



The Forests of Eastern Russia

A Study of the Competitiveness of
Forestry in Siberia and Russian Far East



- Malcolm Cockwell -



The Forests of Eastern Russia: A Study of the Competitiveness of Forestry in Siberia and Russian Far East. Working Draft – December 2012.

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Future editions of this book may be issued upon the updating, revising, or improving the text. Comments and corrections are welcome.

Written, compiled, and edited by Malcolm Cockwell. The author is grateful for information and ideas from consultants, investors, sawyers, and foresters from across Canada and eastern Russia.

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The Forests of Eastern Russia follows the publication of two books by Malcolm Cockwell:

The Forests of Canada: A Study of the Canadian Forestry Sector (2012)
http://www.limberlostlodges.com/PDFs/Books/The_Forests_of_Canada_March_2012.pdf
Objective Ecology: A Study of Global Warming and Popular Views (2007).
http://www.limberlostlodges.com/PDFs/Books/Objective_Ecology_Nov_2007.pdf

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This book is dedicated to the professors, instructors, technical staff, and students of the Faculty of Forestry at the University of Toronto.

Now more than ever, their diverse efforts are critical to the sustainable development of the global forestry sector.

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About the Book

As I stated at the beginning of my last book, *The Forests of Canada*, I am a conservationist who believes that good forest management is a form of environmental conservation that leads to sustainable economic development. When it is done right, forestry is inherently a good business – the social benefits of forest stewardship are vast, the environmental impact is benign, and the profits are good.

Yet I often witness misunderstandings about various facets of the global forestry sector, which lead to avoidable conflicts or expensive mistakes. The harvesting and wood processing businesses of eastern Russia are no exception. Indeed, the forestry sector of this region is even more of an enigma due to its recent political history and geographical remoteness.

Eastern Russia is a region facing enormous challenges, but it has great potential. If investors, foresters, and scholars in Canada understand the forestry sector of Siberia and Russian Far East (RFE), every wood-based business will benefit. I wrote this book with that notion in mind.

In September 2012, I was very fortunate to be able to participate in the “Siberia & Northern China Timber & Wood Products Tour” organized by International WOOD Markets Group. Prior to that trip, in April 2012, I visited China to meet with importers of Canadian forest products. These trips facilitated dozens of meetings and countless conversations about the forestry sector of eastern Russia and the timber import business in China. This book has been written over the course of several months since I returned. It is part of a series of books about the global forestry sector that I will write over the next few years.

As the Forest Manager at Limberlost Forest & Wildlife Reserve, I was able to maintain an operational perspective during my travels in

eastern Russia. I am also a PhD student at the University of Toronto's Faculty of Forestry, which encouraged me to consider big-picture issues, like demographic decline in Siberia and environmental degradation by forestry companies of Russian timber resources. I hope that this two-part approach to assessing the forestry sector of eastern Russia has resulted in a book that both comprehensive and comprehensible.

Much of the data found in these pages was acquired during my recent trip to eastern Russia and China. Some information was acquired during research conducted before and after the trip of news articles, analysts' reports, scholarly journals, and intergovernmental data caches. In most cases, I have preferred data acquired during my travels over data from research. The latter tends to be dated and sometimes arbitrary.

As this is a business book but not an academic study, I have included citations only in cases of attributing due credit to original authors or where the original source could be of great interest to the reader. For the sake of brevity, I have not bothered to cite cases of data that I collected through "personal correspondence." Furthermore, out of respect for the privacy of the individuals that I met in China, Russia, and North America, I have refrained from naming my sources in almost every case. If readers take issue with my data or conclusions, they may contact me.

My goal has been to write a book that answers one simple question: How competitive is the forestry sector of eastern Russia? Readers in a rush to know the answer can skip most of the book, and only read two sections: the *Introduction: Today's Timber Empire* and the *Conclusion: Winners & Losers*. These sections explain the general themes without dwelling on nitty-gritty data and evidence. Those desiring the full story – and it is a very interesting story – should read the entire text.

In summary, I hope that *The Forests of Eastern Russia* is as straightforward as its title. It offers hard data, simple analysis, and plain conclusions about the most important issues facing the forestry sector of Siberia and RFE. If I have accomplished what I set out to do, readers should feel the pulse of the forestry companies in these regions by the time they finish reading this book.

Acknowledgements

It has been my good fortune to have many chances to learn about the eastern Russian forestry sector and the Chinese timber trade from countless individuals from around the world. This non-exhaustive section is intended to acknowledge the most important people who have directly assisted in the data collection, analysis, or writing that resulted in this book.

I am grateful to the businesspeople in Russia and China who were kind enough to show me their operations and answer my questions. In particular, I acknowledge the generosity of Ken Kao from China National Building Materials Corporation, Franco Zhou of Shanghai Jinheng Building Materials Corporation, and especially Nathan Cheng. These men were the first to open my eyes to the sheer immensity and importance of the Chinese timber trade.

Thanks are due to following Russian companies and their foresters, sawyers, and executives: LDK #1 in Lesosibirsk, KLM-Art in Krasnoyarsk, RusForest and KrasLesInvest in Boguchany, Ilim Timber in Ust-Ilimsk and Bratsk, SibExportLes in Novaya Igirma, and LesoBalt in Bratsk. I am also grateful to Chen Wenjie of the Qianding Wood Company and his friends and colleagues in Manzhouli, China.

During my trip to eastern Russia and northern China, it was my pleasure to travel with Dr. Peter Schleifenbaum, who sportingly tolerated my quirks and critiqued my ideas while contributing his own. He also edited a final draft of this book, provided a much-needed review.

