



Market analysis

Availability of forest products and by-products

North West Russia

Client:

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1. Introduction

SGS has been assigned by Electrabel to analyse the market availability of the feedstock used to produce wood pellets in Russia, in order to assess to what extent the use of those materials for energy purpose might compete with the industrial use of those resources both locally and internationally.

This report will cover the following wood resources used as raw material by pellet producers in North West Russia

- Residues of forest exploitation
- Round from forest thinning & harvesting
- Wood processing residues

The industrial activities concerned by those materials are:

- sawmills
- pulp and paper
- wood panels production

The geographic range covered by the analysis includes Northwestern Federal District.

2. Production volumes

Despite the fact that Russia contains the largest area of natural forests in the world, its current share in the trade of world forest products is below 4 percent. The United Nations notes that “forests occupy over half of the land of the country, but the share of forest sector in the 2010 gross domestic product (GDP) was only 1.3 percent; in industrial production, 3.7 percent; in employment, 1 percent; and in export revenue, 2.4 percent”¹.

According to the most recent statistics available from the FAO to date² (Figure 1) the production of round wood in Russia in 2011 was 175 million m³. After a dramatic collapse of the harvesting in the early 1990ies following the collapse of the Soviet Union, the level of harvesting shows a slow increase since the late 1990ies. Despite this progressive recovery of the forest harvesting volumes the actual harvested volumes remain below the levels harvested during the Soviet period, and also under the annual allowable cut levels. This is mostly because of difficult access and deficient infrastructures.

There was a slight decrease between 2006 and 2009, presumably as a result of two factors:

¹ School of Russian and Asian Studies http://www.sras.org/russia_forest_sector_wto

² http://faostat3.fao.org/faostat-gateway/go/to/browse/F/*E

- the crisis experienced at the time by the economy in general and especially in forestry, at a global level
- the enormous increase in taxes for logs exports introduced in 2007, in a strategy to stimulate domestic processing of wood.

Indeed in 2007, the Russian government announced that it will be steadily increasing its export tax on logs over the next two years. It will rise from 6.5% at present, to 20% in July 2007, 25% in April 2008, and 80% in January 2009. The government renounced to the intended increase to 80%, so the tax level stopped at 25%. While this strategy certainly helped stimulating the development of domestic processing facilities, the short term effect was a reduction of the harvesting levels, presumably because of a suddenly diminishing demand for Russian logs. After 2009, the exports have stabilised, mostly driven by demand on Asian markets, but remain far below the levels before 2008.

More recently, in 2012, Russia became a member of the WTO and, as part of the efforts needed in this process, there is an engagement to progressively decrease the export tax on round wood so that it will finally fall below 10%.



Figure 1 : production of round wood in Russia (1992-2011)
(source : FAOstat)

The trend in the North West in terms of round wood harvesting in the North West region of Russia is pretty similar to the evolution observed in Russia as a whole. In 2006, in Northwest Russia the

production volume of merchantable wood was still less than half of the level in 1990 indicating that the forest industry has not recovered 15 years after the collapse of the planned economy system³

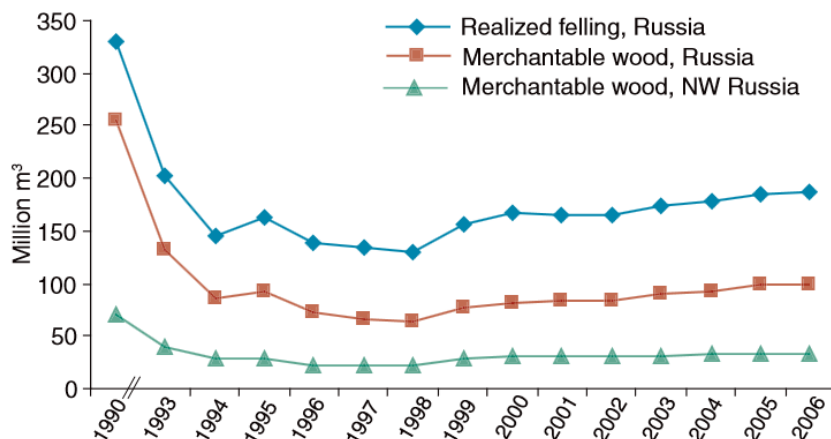


Figure 2 : realized fellings and merchantable wood in Russia and in the North West region

(source : Karjalainen T., Leinonen T., Gerasimov Y., Husso M., Karvinen, S.(2009) Intensification of forest management and improvement of wood harvesting in Northwest Russia)

As can be seen on Figure 3, the domestic production of pulp for paper, sawnwood and wood-based panels has been increasing since the late 1990ies, particularly after 2007, presumably helped by the export tax policy on wood logs. Nevertheless the processing facilities are still insufficiently developed and lack efficiency to make the most of Russia's important wood resources.

