planning creates uncertainty of wood raw material availability.

Russian birch log prices



Wood-based Panels – Plywood

One option to reduce the cost burden on birch logs could be an entry to softwood plywood business resulting in synergies in raw material procurement and in an opportunity to expand product offering to even LVL.

- Laminated Veneer Lumber (LVL) is a high-strength EWP used primarily for structural applications
- It is comparable in strength to solid timber, concrete and steel and is manufactured by bonding together rotary peeled or sliced thin wood veneers under heat and pressure
- LVL was developed in the 1970s and is today used for permanent structural applications including beams, lintels, purlins, truss chords and formwork
- LVL can be used wherever sawnwood is used however; one of the main advantages is that it can be manufactured to almost any length, restricted only by transportation to site.

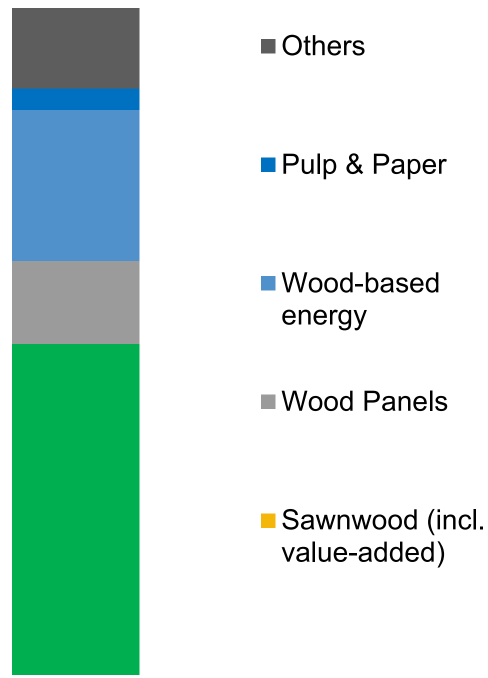
Russian Woodworking Market

Investments and Developments

Investments and Developments

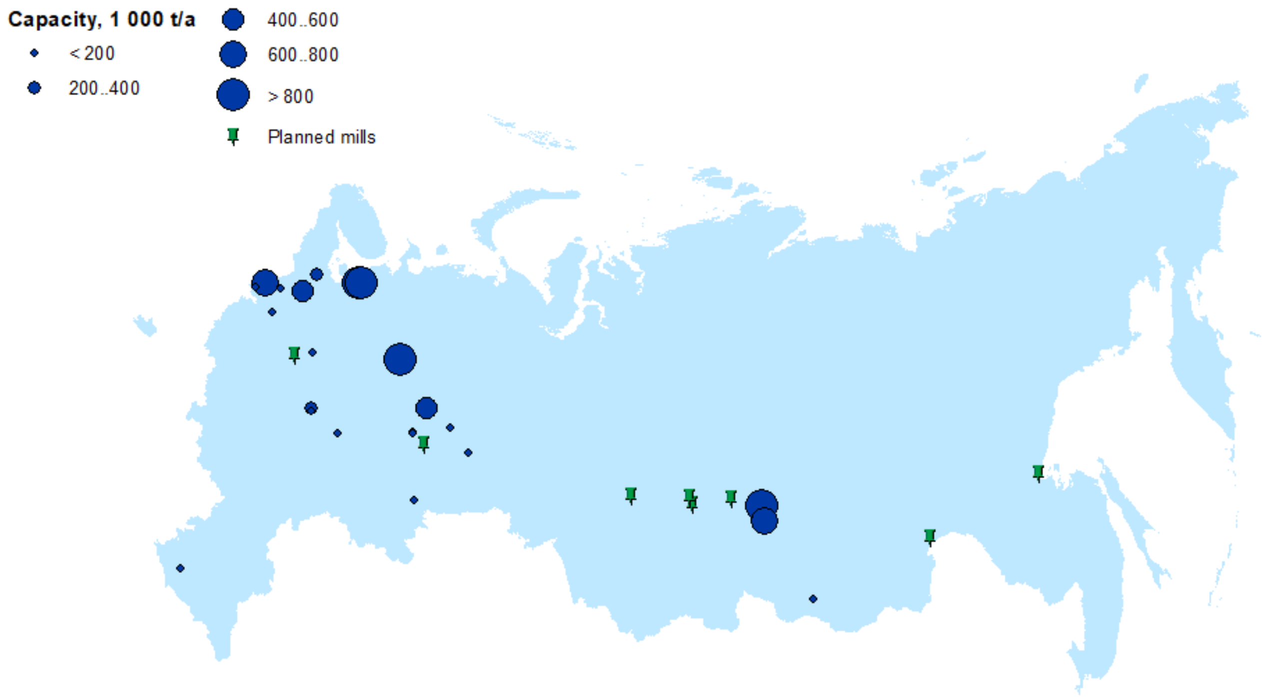
Currently, more than 70 investment projects are under implementation stage with volume almost EUR 6 billion. Over half of them focus on the sawnwood and wood panels product segments.

Product Focus, Number wise



Investments and Developments

Both the FAO and the Strategy of Forest Sector Development 2030 scenarios project strong growth for the sawmill and wood panels industries. ***Even one P&P greenfield project materialized may significantly influence on wood consumption balance among industry sectors in a regional scale.***



Russian Woodworking Market

Take-away Messages

Take-away Messages

Outlook showing challenges and opportunities

- Exchange rate development has given strong cost competitive advantage to Russian producers, but this is definitely not enough and fundamental changes are still needed
- Without modernisation, Russian mills might have hard time staying competitive
- There is an increasing demand for renewable and bio-based products and materials worldwide, especially in the light of bioeconomy development as a driver of economic and industrial sustainability
- Wood and wood-based products will play a significant role in this regard
- As a country with 20% of the total world wood stock and as one the biggest producers of roundwood (even though only about 30% of the total AAC 700 M m^3 is utilized), Russia seems to have significant opportunities to satisfy those demands
- However, what place will the Russian producers and companies take in the current and further changes is the key question towards future woodworking market development in Russia – **raw material supplier or manufacturer of higher value-added wood products?**
- Consolidation/JVs across the different producer segments and industry sectors – could they enable new kind of development?

THANK YOU!

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