In the same way, I am grateful to the other participants in the trip: John Enlow, Katherine Hui, Chad Kim, Changuhn Park, Daryl Swetlishoff, Matthew Wood, and Neil Woods. These participants shared their ideas as well as their notes before and after the trip, which assisted enormously in

the writing of this book. Perhaps more importantly, they made the trip fun.

Above all, I thank Gerry van Leeuwen and Russell Taylor of International WOOD Markets Group, as well as their colleagues Igor and Jane in Russia and China. Russell and Gerry possess unmatched expertise of the forestry sector of Siberia and RFE, as well as the timber trade with China. Anybody who needs straight facts about the wood products business in Russia and China, as well as elsewhere, should turn to them. Without Gerry and Russell, this book would not have happened.

Finally, I continue to be indebted to several individuals from the Faculty of Forestry at the University of Toronto. In particular, I thank Prof. John Caspersen. He has been a staunch supporter of my broad education in forestry and engagement in the forestry sector. I am grateful that he encourages me to pursue educational opportunities that fall beyond the direct scope of my research.

Also from the Faculty of Forestry, I am grateful to Prof. Sean Thomas, Prof. Ning Yan, and Mark Horsburgh, for leading a very educational tour of the Malaysian forestry sector in April 2012. This trip facilitated my familiarity with the wood business of Malaysia, the greatest hardwood lumber supplier to China. It confirmed the significance of southeast Asia as a major player in the global timber trade and highlighted the importance of tropical forest conservation.

Many of the ideas and much of the information presented in this book can be attributed to the individuals and companies mentioned here, in addition to numerous others from around the world. Any mistakes in this book, however, are completely my own. I am grateful to these individuals for freely passing on their knowledge and professional experience. I sincerely hope that this book will impart some of their collective wisdom onto readers from all backgrounds.

Someone is able to sit in the shade today because someone planted a tree a long time ago.

- Warren Buffet

Introduction

Today's Timber Empire



The forestry sector of Siberia and Russian Far East (RFE) has the potential to become the most significant producer of softwood products in the world. Many companies are capitalizing on the inexpensive timber resources of this region. But the same forestry sector is confronted by immense challenges. Some of these challenges can be overcome with modernization and smart investments. Others can be resolved with new operational methods, such as better harvesting and planting techniques. At this point, however, too many of these challenges are not being addressed by foresters or sawyers in eastern Russia.

This book weighs the major opportunities and challenges facing forestry companies in Siberia and RFE. The ensuing analysis seeks to address a relatively simple question: How competitive is the forestry sector of eastern Russia? Using the broadest of brushes, this section summarizes the contents of the following chapters and accounts for the major arguments in this book. Detailed explanations of these ideas, with abundant data, are offered in the ensuing twelve chapters.

The forestry sector of eastern Russia enjoys many advantages, natural as well as anthropogenic, which allow it to competitively supply softwood logs and lumber to a variety of markets. Above all, the forest resources are huge. No other country on Earth possesses such a vast timber basket. In their virgin state, the forests produce excellent softwood timber that rivals the best coniferous forests of North America and Scandinavia.

In some respects, forestry companies in Siberia and RFE enjoy a

competitive operating situation. Labour is fairly inexpensive. Old Soviet assets and infrastructure, purchased for cents on the dollar in the 1990s, are still functioning. Lax environmental regulations mean that it is sometimes easier and cheaper to harvest and process timber in Russia compared to North America. For the affluent, it is a great place to do business: companies can do virtually anything if they are well-connected with local power-brokers.

But the overall value of these competitive advantages is mitigated by serious structural challenges. The government is, in the words of a British correspondent stationed in Moscow, “absurdly corrupt.” Interest rates exceed 12% for most companies due to high inflation and a lack of capital. Forestry policies change with great frequency. This seriously affects the confidence of companies. The economy is controlled by oligarchs and the prosperity of the entire country is overly dependant on energy resources. The business culture is rough. Alcoholism is rampant, and the labour pool is shrinking. It is difficult to find competent managers in eastern Russia.

Operational challenges in Siberia and RFE also reduce the value of the previously noted competitive advantages. The cost of harvesting timber and moving it a processing facility is quite high because the terrain is challenging and the climate is severe. The best forests were harvested a long time ago, so many of the remaining stands are sparse and patchy. There is very little effective replanting; forests become veritable wastelands after being harvested. Companies must venture further afield to access virgin timber, so the cost of hauling timber increases annually.

Many forestry companies in eastern Russia are trying overcome these challenges by investing in processing efficiency and capacity. Investors from Europe, Asia, and North America are providing the capital. Some greenfield projects are underway, but most investments are being used to improve existing mills. European technologies are especially popular in modernized processing facilities.

The money is for the most part being spent well. The new/modernized processing facilities are state-of-the-art: they enjoy processing costs 50% lower than Soviet-era mills. It is widely believed that the average processing cost in Russia can be reduced by an additional 30%

over the next decade. These cost-savings will, Russian businessmen say, partially compensate for increasing raw material costs.

At the same time, the much-discussed Supercycle, which foresees wood prices skyrocketing over the next decade, is manifesting. It will probably benefit all softwood producers around the world. According to the theory, the supply of global timber is being reduced by policies, pests, and resource depletion. At the same time, demand is increasing in forest-poor markets like China, India, the Middle East, and North Africa. The U.S. and Japanese housing markets are also recovering from lengthy downturns. A rapid increase in demand for logs, lumber, panelboards, and pulp products is expected to occur over the next few years. The subsequently higher prices will benefit the forestry sector of eastern Russia, as one of the largest softwood producers in the world.

These modernization efforts and wood market conditions may preserve the position of the eastern Russian forestry sector for the time being. As the value of forest products increase, companies in Siberia and RFE will be able to justify harvesting more marginal, remoter stands. The big question is whether these price increases will match the ever-rising cost of raw material. Most data indicate that this will not be the case in the long term, although the near-term situation seems positive.

Back to the point at hand: Russian forestry companies are degrading the national wood basket by harvesting without regard for the future. There is virtually no replanting of clearcuts. Each year, millions of hectares of dense coniferous forest are being converted to sparse meadows studded by scrubby birch and poplar. Siberia and RFE will run out of accessible softwood timber eventually. At this rate, it is a matter of when, not if.

With less than half – and perhaps as little as 20% – of the forest area available for exploitation, Russian forestry companies can barely afford to ruin the forests that are accessible at current prices. At today's rates of harvesting and natural disaster occurrence, Russia will run out of wood by 2040. In all likelihood, this will occur sooner, perhaps by 2020 or 2030. The remaining timber will be too expensive to harvest and transport due to its distance from processing facilities. The “timber deadline” for when Russia might run out wood seems far away today, but time flies.

Unfortunately, the depletion of eastern Russian forests is not occurring in the most profitable manner. Siberia and RFE currently lack the processing infrastructure required for a fully integrated sector. In other words, a lot of decent timber is left in the forest to rot because it lacks a local market. This is especially true of the sawlog-quality birch and poplar in virgin forests. The current tenure regime makes it expensive for companies to hold but not use forest harvesting licenses. Hence, they harvest regardless of market conditions, even when prices are low.

In summary, a fraction of the value of the forests is being realized due to the immaturity of the forestry sector. As a result, most companies are rapidly depleting their resource as they develop their industry. By the time they establish a modern forestry sector, they may have run out of wood.

These are harsh conclusions. Some individuals in eastern Russia or elsewhere may be irritated by such dire prediction about the future of their forestry sector. The major arguments in this book, however, are made not to discourage investment in eastern Russia. These concepts are being put forward so that the region's forestry sector can improve itself and thereby remain globally competitive for many years to come.

It is not too late for the forestry sector of Siberia and RFE. The biggest long-term challenge – running out of accessible timber – can be addressed by taking immediate steps towards the sustainable management of forests in eastern Russia. It would not be logistically difficult: the silvicultural science is fairly settled; plenty of foresters in Russia and abroad can contribute expertise. Culturally, this change might be untenable. For a long time, Russians have practised unsustainable forestry. Furthermore, such a shift towards sustainable forest management is unlikely to occur without a stable, business-friendly government. The outright privatization of forests across the country might be necessary.

Despite these challenges, there is hope. The forestry sector of eastern Russia is not doomed if it takes appropriate measures today. Russian foresters, investors, and executives must realize that there is no future for forestry companies when there are no decent, accessible forests. Without a radical change in the way forestry is done in eastern Russia, what is a timber empire today might be a state of stumps tomorrow.

Chapter 1

Geography & Terrain



The forestry sector of eastern Russia is complicated and alien to most people in North America. With a good explanation, however, many Canadians will realize that most forests in Russia are very similar to the boreal forests of northern Ontario or the montane forests of interior British Columbia. Therefore, before embarking on a study of the forestry sector of eastern Russia, it is worth first reviewing the geography and terrain of the region and then considering the types of forest that grow there. This chapter explains the size of Siberia and RFE as well as the topography, climate, and ecology of eastern Russia. In this way, it provides context for a discussion about the operations of the forestry sector in Siberia and RFE.

Location and dimensions

Russia is an enormous country bordered by the Pacific in the east, the Atlantic in the west, and the Arctic Ocean in the north. It straddles both Asia and Europe. The Ural Mountains are the unofficial divider between these continents. Asian Russia – the focus of this book – is split into two major regions. The first is Siberia, which ranges from the Ural Mountains to Lake Baikal. The second is RFE, which ranges from Lake Baikal to the Pacific. This book will focus on the forestry sector that operates in these regions of eastern Russia.

The sheer size of Russia cannot be understated. It is the largest country in the world at more than 17 million km².¹ Its borders run for about

1 Curtis 1996

58,000 km, 50% longer than the circumference of the Earth. Russia as a whole is a little bit smaller than the U.S. and Canada combined, or the same size as South America. Impressively, the forests of Russia are about the same size as the forests of South America.

The major regions of eastern Russia are large in their own right, too: Siberia is 5 million km² while RFE is 6 km². Together, these regions are slightly larger than the entirety of Canada. Their forests are about the same size as the entire continental U.S., at 8 million km² or 800 million ha. This is twice the size of Canadian forests. The enormity of Russia as a country will come up again and again in this book because it is both a blessing and a curse to most Russian natural resources-based industries, like forestry.

The borders of Russia have remained essentially unchanged since the founding of the U.S.S.R. in 1922. Its western neighbours are Ukraine, Belarus, and Poland, while its northern neighbours are Finland, Norway, and a few other Baltic States. In the south, Russia shares borders with Georgia, Azerbaijan, Kazakhstan, Mongolia, China, and North Korea. Japan and South Korea are basically neighbours, even though they don't share a land border with Russia.

Most of Russia's borders are peaceful. In the past, the bellicose U.S.S.R. was engaged in many armed conflicts in Asia and eastern Europe. A few wars have been fought in recent history with Caucasus countries like Georgia and regions like Chechnya. Like most natural resource behemoths, the majority of Russia's trade is with its physical neighbours. This is particularly true of the Russian forestry sector.

Key land formations

Conveniently, Russia can be divided into five major land formations: tundra (10%), taiga/forest (60%), steppes/plains (20%), arid land (5%), and mountains (5%). These regions are very similar to their equivalents in Canada, and the key land formations in Siberia are correspondent to northern Ontario and eastern Manitoba. The differences between each of the major land formations in Russia is striking; the tundra is a veritable frozen wasteland, for example, while the taiga is a rich coniferous forest. Each zone, however, is relatively homogenous within itself.

The steppes and plains of Russia are flat with rich soil. These lands are sometimes known as “black earth” zones because of the fertility of the soil. They are intensively cultivated in regions that enjoy sufficient precipitation for agricultural crops, such as along the southern border of Russia from Ukraine to Mongolia. Even in central Siberia, there are “black earth” areas with rich, fertile soil. While erosion and poor farming practices have degraded more than 33 million ha in western Russia since the 1960s, the agricultural output of Siberia and RFE is expected to improve significantly with global warming.

The steppes are bordered by the Ural Mountains in the north and west, as well as the Sayan Mountains along the border with Mongolia. Lake Baikal is also surrounded by a mountain range. North of that, the Stanavoy Mountains loom over the extensive coniferous forests of northern Siberia. Yet despite their size and girth, the mountains of Russia are not particularly significant to the national forestry sector. The same can be said of the arid areas, which are primarily located in southern-central Russia, where precipitation is scarce.

The tundra is dominated by willows, moss, and lichen – there are very few trees in this region. The tundra is confined to a belt across the northernmost tenth of Russian territory. Happily, as the climate changes, the taiga is expected to move north into the tundra zone. In fact, much of this region is expected to be treed a hundred years from now.² While this is ecologically exciting, it presents little business potential; the trees will be stunted pioneer species like birch and poplar, not climax species with commercial applications like pine or larch.

Perhaps the most important land formation of Russia (apart from the forests of the taiga, which are discussed at length in Chapter 2) is the immense network of rivers and lakes. Russia possesses 84% of the world's surface freshwater, more than any other country. There are 120,000 rivers in Russia. More than 40 rivers in Siberia and RFE that are longer than 1,000 km. The most significant rivers are the Lena, Yenisey, and Irtysh-Ob. These rivers are a very important form of transportation infrastructure for the forestry sector in eastern Russia.

2 University of Oxford 04 June 2012

Interestingly, almost all of the major rivers flow north. This will make it easy for Russian barges to access the Northeast Passage to Europe when the Arctic Ocean ceases to freeze entirely each winter. But it also means that the southern source of these rivers defrosts before the northern outflows each spring, causing enormous seasonal swamps throughout Siberia and RFE. In fact, due to this ecology, about 10% of Russian “forests” are actually seasonal swamps.

Climate and soil conditions

Much like Canada, Russia is a cold country. The majority of the land is under snow cover for six months of the year. The average annual temperature is -10°C in western Russia, -20°C in central Siberia, and -40°C in eastern Siberia. Average summer temperatures are more hospitable across the country, at about 20°C . There are positive and negative aspects of such temperatures. For example, the winter logging season in eastern Russia is highly productive because the ground is consistently frozen. But the wet conditions and mild summer mean that trees grow slowly. Furthermore, the blackflies are horrendous for much of the year.

The majority of land in Russia is more than 400 km from an ocean or sea, and most of the country is closer to the Arctic Ocean than the equator. The northern-continental nature of Russia means that most of the land receives relatively little precipitation.³ Central Siberia receives approximately 400 mm to 600 mm of precipitation per year, with about 75% of this volume falling between April and September. Eastern Siberia receives even less, with just 200 mm falling per year. These low volumes of rainfall contribute to the slow growth rates of trees in eastern Russia.

Soil conditions in northern coniferous forests are similar throughout the world. The soils are known as “podzols.” This scientific term is derived from the Russian word for “ash,” since the soils are often the colour of ash. The light grey colour is due to the leaching of nutrients and organic matter over long periods of time.

The soils in Siberia and RFE are quite poor. Nitrogen cycling in the taiga ecosystem is very slow because the main decomposing biomass

3 World Wildlife Fund 21 November 2008

(conifer needles) are full of resin, wax, and lignin, and therefore break down quite slowly. Furthermore, the soils are cold and wet because of the thick mat of moss that insulates the soil during the spring and early summer. The low soil temperatures prevents microorganisms from efficiently breaking down what little biomass is available. It is also worth noting that 60% of Russian forests are growing on permafrost soils, which can only support very slow rates of tree growth.⁴

The harsh climate and poor soils result in slow arboreal growth rates. The growing season in Siberia and RFE is just 60 days in the northernmost forests, and about 110 days in the southern areas. Average productivity is approximately 1 m³/ha/year, or 1/3 the growth of central Ontario. As previously mentioned, the impact of climate change is projected by many scientists to allow trees to grow faster and in more places throughout eastern Russia. Some scientists, however, have warned that forest productivity in Siberia will actually decline due to climate change, since warmer summer temperatures will make the soils waterlogged and even more acidic.⁵

Biodiversity and ecology

Due to its size, Russian is a biodiversity behemoth. It contains every major vegetation zone in the world except a tropical rainforest, something that no other country can boast. Forests are the dominant feature and contribute enormously to national biodiversity. Depending on the metric, forests cover between 45% (forests net of swamps) and 60% (gross forested area) of the land mass. These forests contain more than 150 different tree species.⁶ In most parts of Siberia and RFE, however, just a handful of coniferous tree species are commercially exploited.

The real ecological value of Russia and especially Siberia is the enormous natural areas, not the actual diversity within them. Nonetheless, there is a plethora of plant and animal communities across the country. There are 11,000 plants, 320 mammals, 730 birds, 75 reptiles, 30 amphibians, and 270 freshwater fish species.⁷ In Siberia and RFE alone,

4 PwC 2006

5 The Siberian Times 07 August 2012; Stiles 07 July 1999

6 Schmidh and Raile 2000

7 State Committee of the Russian Federation for Environmental Protection 1997

there are approximately 2,300 plant species.⁸ Many iconic mammals live in the Siberian taiga, such as moose, elk, deer, and wild boars. Some admired carnivores also live there, such as wolves, bobcats, and even Amur tigers.

Estimates vary but most conservation organizations and scientific institutions agree that approximately 60% to 75% of the forests in Siberia and RFE are “virtually untouched by human activities.”⁹ Much of this area is sparse taiga in the far north, with few trees thicker than a man's wrist. Furthermore, Russia has more than 25% of the world's unexploited forests, amounting to about 350 million ha – an area greater than all of the forests in the U.S. With more than 14,000 conservation areas covering 200 million ha, many of these untouched forests are protected, at least on paper.¹⁰ But the rate at which virgin forests in Russia are being destroyed is shocking; this will be discussed at length in subsequent chapters.

The taiga is an important regulator of CO₂ emissions as well as climate conditions. The global boreal forest and associated tundra ecosystems contain 40% of the world's reactive soil CO₂, about the same volume as the CO₂ in the atmosphere. With the greatest boreal forest, Russia has the largest “CO₂ reserves” in the world.¹¹ Specifically, Russian forests contain about 83 tonnes of CO₂ per hectare in biomass, plus another 281 tonnes of CO₂ per hectare in the soil.¹² Thus, the CO₂ stock in standing timber and forest plants in Russia is approximately 50 billion tonnes.

Despite the significance of its forests in global climate regulation, it is entirely unlikely that Russia will ever become a carbon trading giant.¹³ For it to count credits from the natural CO₂ sequestration of the taiga – measured at 500 million to 700 million tonnes annually – Russia would also have to count emissions from its forests. Fires, deforestation, and soil degradation in eastern Russia together result in much greater emissions than annual sequestration. In fact, CO₂ emissions from soil degradation alone are double or even triple current emissions from the destruction of tropical forests. This is why Canada, which has similar forests, opted against counting forests in its Kyoto Protocol commitments in 2003.

8 World Wildlife Fund 21 November 2008

9 Convention on Biological Diversity 2012

10 State Committee of the Russian Federation for Environmental Protection 1997

11 International Arctic Science Committee 07 May 2010

12 RusNature 2012

13 FAO 2012

Closing thoughts

Russia is a huge country with many neighbours and great resources. Due to its immensity, Russia contains some of the largest and most interesting natural features in the world. Its forests especially provide habitat to countless creatures, hold much of the world's CO₂, and filter a great portion of the planet's freshwater. The major ecosystems of the country are enormous, but fragile. Ecological conditions are harsh, with low temperatures and little precipitation, so most plants grow slowly in Siberia and RFE. In closing, the natural environment of Russia can be described as impressive due its size but fairly unproductive.

Chapter 2

Forest Regions



Forestry is a peculiar industry that falls somewhere between mining, farming, and conservation. Most foresters are interested in harvesting the timber that Mother Nature grew initially, then growing more trees for future harvests, while protecting the ecological integrity of the land in the process. The entire Russian forestry sector depends on the harvesting of natural forests. Chapter 1 explained that there is a lot of land in Russia and revealed that the environmental conditions of eastern Russia are harsh. Continuing with this understanding, this chapter will assess the different types of forests that grow in Siberia and RFE.

Forest types and distribution

With 810 million ha of forest, Russia possesses 20% of global forests and 40% of the world's boreal forest.¹ It has a coniferous timber stock of 62 billion m³ and a deciduous timber stock of 22 billion m³. As previously mentioned, Russia's forests are about the same size as the entire continental U.S.. They are more than double Canada's total forest area of 400 million ha. The Annual Allowable Cut (AAC) in Russia – the yearly harvest that is deemed sustainable in perpetuity – is 570 million m³, three times that of Canada.

The Food and Agriculture Organization believes that the area and productivity of Russian forests will increase over the next two decades.² National forest area is expected to increase by up to 1.5% due to natural

1 Teplyakov 2011

2 FAO 2012

reforestation of abandoned agricultural lands. The total timber stock will increase up to 5% thanks to global warming. This could support a marked increase in the AAC, which might be pegged at 700 million m³ by 2030. In all likelihood, however, pioneer species like scrubby birch and poplar will account for all of this growth, making it commercially inconsequential.

There are three main forest types in Siberia and RFE. First, the dark taiga is found throughout both regions. It is dominated by spruce, fir, larch, and pine, with lots of poplar and birch on recently disturbed sites like clearcuts. It covers 204 million ha and contains 30 billion m³ of timber.

Second, the light taiga is located mostly in central and southern Siberia and is dominated by larch as well as pine. Poplar and birch also dominate disturbed sites. It covers 261 million ha and contains 23 billion m³ of standing timber. The term “taiga,” which is used interchangeably in this book with “boreal forest” and “coniferous forest,” means “little sticks” in an indigenous language from Siberia.

Third, the temperate hardwood forests are found exclusively in RFE. They are dominated by oak, ash, and other shade-tolerant species, but only cover 4 million ha and contain 500 million m³ of standing timber.

This book focuses on the first two forest types – the dark taiga and light taiga – and only briefly accounts for the significance of the temperate hardwood forests.

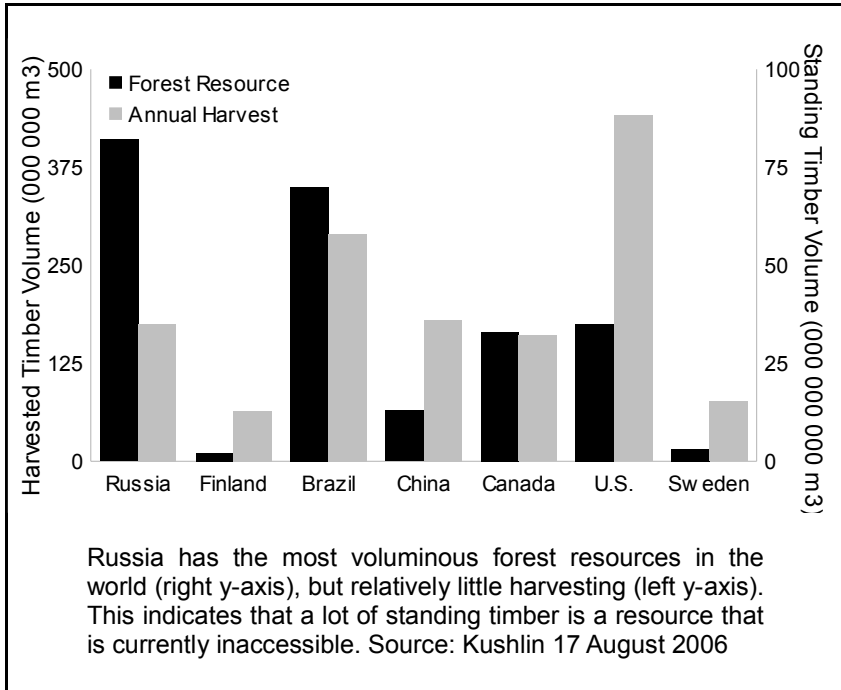
Approximately 75% of Russian forests are located in Siberia and RFE. They are relatively uniformly distributed across these regions.³ Specifically, RFE contains 280 million ha of forest with 21 billion m³ of growing timber, while Siberia contains 325 million ha of forests with 39 billion m³ of growing timber.⁴ This corresponds to a significantly greater forest area and timber stock than all of Canada, which has 300 million ha of dense forest containing 30 billion m³ of timber.

The forests of eastern Russia are prone to a variety of natural disturbances; fires are the most significant. There are 15,000 to 25,000 fires each year in Siberia and RFE, ranging in size from 1,000 ha to 10,000 ha.⁵

3 PwC 2006

4 RusNature 2012

5 RusNature 2012

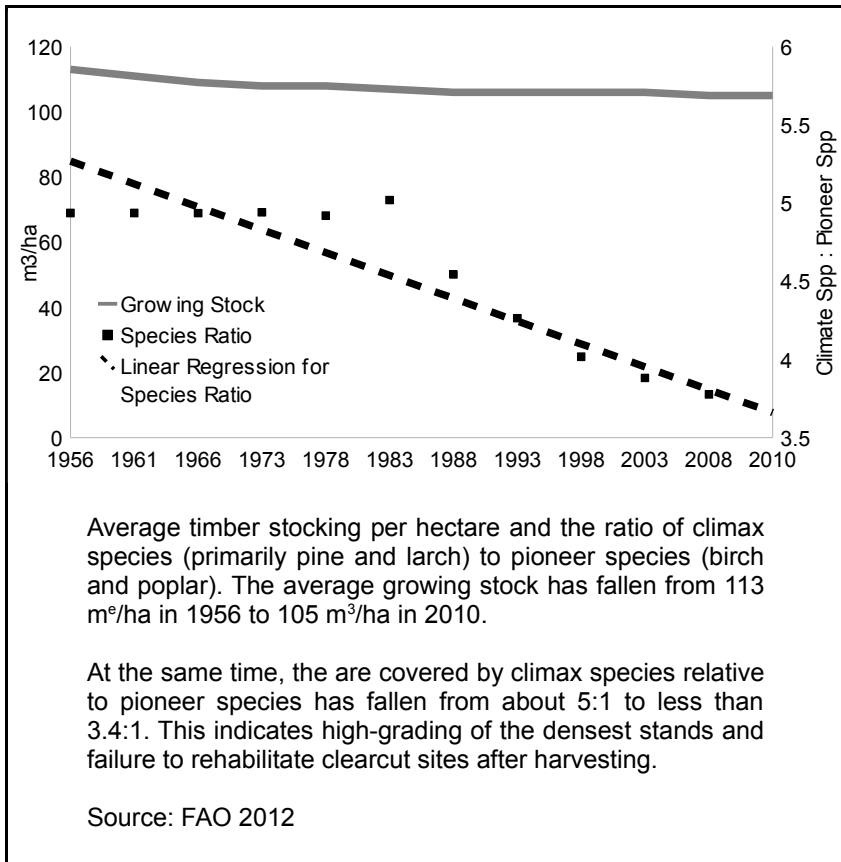


These fires destroy 1.25 to 2.5 million ha annually.⁶ It is darkly amusing to note that the Russian Federal Security Service accused al-Qaeda of “causing significant economic and moral damage” by waging “forest jihad” and starting forest fires.⁷ Greenpeace and scientists dismissed these claims, stating that all of the fires to date have been of natural origin.

In addition to fires, a variety of other natural disasters destroy an additional 4 million ha of forest in Russia each year. About 50% of this damage is due to wind events like microbursts, 20% pests, 20% forest diseases, and 10% anthropogenic-induced disasters. This is fairly similar to the boreal forest of Canada, with a major difference being that the Canadian forestry sector has the equipment and infrastructure to recover from natural disasters. In Russia, the timber resources are often inaccessible, so nature is able to take its course.

⁶ Teplyakov 2011

⁷ Nikolas 04 October 2011



Forest accessibility and quality

Although the forest area of Russia is impressive, it must be considered in context of its distribution. A huge portion of the forest is so remote that it is economically inaccessible. Even the Food and Agriculture Organization warns that “national policymakers [must] start to ... exclude physically and economically inaccessible forest resources” when calculating the national timber stock.⁸ By making no deductions for inaccessible forests, they grossly overstate the timber reserves of Russia.

Due to the remoteness of many Russian trees, only 50% of the

8 FAO 2012

forests in Siberia and RFE are considered “exploitable” by Russian foresters and industrialists.⁹ This is primarily due to the lack of infrastructure and low population density. Consider that European Russia, which has better infrastructure but contains only 25% of national timber resources, accounts for 60% of harvested and transported timber in Russia. The inaccessibility of forests in Siberia and RFE will probably not change over the coming decades unless federal or regional governments invest immensely in railroads, highways, and river ports/locks – something that is unlikely to happen unless mineral or petroleum development expands enormously in northern Siberia and RFE.

In addition to being distant, the quality of many Russian forests is very low. A good portion of the accessible virgin forest endured fires, pests, or wind events in the recent past, destroying much of the standing timber. More importantly, due to primitive silvicultural methods, second-growth forests throughout Siberia and RFE are useless for timber production. After being harvested, they primarily grow back with shabby poplar and birch, instead of pine and larch. In other words, natural disasters and harvesting alike are rendering the stands useless from a forestry perspective.

The models and reports of international organizations and forestry analysts rarely take this into account; they assume that the forests that are being harvested today will be harvested again in 80 years or so. It is inconceivable that the clearcut forests of Siberia and RFE will be productive again within the next century. Yet the optimists say that the timber stock will be replaced by natural reforestation and forest expansion in the tundra. But that is like saying that a gardener can increase his veggie patch by harvesting the crops and letting it grow back as weeds! This is a defining issue of the eastern Russian forestry sector and it will come up again and again in this book.

In summary, the forest resources of Siberia and RFE seem a lot smaller when the measure takes into account the inaccessibility of many Russian forests and the low quality of a substantial portion of the accessible stands. Russia may indeed have 810 million ha of forests, but it probably has less than 400 million ha of accessible forests. It would be conservative to guess that 20% of these forests are damaged, sparse, or flooded,

9 Roberts et al. 2007

resulting in a net forest area of 320 million ha. This is still a lot more than Canada's commercially accessible forest area of about 180 million ha, but a far cry from the gross figures touted by some organizations.

Density, species, and wood properties

The density of virgin forests in eastern Russia varies depending on site conditions and species composition but there is a consensus that the average standing timber volume is 100 m³/ha.¹⁰ This is fairly average and would be comparable to the Canadian boreal forest. Some estimates are more conservative, however, claiming that the average standing timber volume is just 76 m³/ha.¹¹ These averages account for the sparse stands in the northern parts of the taiga as well as the dense stands in central and southern areas of eastern Russia.

The forests that logging companies actually harvest, however, are dense with 200 m³/ha. Foresters across Siberia agree that 30% of the standing timber volume is unmerchantable due to high levels of butt-rot in coniferous trees. This means that the average merchantable standing timber volume is actually 40 m³/ha to 70 m³/ha in most stands, and about 140 m³/ha in the stands being harvested. As these forests are depleted, forestry companies in eastern Russia will be forced to target less lucrative stands.

Just a few coniferous species make up the vast majority of the Russian taiga. Various sub-species of larch, pine, spruce, fir, birch and poplar account for 90% of forest cover. The top ten tree species account for 99.1% of the growing stock; another 136 tree species in Russia account for just 0.9% of the forests.¹² This is also similar to Canadian forests, which is dominated by just a few softwood species but also hosts a wide variety of hardwoods in a small belt of forest along its southeastern border.

Scots pine (*Pinus sylvestris*), also known as “Red pine” or “Angara pine” in Russia, is the most coveted important species in Siberia and most parts of RFE, accounting for 80% of the output of the largest mills. It is the bread and butter of most forestry companies. Scots pine is desired by builders and furniture manufacturers because it is a strong wood that can be

¹⁰ Teplyakov 2011; Thomas 2011; Killmann and Whiteman 2006

¹¹ Yanfang 2008

¹² Teplyakov 2011

easily worked. It is used for essentially everything except flooring. It has a light reddish colour and an attractive grain, and has a density of 490 kg/m³.

Siberian larch (*Larix sibirica*) is another major species, accounting for about 15% of the major mills' output. Larch is much harder than Scots pine and so it used for flooring, decking, and construction. It is difficult to work and has a light brown hue, with a density of 590 kg/m³.

Sometimes spruce and fir are harvested by the mills, too. The thin margins earned on harvested timber mean that non-commercial species like birch and poplar are left in the forest. Most foresters estimate that over 30% of felled timber is left to rot during harvesting operations.¹³ As a result, the forests of eastern Russia are brutally high-graded for pine and larch. GIS systems and remote-sensing inventory technologies are now being employed to assist with this high-grading.

When discussing the current species composition of Russian forests, it is necessary to look to the future. Due to poor forestry practices, the composition of Russia forests is changing fairly rapidly: young poplar and birch, which are useless for sawlog and lumber production, are increasing their coverage at an annual rate of 0.8% of total forest cover.¹⁴ This is because these species dominate a stand after a clearcut, in much the same way that brambles and sedges take over old fields in North America.

Today, poplar and birch account for approximately 15% to 20% of the forests in eastern Russia. At current rates of harvesting, 30% of Russian forests will be dominated by poplar and birch in 15 years. In less than 40 years, this will be true of nearly half of Russian forests. In virgin stands, these species tend to produce tight-grained lumber that is comparable with Canadian hardwood in terms of its strength and consistency – nonetheless, they are barely utilized. But the birch and poplar that dominate former clearcuts are twisted, gnarled, and small. In other words, they will be useless for commercial exploitation, today and in the future.

Presumably the harvesting over the next few decades will occur in the most productive and most accessible stands, which are always “creamed” first by Russian logging firms. If we also assume that 50% of

13 RusNature 2012

14 Canby 2006

Russian forests are actually accessible, and that 20% of accessible forests are damaged by fires and pests at any given time, it appears that the forestry sectors of Siberia and RFE will entirely run out of mature, accessible softwood not later than 2040, and probably much sooner. Some Russian foresters see the writing on the wall. They say there is enough virgin timber left to support the industry for another ten to 20 years.

There is the argument to be made that higher prices in the future will increase the accessible forest area, similar to the affect of higher oil prices on the Canadian oil sands. This argument has some merit, but it tends to overlook the fact that every kilometre further north the loggers move, less timber is available per hectare yet fixed costs like road construction remain the same or increase. Profit margins (which are slim today) will get pinched, even if prices improve. A Malthusian catastrophe looms: timber value will increase arithmetically but costs will rise geometrically. The only way around this scenario is to invest in future forests by improving management methods today.

Growth and timber productivity

The annual tree growth rates in the forests of Siberia and RFE are between 1 m³/ha/year and 2 m³/ha/year, with the vast majority of forests at the lower end of the scale.¹⁵ This is approximately the same as most of the unmanaged stands in the Canadian boreal forest. Rates of timber productivity will probably decrease over the next few decades as over-mature stands (which currently account for 44% of forests) start to decline or collapse.¹⁶ In fact, the forests of eastern Russia could enter a period of net decline with relatively little in-growth over the next half-century.

Foresters love to compare the growth rates of different forest regions. But the relevance of growth rates in Siberia and RFE is negligible, since current forestry is based on the exploitation of virgin forests and not the long-term management of forestland. How fast trees grow only matters if foresters are planting trees for future harvests. In eastern Russia, they are only cutting them down. This is discussed at length in Chapter 8.

15 Thomas 2011; Yanfang 2008

16 FAO 2012

With better management, such as planting after harvesting and conducting pre-commercial thinnings from time to time, the more productive sites in Siberia and RFE could produce 4 m³/ha/year.¹⁷ According to researchers from the U.S. Forest Service, “The current productivity of the forests does not exceed 55% of the theoretically achievable productivity.”¹⁸ Such growth rates have been achieved in Scandinavian countries and some parts of Canada, but it will probably never happen in eastern Russia unless foresters radically change the nature and intention of their forestry operations.

In fact, it is worth suggesting that the commercial timber growth rates in harvested forests in eastern Russia are actually 0 m³/ha/year. That is not a typo – it is meant to emphasize yet again that the forestry practices in Siberia and RFE essentially eliminate the productivity of the forests. The rapid growth of scrubby birch and poplar on clearcuts should not be counted towards the timber stocks of the forestry sector, since these are unmerchantable trees only useful as firewood.

Some stands become acidic swamps because there is insufficient canopy cover to regulate soil moisture. Sometimes the soil compaction from the machinery is so great that only lichen, moss, and brambles can grow back on the harvested site. At best, in the most productive sites, harvested stands usually grow back with scrubby poplar and birch. After about 100 years, these pioneer trees are overtaken by coniferous species like pine and larch. After another 200 years, a conifer-dominated forest with some sawlog sized trees may have grown back, assuming that fires, insects, and storms don't destroy the recovering stand in the meantime.

Accessibility and management

Road construction costs in Siberia and RFE are about \$20,000 per km, the same as in Canada. It is anticipated that the cost of roads will rise in the future as harvesting operations push into wetter areas with more challenging topography. Nonetheless, the quality of the primary haul roads is very high. The road builders are well-trained, use good equipment, and care about doing a fine job. The road building techniques employed in

¹⁷ Rasmussen and Pilajamaki 2012

¹⁸ Schmidt and Raile 2000

Siberia are very comparable to those used in the boreal forest of Canada.

Roads only provide access to 30% of the forests in Russia. By another measure, the Russian forestry sector has 1 km of road/1,000 ha of forest, whereas the U.S. has 8 km/1,000 ha and Germany has 45 km/1,000 ha.¹⁹ To address this issue, the federal government has committed to building 2,100 of year-round roads and 9,300 km of seasonal roads each year.²⁰ About 3,000 km of seasonal forestry roads will be built each year in Siberia alone over the next decade. Much of this construction will be in marginal valleys and on plateaus skipped during past operations:²¹

There are millions of hectares of Russian forest where it will never make sense to build roads because the density of both population and trees is too low to be economically viable. