FOREST GOVERNANCE, MARKETS AND TRADE:

IMPLICATIONS FOR SUSTAINABILITY AND LIVELIHOODS

RECENT DEVELOPMENTS IN FOREST PRODUCTS TRADE BETWEEN RUSSIA AND CHINA:

POTENTIAL PRODUCTION, PROCESSING, CONSUMPTION AND TRADE SCENARIOS

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SUMMARY

China has a very significant role in the global timber market and this has significant ramifications for forests, forest livelihoods and the structure of forest industries around the world. In this report we will focus on possible future trends in the forest products[1] processing, consumption and trade between China and its main suppliers, with a particular focus on Eastern Russia (Siberia and the Russian Far East). The data used for the report preceded the global economic downturn which started in 2008. While the current downturn will likely have an impact on regional supply, processing, consumption and trade in the short-term, in the long-term it is expected that the global economy will recover and these trends will resume in a predictable fashion based on the data incorporated into the scenarios presented in this report. The International Forest and Forest Products [IFFP] (Northway and Bull 2008) trade model was used as a modeling tool to undertake the analysis. It includes a model of the global industrial forest estate.[2]

Two previous reports serve as a starting point for this new round of analysis. These include: "Forest Products Trade between Russia and China: Potential Production, Processing, Consumption and Trade Scenarios" and "International Forest and Forest Products Trade Model: Scenarios for China and Eastern Russia Forest Supply, Forest Products Processing, Consumption, and Trade," both published by Forest Trends in 2007. This analysis includes an updated and significantly reduced assessment of China's domestic production accounting for the impact of China's National Forest Protection Program, the increase in Russian log export tariffs and the addition of several years of additional production and trade data to our trade model.

The report begins by exploring a *status quo* scenario for forest products supply, processing, consumption and trade based on the trends up to 2007 in China, Eastern Russia, Indonesia and the rest of the world. Then we develop potential *future* scenarios, which describes the likely impacts of the stated policy and development goals of Russian national and provincial governments. These scenarios were modeled individually and together, and include:

- *Russia's announced log export tax:* Announced in early 2006, this tax started at 6.5 percent per m^3 of exported roundwood, rose to 20 percent in July 2007, then to 25 percent in April 2008, and the final increase to 80 percent was expected to happen in January 2009, but was delayed for 9-12 months by Prime Minister Putin in November 2008.[3] This report assumes that Russian log exports will become

[1] "Forest products" includes timber products plus pulp and paper products (poles and pilings are excluded). The term "timber products" is used to refer to logs, sawnwood, panels and other wooden goods. It does not include non-timber and non-wood products such as mushrooms, botanicals, and wildlife. Industrial Roundwood (IRW) is defined as including sawlogs or veneer logs, pulpwood, other unprocessed industrial roundwood consumed at the mill gate. In the case of trade-- chips, particles, and wood residues are also included. (See the Statistical Database of the Food and Agriculture Organization of the United Nations (http://faostat.fao.org)). Current and forecast data for timber products (pulplogs, sawlogs, poles, panels, plywood, sawnwood, fiber, and pulp products, including recycled material, newsprint, printing paper and packaging paper) for China, Eastern Russia, and Indonesia are presented in Northway & Bull (2008).

[2] The IFFP Trade Model analysis was based on a global forest estate generally consistent with production forecasts of the Global Fibre Supply Model (Bull et al. 1998) and falls within the range of surveyed projections in Nilsson (1996) and Weiner and Victor 2000.

[3] IHB FORDAQ Network. 2009. WRI: Log costs fell in Russia in the 3Q/08 as the forest industry cut back production. Available online at: http://www.ihb.de/wood/news/WRI%253A_Log_costs_fell_in_ 18451.html. Accessed January 9, 2009.

too expensive for Chinese manufacturers, eventually reaching the purported 80 percent tariff level on log exports, and that all log exports to China will eventually stop. As Russia has been the source of more than 60 percent of China's log imports, this emerging reality will necessitate changes to the Chinese processing industry, especially along the Russian border, which has become dependent on imported Russian logs.

- *Increased government investment in Eastern Russia's domestic harvest transportation infrastructure:* While there is currently no estimate of the amount of investment, the Russian federal government has plans to increase investment in Eastern Russian harvest transportation infrastructure that will improve access to the raw materials in areas currently considered "economically inaccessible" as well as increase the efficiency of transport to and from harvest sites and markets areas. This report assumes that improved efficiency and economy of access and transport of the raw material resources will decrease total harvest costs by an average of US$10/m^3.

- *Expansion in Eastern Russia's domestic sawmilling capacity:* The Russian government's policy and development strategies call for a reduction in import taxes on high-technology wood processing equipment and other incentives for investment in value-added processing (such as tax breaks, favorable terms at forest lease auctions, etc). These increases in incentives for value-added processes combined with the availability of cheaper wood as well as the impact of the export tariff are intended to encourage accelerated investment in Eastern Russia's sawmilling capacity. The current economic downturn may delay the implementation and impact of the Russian governments' policies and investments, but this report rests on the assumption that such investing could potentially double milling capacity over the status quo by 2018.

Given that the revised Russian Forest Code's bylaws were adopted in late 2006 and associated regulations and amendments are still under consideration, its precise consequences on investment, manufacturing, trade, and regulation in the forest sector remain undetermined. Russia's forestry sector is entering a period of dynamic change (Laletin 2007), with complex and significant impacts on Russia's industrial roundwood supply. However, by making some broad assumptions, the main findings of this and our previous analyses are that:

- Under each scenario, while China's own forests supply an ever-increasing amount of industrial roundwood to meet domestic consumption and export demand, China still will not reach self-sufficiency. Once the global economy begins to pick up, the forecasted increase in forest product consumption for both domestic and export markets will outpace the increase in domestic supply, leading to the need for increased imports of products over the next 25 years, especially logs. Sawnwood and panel imports will remain relatively low and steady. While China is currently a net plywood exporter, by 2020 it is expected that China will again need to import plywood. Wood pulp and recycled paper materials will continue to be imported while exports of printing paper will increase. Under each scenario Russia and Indonesia will play a decreasing role in supplying China's timber product imports.

- One effect of transportation infrastructure investment, which the Russian provincial governments currently envision, is a 90 percent increase in Eastern Russia's harvest volumes from 2005 to 2030. Much of this production will be in northern areas previously considered "economically inaccessible"

due to high transportation costs. It is important to note that many of these forests are located in fragile ecosystems in boreal areas, where regeneration is slow and the carbon release of permafrost areas during harvesting is high. Another important consequence for European Russian North will be that after 2020-2030 substantial areas of currently deciduous forests (birch and aspen), will be mostly replaced by mixed spruce-deciduous in regions with developed infrastructure.

- Current Russian trade policies and investment incentives will result in a reduction of Russian log exports, with volumes falling from 23 million m^3 RWE to close to 0, and an expansion of sawnwood exports to China from a negligible amount to over 15 million m^3 RWE by 2030. The net result will be a net decrease in the solid wood trade between Eastern Russia and China. It is expected that pulp and paper production (including wood pulp) and exports will remain relatively stable. For example, China has already started with the construction of a new pulp & paper plant in the Tomsk region. Since China will not be able to rely on Russian supply to bridge its supply gap, it will have to look elsewhere. However, China's next four largest suppliers (Malaysia, PNG, Indonesia and Thailand) are producers of tropical hardwood and plantation woods which are not a substitute for the boreal softwood from eastern Russia; therefore imports from North America and New Zealand are likely. Since China will still need considerably greater volumes, alternate sources, and revised public policies to foster greater efficiencies and/or substitution will likely be announced to meet its consumption projected across the forest products industry once the global economy picks up again .

It is accepted that the data on China's and Russia's forest trade are not a perfect representation of actual levels of economic activity. There are many possible causes and among them are: understated production and trade volumes to avoid taxes, illegal logging, poor information management due to lack of sufficient financial resources, bartered trade and unrecorded exports at minor border crossings.

We recognize the potentially serious data discrepancies and conflicting analyses in reported forest sector statistics. Therefore, the statistics used for the purpose of the IFFP model present one of many possible interpretations.

Participants in the global timber market should recognize that trade modeling is contingent on their own data collection efforts. To improve future projections, individual countries must look to improve their own information management systems.

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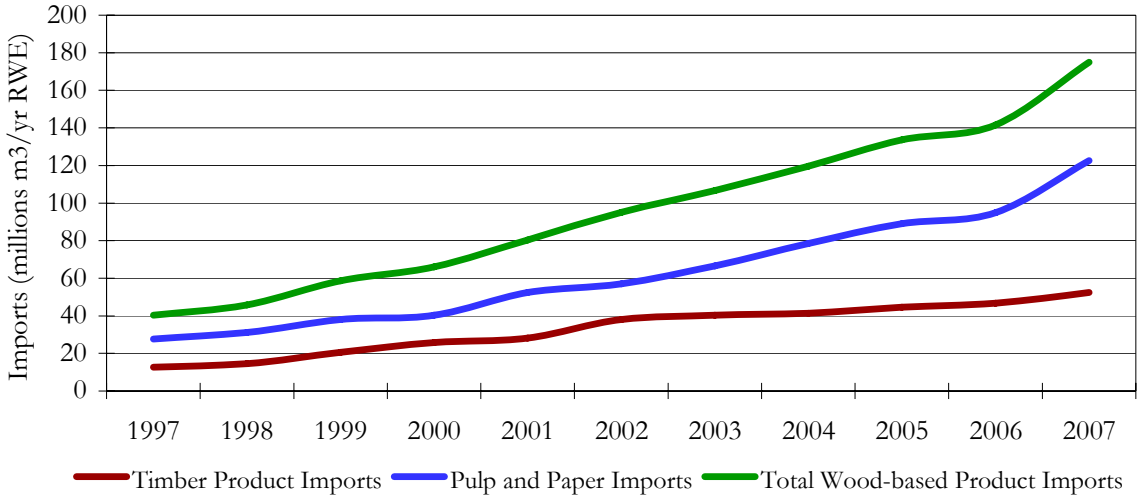
CURRENT CONTEXT

CHINA: DEMAND, HARVEST & IMPORT VOLUMES

In the past decade, China has become the most dynamic developing economy in the Asia-Pacific region and this has implications for the global forest products trade. The volume of China's total forest product imports more than quadrupled between 1997 and 2007, rising from 40 million to 175 million m^3 roundwood equivalent (RWE) (Figure 1). During this same period, the import value rose from US$6.4 billion to US$17.9 billion. This trend is expected to continue in the long-term, despite temporary drops due to the current downturn of the global economy.

Figure 1: China's Forest Product Imports by Product Type



Source: Chinese Customs data as compiled by Forest Trends[4]

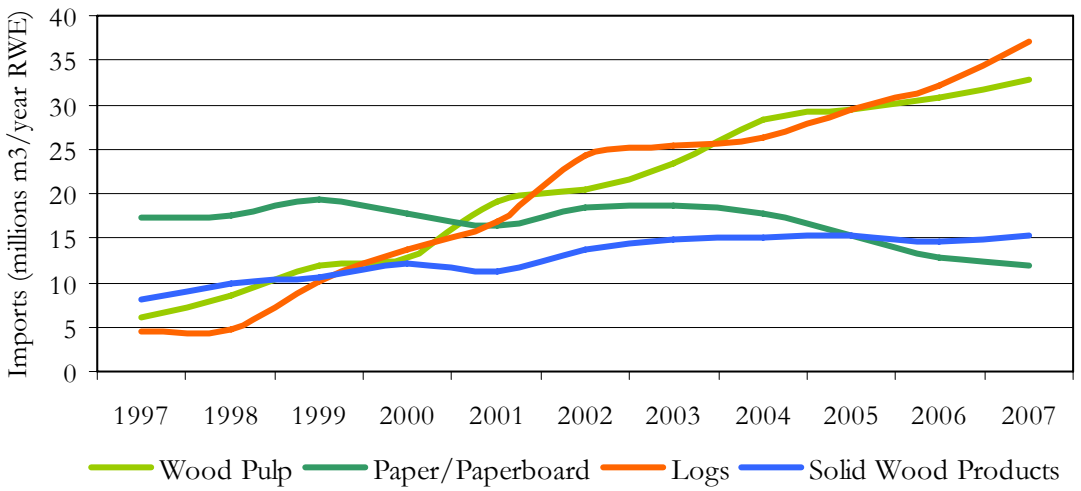
While there are many reasons behind China's burgeoning demand for forest products, perhaps the most important is its extraordinary economic growth: the country has experienced 9 percent annual growth in GDP since 1990, with 6-8 percent growth expected for the coming years.[5] The concomitant domestic consumption of wood and paper products along with growing housing demand has created an enormous domestic demand for forest products in a country with limited per capita forest resources.

Beyond China's borders, a growing global demand for low-cost forest products has transformed China into the world's largest wood workshop. China has now captured more than one third of the global trade in furniture. Between 1997 and 2007, the volume of manufactured wood product exports– mainly plywood and furniture– skyrocketed more than eight-fold from 5.1 to 48.5 million m^3 RWE.[6] Over the same time period,

[4] All charts depict annual levels and are not cumulative.
[5] The Economist Newspaper Limited. 2009. Country Briefings: China. Available online at: <http://www.economist.com /countries/CHINA/profile.cfm?folder=Profile-Forecast> Accessed on February 24, 2009.
[6] All manufactured wood products, excluding wood chips; Forest Trends analysis of Chinese Customs statistics, 1997-2007, unpublished.

the value of these wood exports jumped approximately 1500 percent from US$2.6 to US$39.2 billion.[7] Feeding this expansion was a 600-700 percent increase in U.S. and EU imports of Chinese finished wood products.[8]

Figure 2: China Imports of Forest Products by Volume, 1997-2007



Source: Chinese Customs data as compiled by Forest Trends

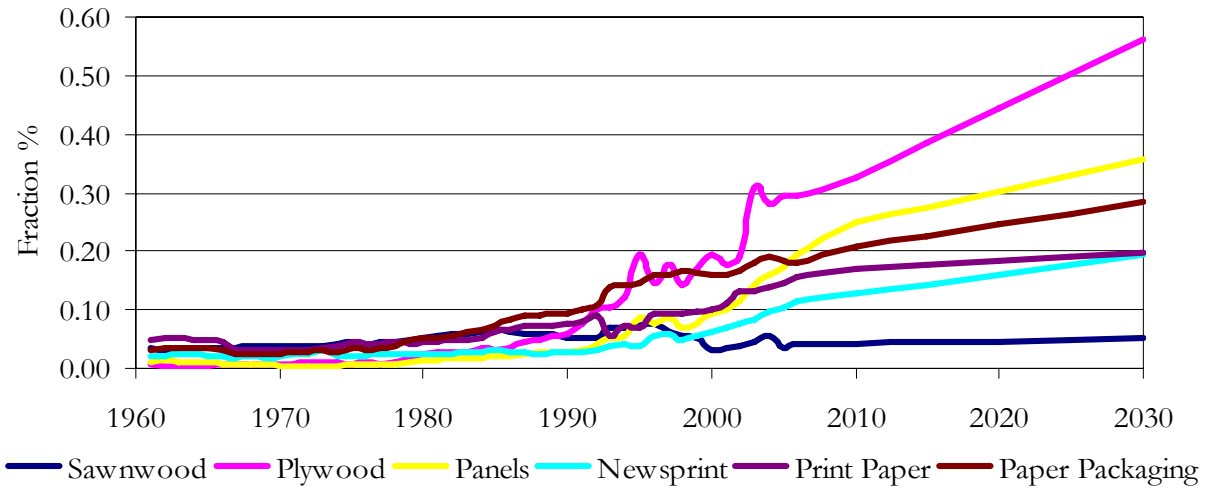
China's domestic supply of industrial wood has been unable to keep pace with this growing domestic and external consumption, and is unlikely to catch up once global demand picks up. Northway & Bull (2008) noted that China's domestic harvest accounted for little over 50 percent of its domestic industrial roundwood consumption in 2005 -- a share that may not change substantially over the next 20 years due to 'age-class' gaps in China's timber supply. In early 2006 China's National Development Reform Committee predicted an annual shortfall of 140-150 million m^3 of industrial roundwood by 2015 (Asia Pulse News 2006). Similarly, Zhang et al (2007) forecast a domestic supply shortage of industrial roundwood up to 170 million m^3 by 2020.

Given the expected increases in long-term demand and comparatively slow-growing domestic supply, China's imports of wood products will most likely continue rising for several decades once the global economy returns to previous levels. This increasing dependence on external sources leaves China vulnerable to supply fluctuations from its various trade partners. Many of the historically important suppliers of wood products to China (e.g., Indonesia, Papua New Guinea) face dwindling natural forests and ambitious plantation programs that are not yet on-line. Recent crackdowns on illegal logging in Indonesia and Myanmar have further reduced the availability of tropical roundwood, which raises prices and forces traders to look for substitutes in other tropical countries.

[7] Forest Trends analysis of Chinese Customs statistics, 1997-2007, unpublished.
[8] *Ibid.* Forest products included in this calculation represent finished wood products, including veneer sheet (HS4408), floorings and moldings (HS4409), particleboard (HS4410), fiberboard (HS4411), plywood (HS4412), other assorted wooden goods (HS4414-4421) and wooden furniture (HS94).

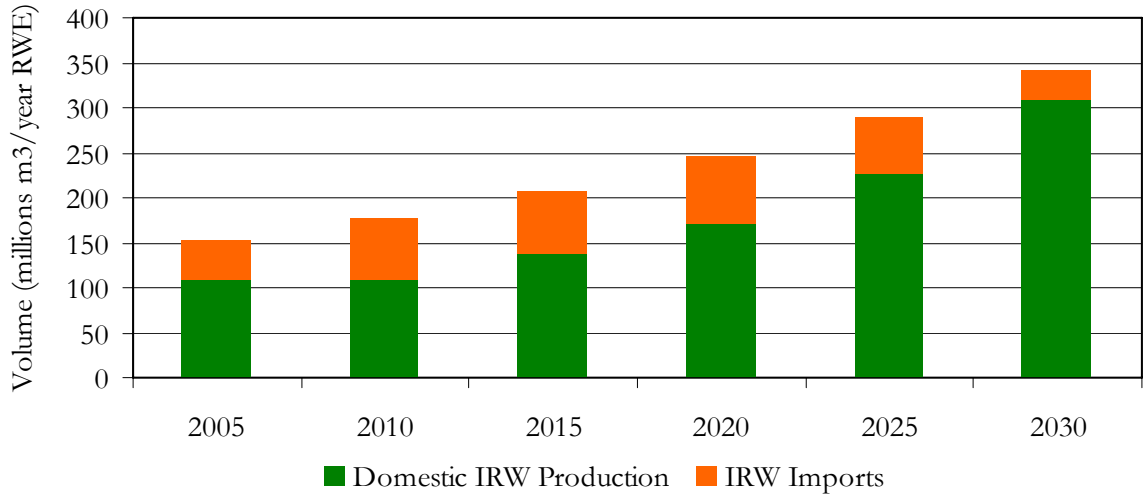
Extrapolating recent trends, China's share of global demand for manufactured forest products (counting both Chinese domestic use and as inputs to value added manufacturing for exports) would rise in nearly every category, with the exception of sawnwood (Figure 3). By our estimation, China's plywood demand could comprise more than half of global demand by 2030; its share of global panel and packaging paper demand would reach 35 percent and 28 percent, respectively.[9]

Figure 3: China as a Fraction of World Consumption – *Status Quo* Scenario



If these indications hold true, China's total industrial roundwood demand will continue to outstrip domestic supply. One Northway and Bull (2007a) scenario suggests that over the next 25 years China's demand for industrial roundwood imports (pulplog and sawlog) could reach 245 million m^3, more than triple the volumes recorded in 2005.

Figure 4: China's Domestic Production & Imports of IRW[10] - *Status Quo* Scenario



[9] Data presented hereafter is from Northway & Bull (2009), unless otherwise cited.
[10] *Note: Industrial Roundwood (IRW) is comprised of sawlog and pulplog volumes at the mill gate.*

Even under the assumption that China's domestic production of industrial roundwood is expected to triple by 2030, it still is not expected to meet demand. Imports of industrial roundwood are expected to nearly double in the short term, to cover the balance of China's demand (Figure 4).

Figures 5a and 5b show a breakdown of the volume and composition of China's total forest products trade over the 25 years from 2005 to 2030 by major forest product category. Under a status quo scenario, China's log imports are expected to nearly double to almost 100 million m^3 over the next 20 years before dropping off to 80 million m^3 in 2030. During the same period, China, which became a net exporter of plywood in the early 2000s, will need to begin to import plywood again. Only for printing paper will China become a net exporter.

Figure 5a: China's Solid Wood Products Trade - *Status Quo* Scenario

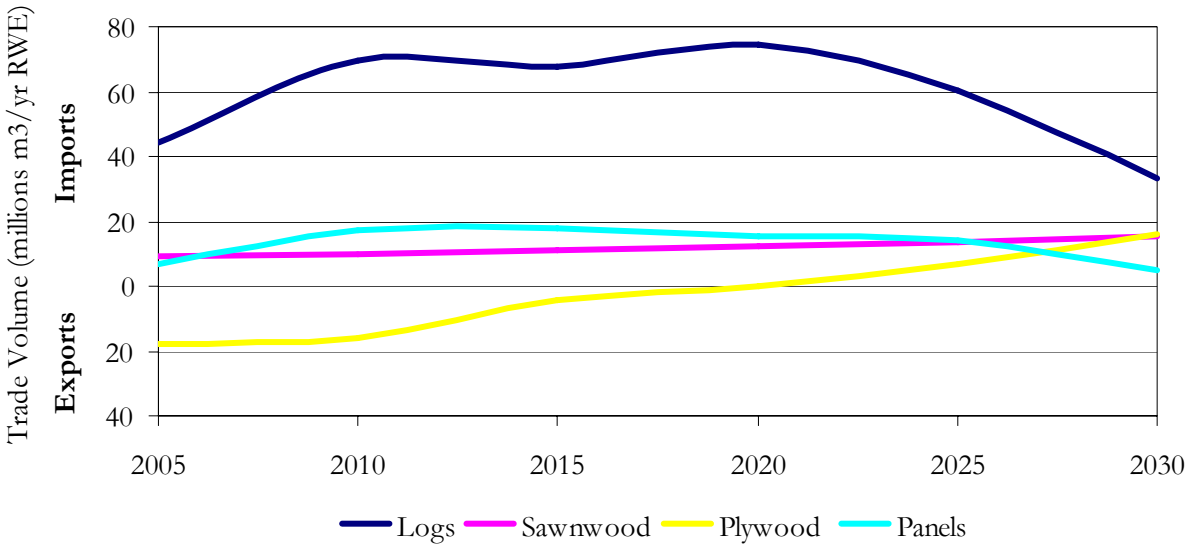
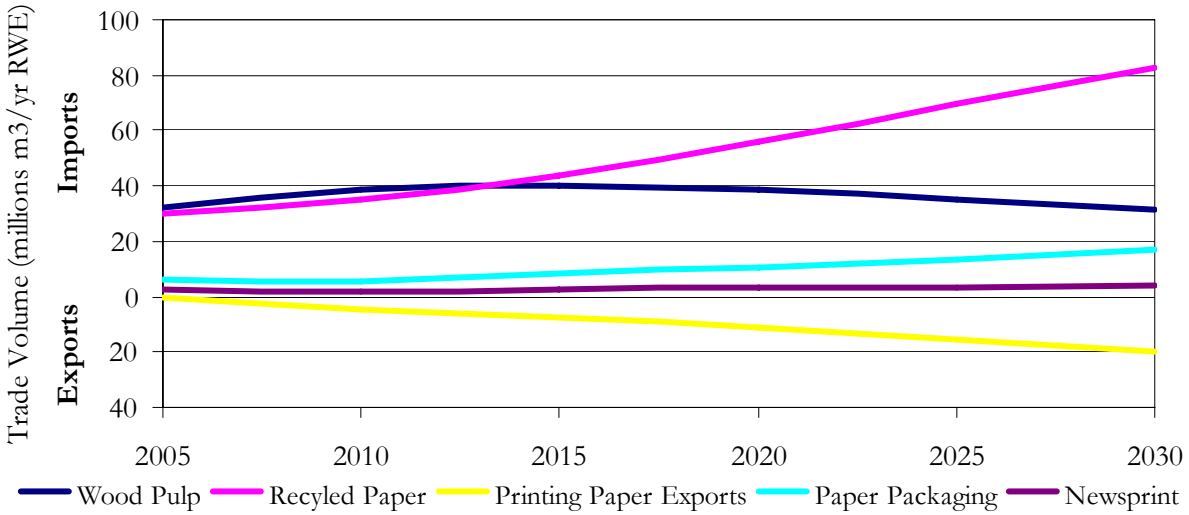


Figure 5b: China's Pulp and Paper Products Trade - *Status Quo* Scenario



Figures 6a and 6b shows a breakdown of the volume and composition of China's domestic production of forest products over the same period. The total volume of China's forest products production could reach 952.8 million m^3 RWE by 2030, including a particularly robust rise in the production of pulp and recycled paper. Some of this domestic production will undergo further manufacturing and be exported to other nations trading with China.

Figure 6a: China's Domestic Production of Solid Wood Products - *Status Quo* Scenario

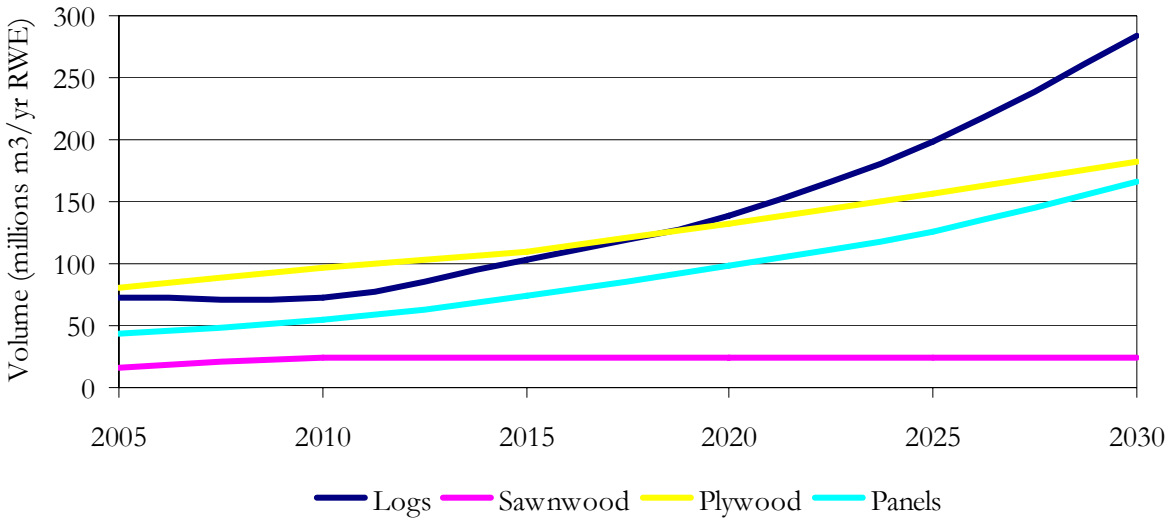
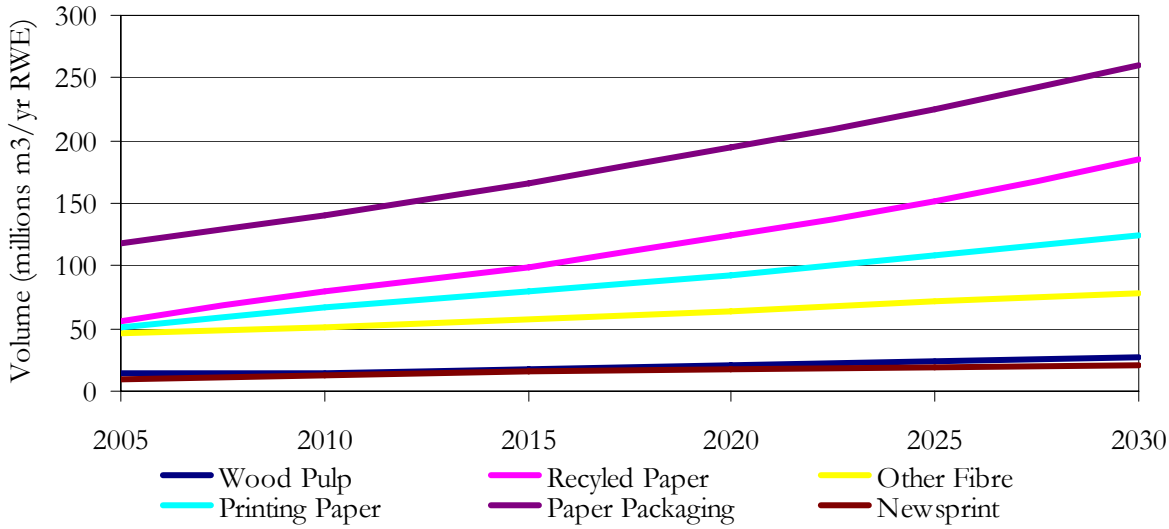


Figure 6b: China's Domestic Production of Pulp and Paper Products - *Status Quo* Scenario



RUSSIA & INDONESIA: MAIN SUPPLIERS TO CHINA

China imports forest products from around the world, but Russia and Indonesia are currently among China's main suppliers of industrial forest products, by volume. In 2007, just over half of China's overall timber products imports came from Russia, including 68 percent of China's log imports.[11] Russia has also been one of China's top five suppliers of lumber, pulp and paper. Indonesia is currently China's eighth largest timber supplier, supplying 46 percent of plywood imports in 2007, in addition to smaller shares of lumber, wood pulp, and paper. Due to poor infrastructure and economic reasons, the wood transported from the Russian Far East to western regions of Russia is negligible. Some regions of Central Siberia (Krasnoyarsk kray, less - Irkutsk region) export harvested wood to countries of Central Asia (mostly to Kazakhstan) and to countries of Western Europe, using large Siberian rivers and the Arctic ocean for transport. Overall, this wood flow does not impact Eastern Russia-China trade.

Russia

Forest products trade between Russia and China flourished in the 1980s and early 1990s, as China began looking across its North-Eastern border to cover its domestic timber deficit. The end of state support for the Russian Far East (RFE) forest industry in the mid-1990s resulted in the near-complete collapse of primary forest production and manufacturing operations in the RFE, forcing a concentration on the harvest and export of logs. Additional reasons for historically significant forest products trade between the two countries include:

- RFE and northeast China (the traditional timber base of China) have similar species of wood;
- China eliminated its log import tariffs in 1999;
- RFE and neighboring Chinese provinces have well-established border trade and rail links;
- China has a favorable tax policies for border trade; and
- RFE resumed maritime shipping of timber products in 2001, enabling Russia's timber to be directly shipped to the major timber consuming regions on China's eastern coast**.**

The RFE is experiencing the nascent recovery of domestic forest products manufacturing, with the greatest growth expected from panel, plywood, and pulp production (Figures 7a and 7b). Yet the bulk of RFE's forest production remains industrial roundwood. Eastern Russian log production volumes are four times greater than sawnwood. This disparity, under the Status Quo scenario, is forecast to remain constant to the year 2025.

[11] Forest Trends analysis of Chinese Customs statistics, 1997-2007, unpublished.

Figure 7a: Eastern Russia's Domestic Production of Solid Wood Products – *Status Quo* Scenario

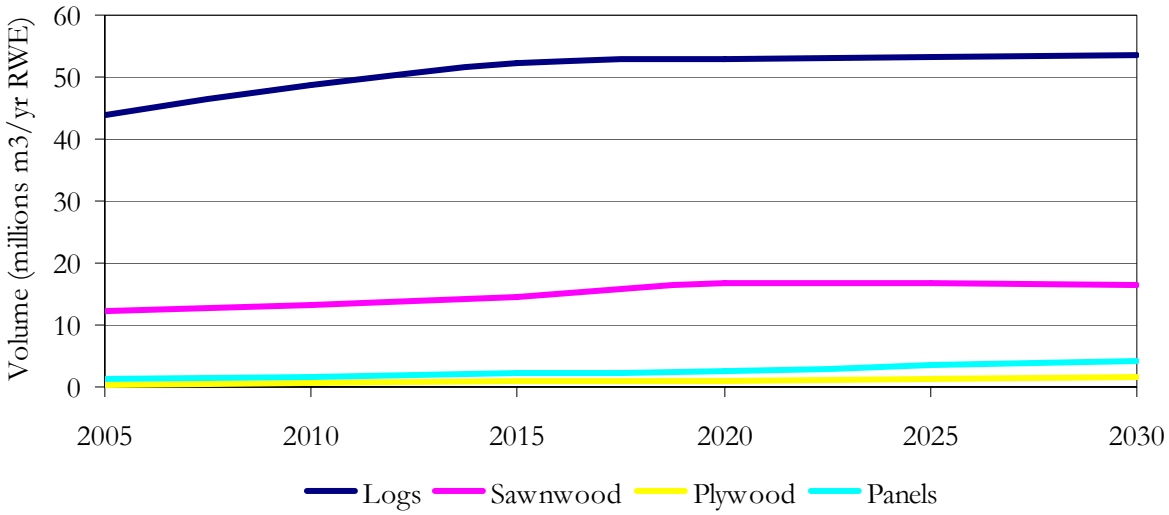
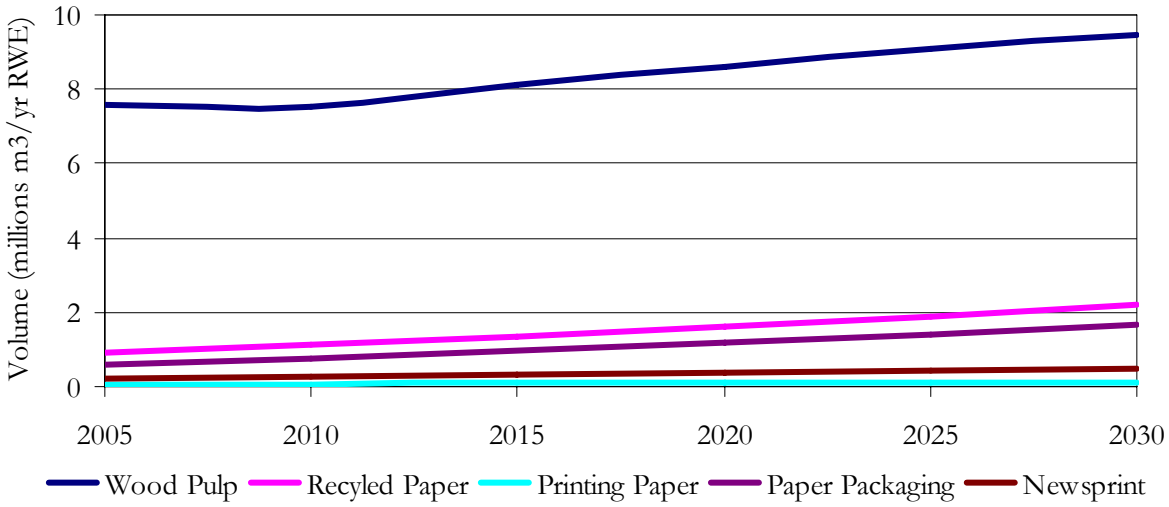
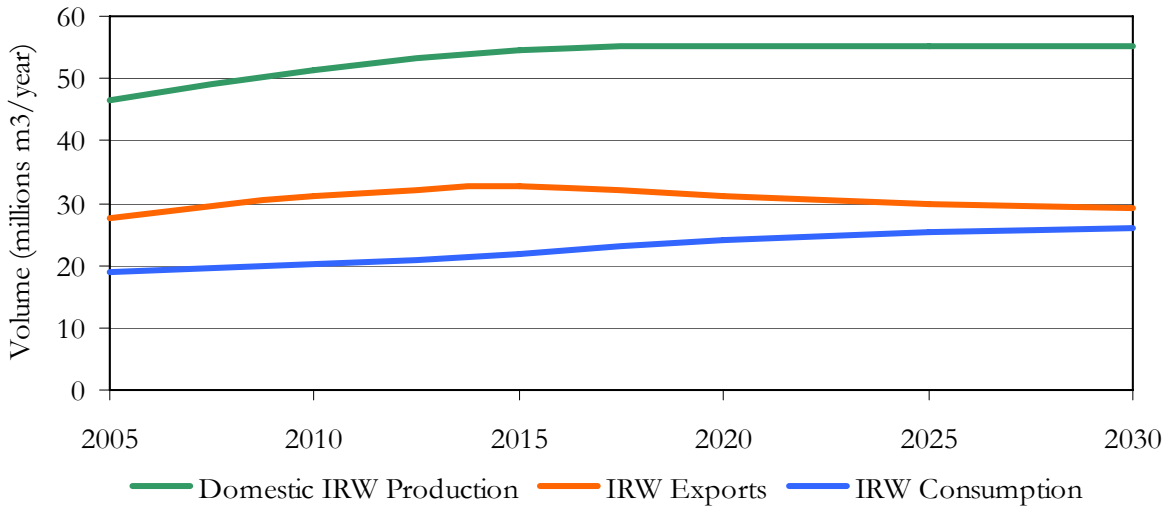


Figure 7b: Eastern Russia's Domestic Production of Pulp and Paper Products – *Status Quo* Scenario



As Sheingauz (2004) notes, Chinese imports presently capture almost all of the timber production of the RFE as well as a significant portion of timber production in Siberia. Figure 8 shows that in 2005, Eastern Russian IRW production of logs significantly exceeded domestic IRW consumption (Sheingauz 2005; Vachuk and Shvidenko 2006). In that year, 63 percent of Eastern Russian IRW production volumes were exported to China. Over the next 25 years, the share of Eastern Russian industrial roundwood exported to China is expected to stabilize as Eastern Russia's own domestic consumption increases. This trend will be largely unaffected by the current global economic downturn.

Figure 8: Eastern Russia's IRW Consumption, Production & Exports- *Status Quo* Scenario



Note: Industrial Roundwood (IRW) is comprised of sawlog and pulplog volumes at the mill gate.

Indonesia

This report concludes that for nearly all forest products, Indonesian production is expected to remain largely stable with the exception of pulp (70 percent increase over 25 years) and paper products (140 percent increase over 25 years) (Figure 9a and 9b). Sawlogs and pulplogs production will remain stable meaning that manufacturing facilities based on these inputs will have to rely more on imports, or on recycled material to feed any type of industry expansion. For example, to feed its expanding pulp and paper capacity, Indonesia could potentially increase its imports of recycled fiber from the rest of the world (as China has) and may come to rely on imported pulp logs to a combined volume of 16 million RWE m^3 per year by 2030.

Figure 9a: Indonesia's Domestic Production of Solid Wood Products – *Status Quo* Scenario

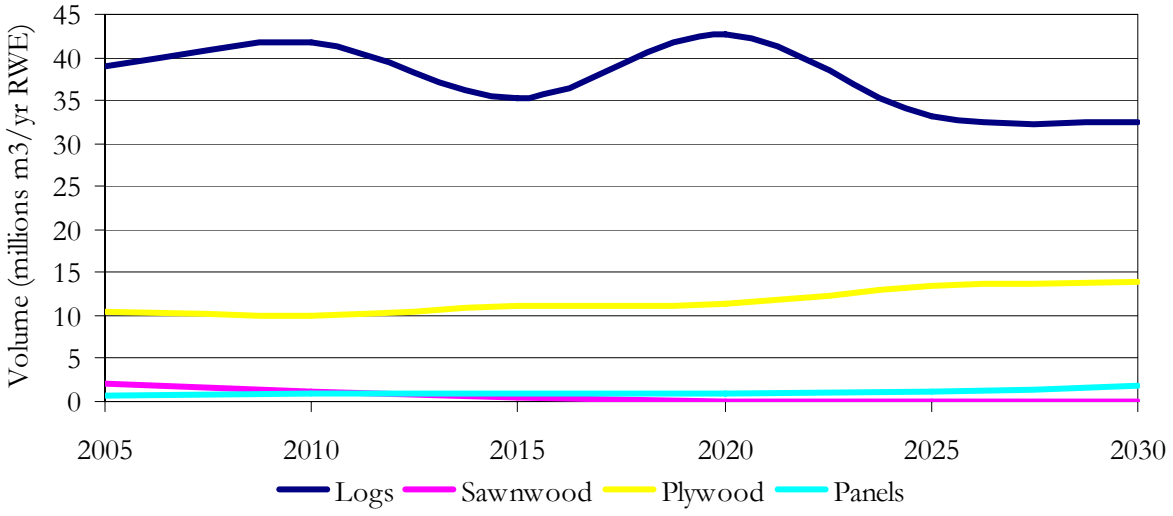
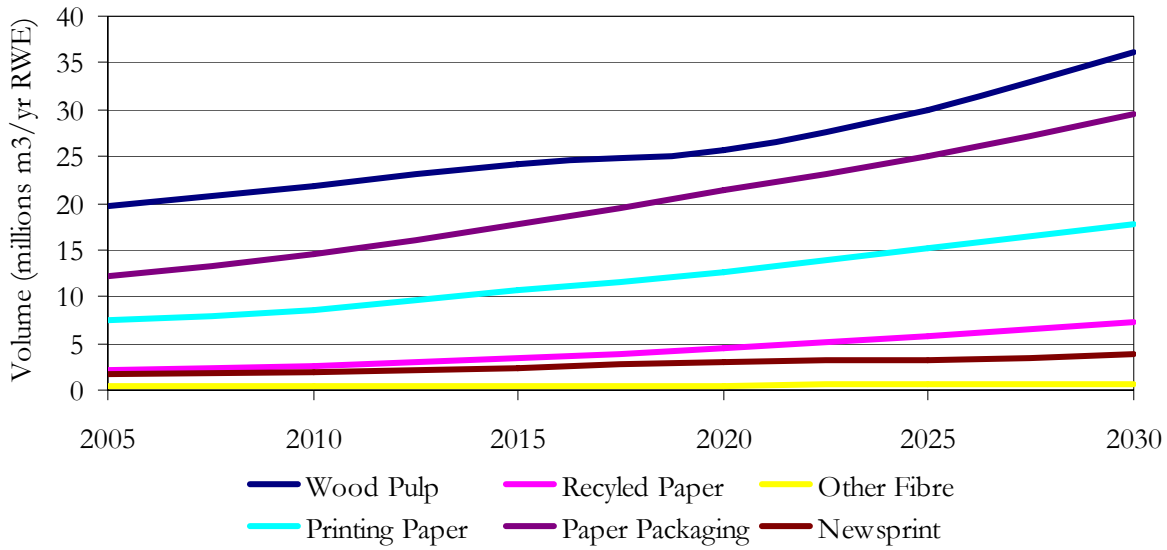
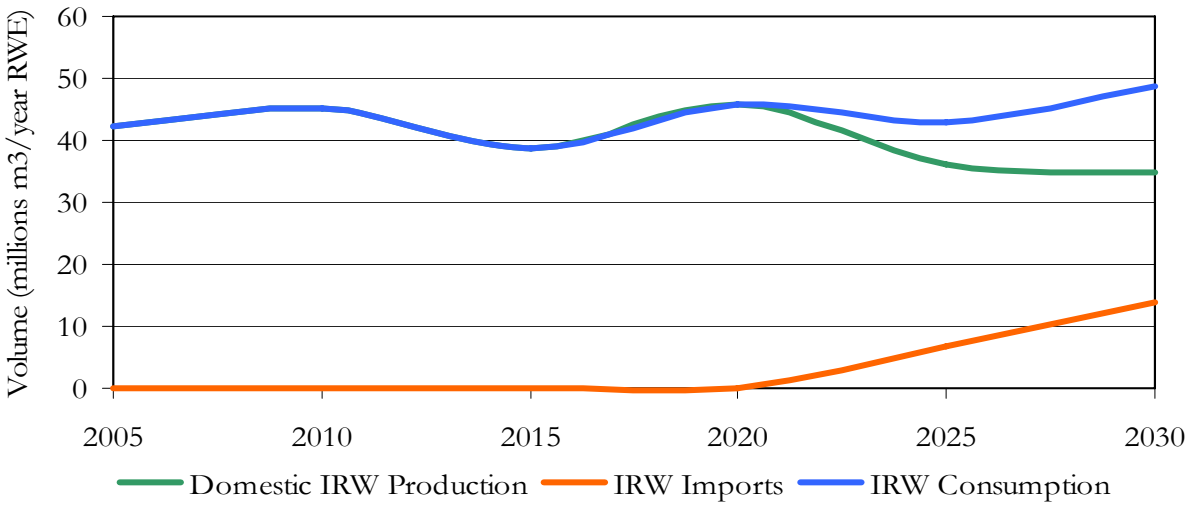


Figure 9b: Indonesia's Domestic Production of Pulp and Paper Products – *Status Quo* Scenario



In 2005, Indonesian domestic industrial roundwood production met the country's own domestic consumption, without any imports. If current trends continue, over the next 25 years domestic production of pulplogs and sawlogs will not be able to supply domestic industrial roundwood demand (Figure 10). Given the steady rise in domestic demand for forest products and an internal supply that is both dwindling and not export-quality, Indonesia could switch from being a net exporter of industrial roundwood to a net importer by 2025. As such, Indonesia's place as a main supplier of industrial roundwood to China will likely be absorbed by Eastern Russia and China's other emerging forest product trading partners. Exports of Indonesia's manufactured paper products to China could more than triple by 2030.

Figure 10: Indonesia's IRW Consumption, Production, & Imports - *Status Quo* Scenario



Note: Industrial Roundwood (IRW) is comprised of sawlog and pulplog volumes at the mill gate.

It is important to note that Indonesia's forest land production of sawlogs and pulplogs will also be directly affected by the economics of competing land uses: specifically agricultural and energy. A more updated assessment of these land uses will be required before revising forest products trade scenarios.

FUTURE SCENARIO: POTENTIAL IMPACT OF RECENT RUSSIAN FOREST POLICY AND INVESTMENT TRENDS

While it may be biologically and financially possible for Eastern Russia to increase its production and export of industrial roundwood to China, the Russian government has set certain forest sector priorities that may affect the impact of investment. In particular, the government wants to shift Russian forest products exports away from industrial roundwood to value-added, processed forest products. To this end, in 2006 the government announced its plans to reduce import taxes on high-technology wood processing equipment and provide other types of incentives for greater investment in value added processing in the region (tax breaks, favorable terms during the auctioning of forest leases, etc).

An even greater impact on Russia's trade of forest products will be the introduction of graduated export taxes on logs. Announced in early 2006, and clarified in February 2007 (Governmental Regulation 75, February 5, 2007), the tax on softwood logs started at 6.5 percent per m^3, rose to 20 percent in July 2007, then to 25 percent in April 2008. A final increase to 80 percent was expected January 1, 2009, but this has been postponed until late 2009. Other types of logs (hardwood, poplar) have slightly lower taxes posted, but will range from 40-80 percent by the time the final increase is implemented. There will be a set minimum log tax of 50 Euro per m^3 for all species once the final tax increase is implemented in late 2009.

Figure 11: Russia's Log Export Tax

Items	Rate / Min. Amount	Jul. 1 2007	Apr. 1 2008	Delayed until late 2009
Softwood logs	%	20	25	80
	Euro/m3	10	15	50
Hardwood logs	%	20	20	40
	Euro/m3	24	24	50
Poplar	%	10	10	80
	Euro/m3	5	5	50
Semi finished products with bark thickness 15cm or less	%	10	15	50
	Euro/m3	20	25	80

Sources: IHB FORDAQ Network, 2007. Impact of Russia's plans to increase export tax on logs. Available online at: <http://www.ihb.de/fordaq/news/Russia_export_tax_logs_14732.html>. Accessed April 28, 2008., and: IHB FORDAQ Network. 2009. WRI: Log costs fell in Russia in the 3Q/08 as the forest industry cut back production. Available online at: http://www.ihb.de/wood/news/WRI%253A_Log_costs_fell_in_ 18451.html. Accessed January 9, 2009.

The implications of this graduated export tax could be significant for RFE forest sector production and trade, as well as the global market for logs. As Russia is currently the source of more than 60 percent of China's log imports, this emerging reality will necessitate changes to China's processing industry, especially

along the Russian border, which has come to rely on imported Russian logs; this is addressed in the following scenario.

EASTERN RUSSIA: THE POSSIBLE EFFECT OF THE LOG EXPORT TARIFF

This scenario is based on the following:

- Logs harvested in Eastern Russia will be processed there. The log export tax may potentially reach a high enough level as to cause the cessation of log exports across Russia's boarders. Transportation costs are too prohibitive (upwards of US$25/m^3) for logs to be sent from Eastern Russia to European Russia.
- Government programs will lead to accelerated investment in Eastern Russia's harvest transportation infrastructure. The Russian parliament estimated that in order to increase annual harvest to 250 million m^3/year it would be necessary to invest 18.7 billion RUR (about US$800 million) – this is the cost for 12.5 thousand km (1.5 million RUR / 1 km) of basis road construction only. Our view is that this estimate is too low since it does not account for road maintenance, distance from population centers and, costs of secondary and tertiary roads. The investment would target improved efficiency and economy of access and transport of the raw material resources, developments that are assumed to decrease total harvest costs by an average of US$10/m^3.
- Increases in incentives for value-added processes combined with the availability of cheaper wood and the export tariff could lead to accelerated investment in Eastern Russia's sawmilling. Such investing could presumably double milling capacity over the status quo by 2020.[12]

Following is a brief discussion of the ramifications of this scenario for harvest, production and trade between China and Eastern Russia.

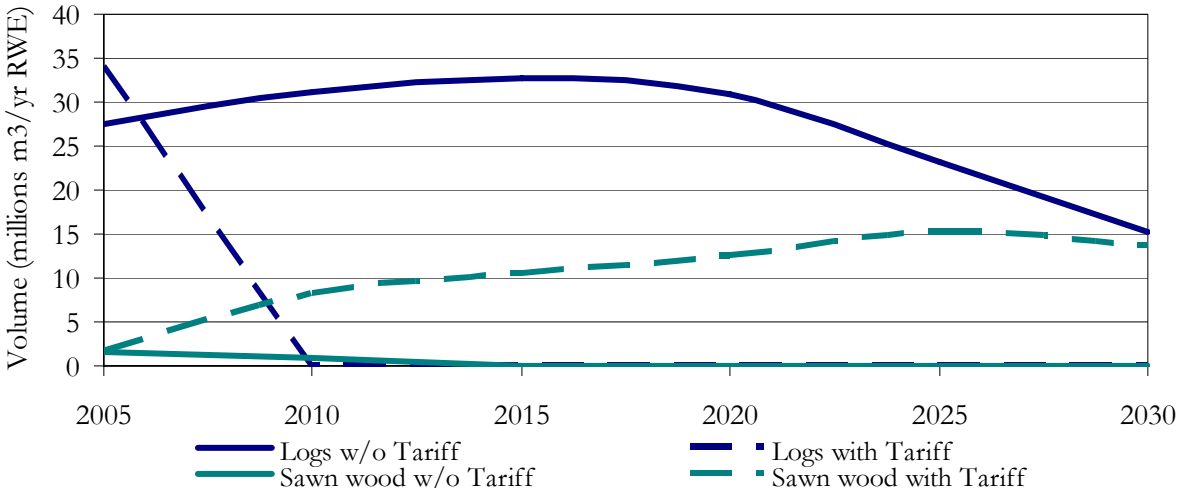
Currently, much of Siberia and the Russian Far East's forest resources are economically inaccessible.[13] Poor road and rail infrastructure in these remote regions makes transportation costs very high. Accelerated investment in Eastern Russian harvest transportation infrastructure will improve access to the raw materials in these areas as well as increase the efficiency of transport to and from harvest sites and markets. One effect of such transportation infrastructure investment, which the Russian provincial governments currently envision, is a 90 percent increase in Eastern Russia's harvest volumes from 2005 to 2030. This could be higher if there is a market for deciduous wood.

With increased processing capacity, domestic sawnwood production volumes are anticipated to more than double by 2030. Accordingly, Eastern Russia's forest products trade with China will shift from sawlogs to

[12] Official Russian forecasts for the forest sector indicated that for paper and board production, an annual growth rate of 5 to 8 percent per year to 2020 is estimated. This means at least a 70 percent increase in overall production.
[13] Official Russian sources estimate as "acceptable for industrial use" in Asian Russia 38.8 percent of close forest. However, due to unique classification and definitional issues, part of this area is not economically accessible.

sawnwood, with sawlog export volumes falling from 23 million m^3 RWE to near 0 and sawnwood exports increasing from a negligible amount to over 15 million m^3 RWE.

Figure 12: Changes in Eastern Russia Exports to China with the Tariff



DISCUSSION

Despite the current global economic downturn, China's long-term future share of global demand for manufactured forest products (for domestic use and exports) will increase in nearly every category, with the exception of sawnwood. Given the bleak outlook for domestic production, three scenarios were created to assess potential future trends of regional trade in forest products. The main findings of these scenarios reveal:

- The new Russian forest legislation and policies will result in a severe reduction in log exports, an increase in investment in harvest transportation infrastructure, and an increase of investment in sawmilling and pulp and paper.
- An increase in investment in transportation infrastructure, which the Russian provincial governments currently envision as a result of the new Russian forest policy, may result in a 93 percent increase in Eastern Russia's harvest volumes from 2005 to 2030.
- An increase in investment in sawmilling capacity in Eastern Russia could shift the export of forest products to China from sawlogs to sawnwood.
- China will still need considerably greater volumes of IRW, provided by alternate supply sources and revised public policies to meet its explosive consumption projected across the forest products industry.
- None of the forecast scenarios show Russia and Indonesia being able to significantly help China bridge the anticipated gap between domestic supply and total consumption (domestic plus export consumption).

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