In the Northwest region, the processing facilities are much more developed than elsewhere in Russia, including 10 pulp mills, 28 panel mills, 25 large sawmills, resulting in the following contribution to Russia's production⁴ :

- 53% of the pulp and paper
- 36% of the plywood
- 28% of the sawn timber.

Plywood has traditionally been the main product of the North West panel industry and its production is about one million m³ annually⁵. Particle board production is close to two million m³, the production volume has doubled during the last 10 years.

³ Karjalainen T., Leinonen T., Gerasimov Y., Husso M., Karvinen, S.(2009) Intensification of forest management and improvement of wood harvesting in Northwest Russia

⁴ Gerasimov and Karjalainen, 2013, Energy wood resources availability and delivery cost in Northwest Russia, Scandinavian Journal of Forest Research, Volume 28, Issue 7, 2013

⁵ http://conifernet.org/wp-content/uploads/2014/12/CONIFER_forest_industry.pdf



Figure 3 : production levels of pulp for paper (tonnes), sawnwood (m³) and wood-based panels (m³) in the Russia between 1992 and 2013
(source : FAOstat)

3. Forest exploitation levels

The volumes of harvested wood from North West Russia forests are described in more details in SGS's report on forest sustainability. The recorded harvested volumes ranges between 44 million m³ in 2007 and 47 million m³ in 2010⁶.

The North-West region represents a substantial share of the round wood harvestings in Russia : about one third as per 2007 (Figure 4). Compared to other regions of Russia, a larger proportion of the economically available timber is actually harvested in the North-West region, because the processing facilities are much more developed. A larger proportion of this wood can be processed locally as well.

Traditional full-tree and tree-length harvesting methods and systems are used in North West Russia⁷. There is little use of intermediate fellings, with contribution to the total harvesting less than 10% wood volume. Several factors hamper development of wood harvesting, including for example weak production infrastructure, weak road network, lack of own turnover means in companies, low quality in harvester and forwarder operator training, and increasing variable costs.

⁶ Roseleshov official statistics (reference year 2010)

⁷ Karjalainen T., Leinonen T., Gerasimov Y., Husso M., Karvinen, S.(2009) Intensification of forest management and improvement of wood harvesting in Northwest Russia

Most authors recognise that the major limiting factor for the Russian forest harvesting is the insufficient transport network and seasonal accessibility issues to the land for transport vehicles and machinery.

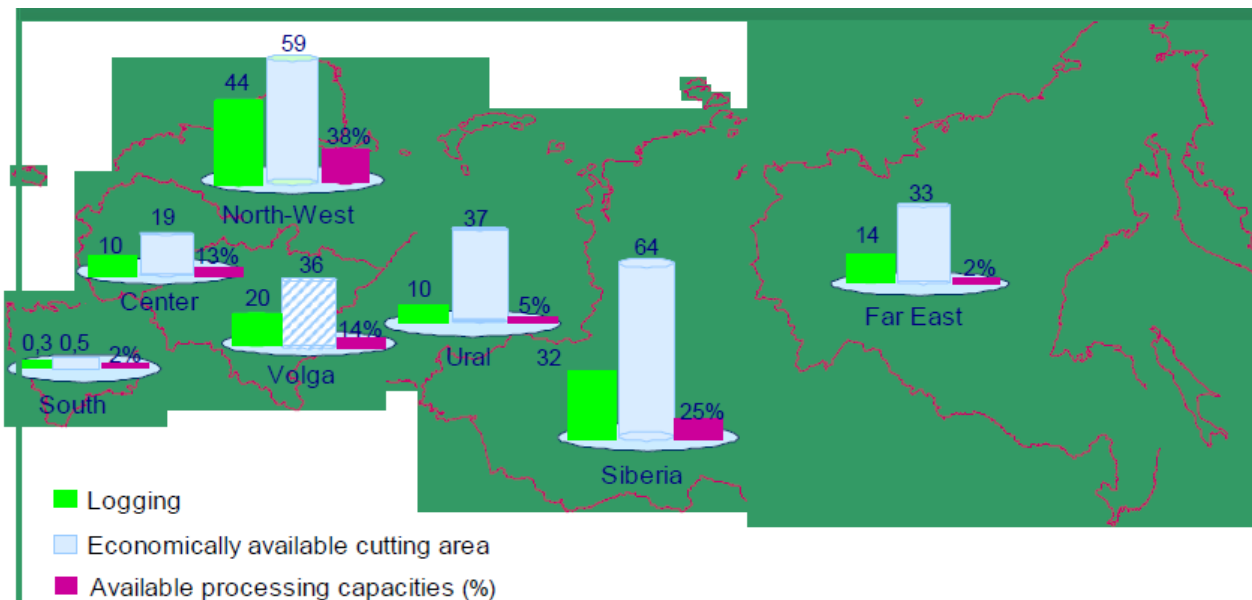


Figure 4 : distribution per region of actual logging (million m³), available volumes (million m³) and percentage of actual harvesting that can be covered by the local processing capacities (source : CIBC. 2007. Russia plans to dramatically increase its export tax on logs. World Markets: Equity Research Industry Update. Feb. 22.)⁸

4. Price of wood resources

Because of poor forest access and insufficient processing infrastructures, the forest sector in Russia is poorly profitable. Competitiveness of the forest industry in the global market is quite low and based on cheap production costs. It is estimated that half of the companies in the wood products industry are unprofitable⁹.

Since 2011, the price of sawlogs has generally been increasing in most regions of the world, including Russia (Figure 6). This trend is due to the recovery of the economy, in particular to higher log trading and improved demand and prices for sawlogs in key regions, including North America¹⁰.

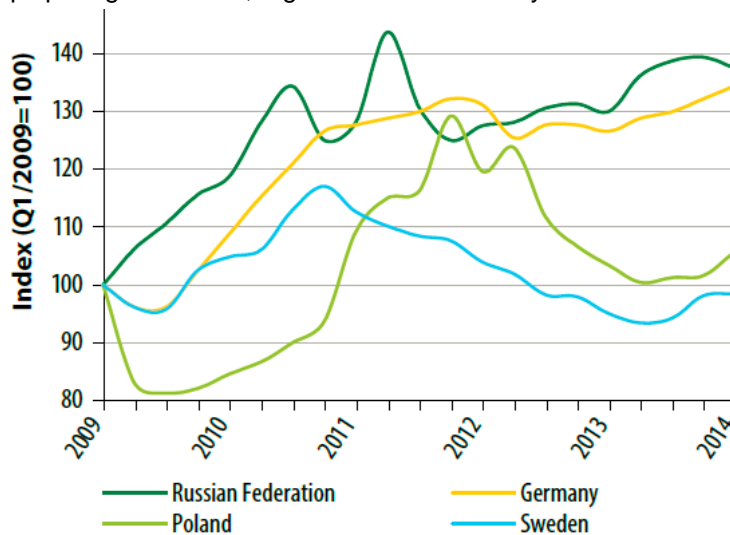
The trend is different in the pulp-grade logs and pulpwood, for which the price in most regions of the world, including Russia, has generally been decreasing in 2012 through 2013, in particular for

⁸ http://conservation-economics.com/pdf_pubs/presentation/CIBC_RussiaLogExportTax_022207.pdf

⁹ http://conifer.net/wp-content/uploads/2014/12/CONIFER_forest_industry.pdf

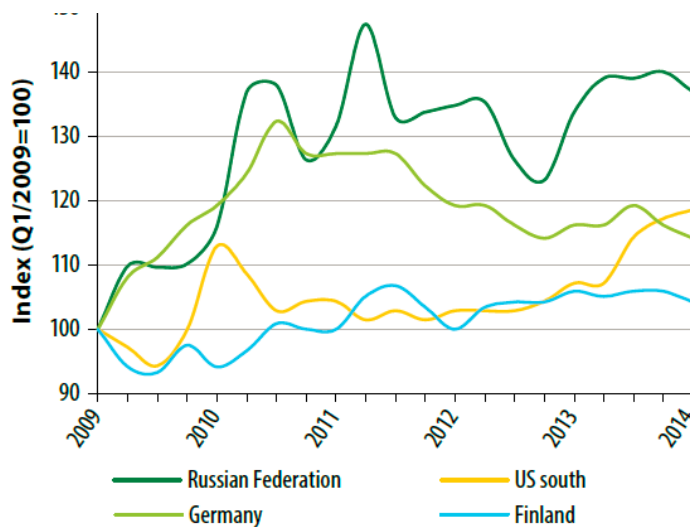
¹⁰ UNECE, Forest products : annual market review, 2014

hardwood. Softwood pulp does show slight recovery in late 2013. This reflects the reduced demand for pulp on global scale, together with availability of more sawmill by-products in some regions ¹¹.



Note: Indices based on delivered log price per m³ in local currencies.
Source: WRI, 2014b.

Figure 5 : Softwood sawlog prices indices (2009-2014)
 (source : UNECE, Forest products : annual market review, 2014)



Note: Indices are based on delivered log price per oven-dry tonne in local currencies.
Source: Source: WRI, 2014b.

Figure 6 : softwood pulpllog prices indices (2009-2014)
 (source : UNECE, Forest products : annual market review, 2014)

¹¹ UNECE, Forest products : annual market review, 2014

5. Import and export of wood resources

In this section, imports and exports are taken into account to assess the availability of the different kind of materials.

While the imports of roundwood to Russia are nearly non-existent, we can see that a significant proportion of the domestic production of round wood is exported. Before 2007 it was more than 25% of the round wood production. Because of the large tax on round wood exports introduced in 2007 and subsequently increased, the levels of exports have dramatically decreased (Figure 7). The still large amounts of exported roundwood are due to the limited availability of processing facilities in Russia.

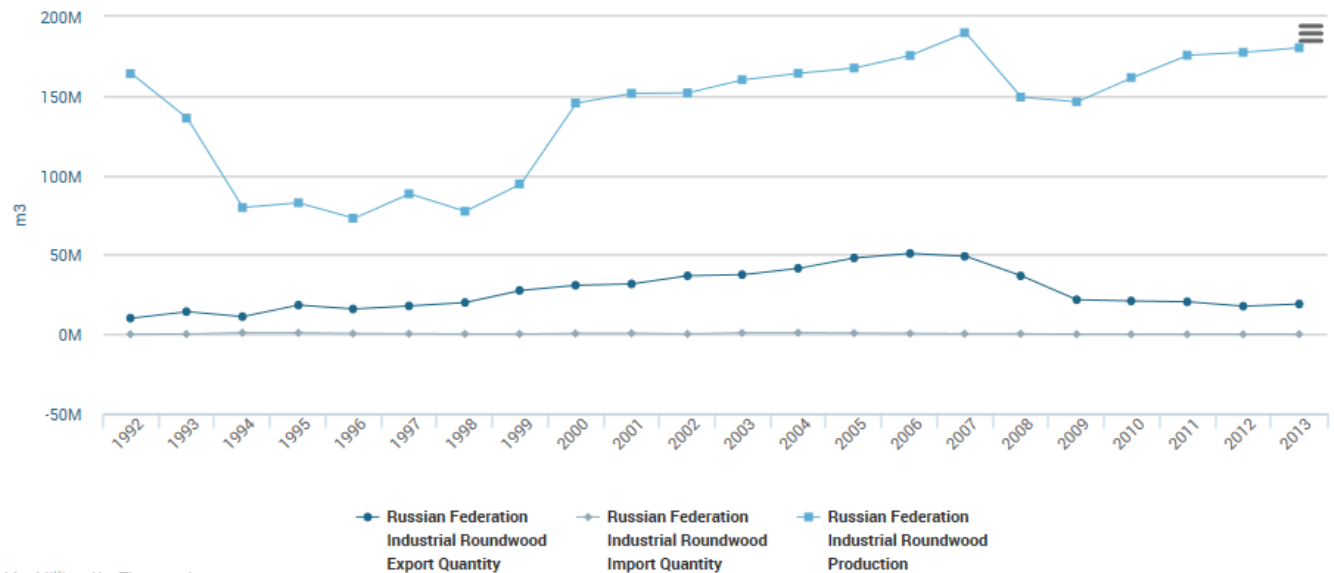


Figure 7 : Production, imports and exports of round wood in Russia (1992-2013)
(source : FAOstat)

The exports of pulp for paper have remained rather stable after 2000, fluctuating between 1.7 and 2 million m³. During the same period, the production has slightly increased, with developments of new processing units (Figure 8). Currently, the export of pulp for paper account for slightly less than 30% of the domestic production and the imports remain negligible.

In the North West region, the situation is similar Figure 9, with only a slight increase of production and exports levels during the period 2002 to 2012, and a smaller proportion of the pulp sent to exportation. This is because the paper industry is much more developed in the North West region than in the rest of Russia.



Figure 8 : Production, imports and exports of pulp for paper in Russia (1992-2013)
(source : FAOstat)

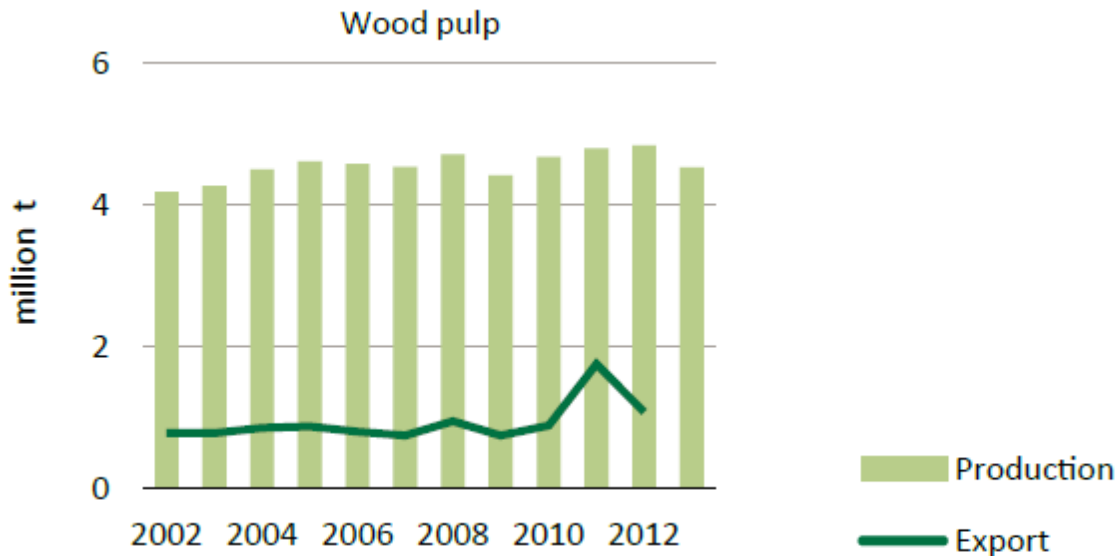


Figure 9 : Production and exports of wood pulp in North West Russia (2002-2012)
(source : http://conifer.net/wp-content/uploads/2014/12/CONIFER_forest_industry.pdf)

Except in 2008-2009 (global economic crisis), the produced and exported volumes of wood-based panels have been increasing rather steadily. It is also noted that the imports are significant and increasing as well, reflecting an important use of wood panels by the Russian domestic market and insufficient processing facilities available (Figure 10). The exported volumes for the North West are rather stable, slightly increasing (Figure 11).

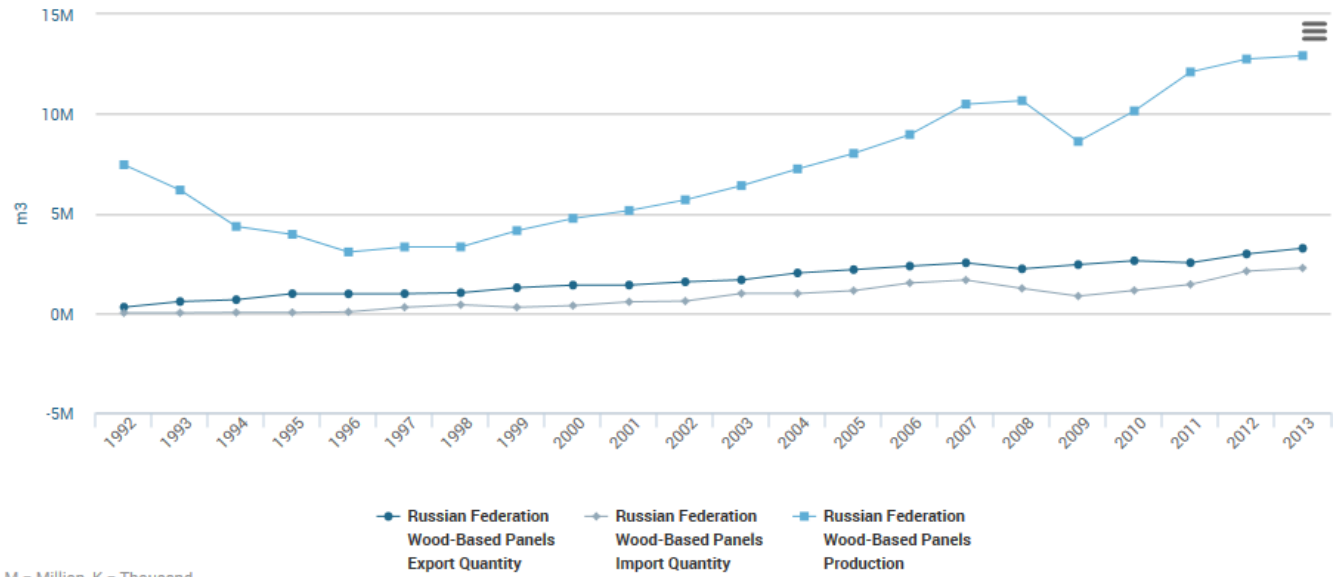


Figure 10 : Production, imports and exports of wood-based panels in Russia (1992-2013)
 (source : FAOstat)

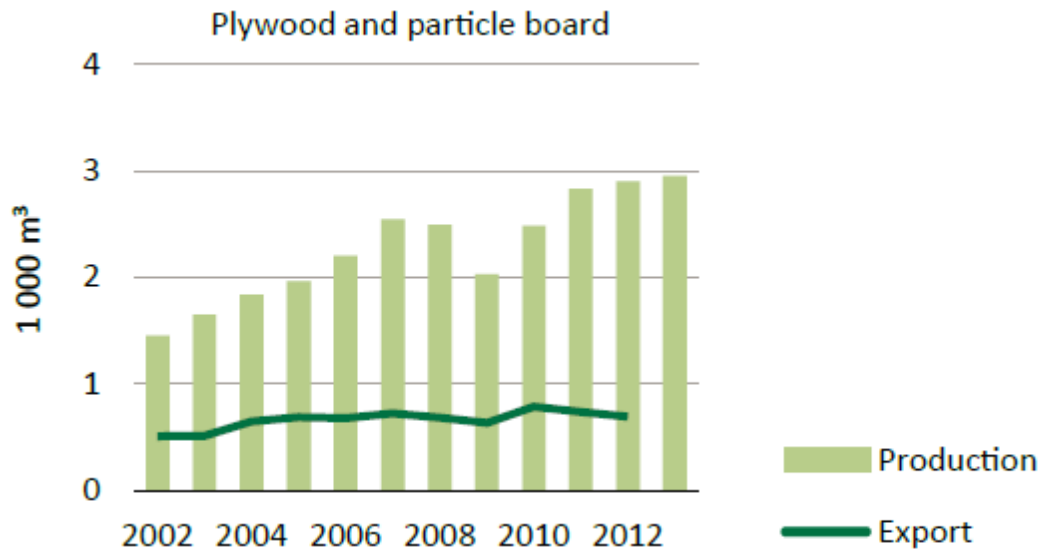


Figure 11 : Production and exports of wood-based panels in North West Russia (2002-2012)
 (source : http://conifernet.org/wp-content/uploads/2014/12/CONIFER_forest_industry.pdf)

Except a slight decrease in the period 2008-2009, the production and exports of sawnwood from Russia have been increasing significantly in the period 2000-2012, which reflects the development of the processing facilities as well as an effect of the export tax on logs since 2007 (Figure 12). The

same trend can be noticed in North West Russia (Figure 13). Approximately two thirds of the Russian sawnwood (lumber) is exported. In the North West region, a bit less than 50% is exported.



Figure 12 : Production, imports and exports of sawnwood in Russia (1992-2013)
(source : FAOstat)

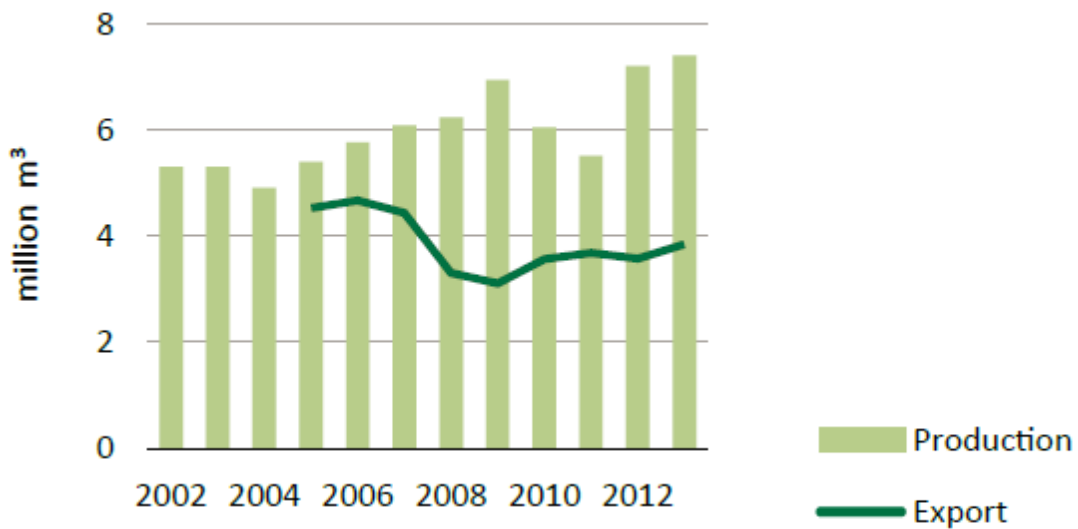


Figure 13 : Production and exports of sawn wood in North West Russia (2002-2012)
(source : http://conifernet.org/wp-content/uploads/2014/12/CONIFER_forest_industry.pdf)

6. Conclusion

Russia's forest industry is characterised by poorly developed infrastructures, in particular forest roads and processing facilities. Because of that, the forest productivity is small compared of the available resources, and the profitability of the forest and forest industries remains at a low level.

Because of the lack of processing facilities, a large proportion of the wood used to be exported as logs. Since 2007, the proportion of log exports has declined because of the introduction of a large export tax for logs.

The actual harvested volumes are far below the permissible levels. Even though they are increasing in Russia as a whole, they are rather constant in the North West region, with hardly some very slow increase. The domestic processing industry has been expanding over the last 15 years, particularly for sawnwood, but also for pulp and wood-based panels. Even though the Russian production of wood based panels is rather small, it should be note that the largest share of it is in the North West region, where it has been quickly growing over recent years. The production of pulp for paper is also very important in the North West Region.

The forest exploitation level in North West Russia (47 million m³ in 2010) is low compared to the allowable annual cuttings. There is room for efficiency improvement and intensification, the most limiting factor being currently identified as insufficient network of forest roads.

Several studies have investigated the availability of wood resources for energy purpose in Russia. Those studies have identified large potential in the use processing residues, as well as forestry residues (a large proportion of which is currently not valorised and left to decay on the roadside and in the forests¹²). In North West Russia, the energy value of residues from sawmills and pulp and paper industries have been estimated to potentially as much as 162-180 PJ per year¹³ (which is equivalent to about 20 million tons fresh wood). Another study¹⁴ estimates the availability of by-product from harvesting and processing in North West Russia to be as much as 30 million m³ per year, 30% of which would be available for sawmills and wood panel mills and 70% of which would be available from forestry residues.

¹² Goltsev, Estimation of potential production of energy wood in the Leningrad region of Russia, 2014

¹³ Bioenergy as an Environmental Factor in the Nordic-Baltic-NW Russian Region, Nordic Council of Ministers, 2006

¹⁴ Gerasimov and Karjalainen, 2013, Energy wood resources availability and delivery cost in Northwest Russia, Scandinavian Journal of Forest Research, Volume 28, Issue 7, 2013

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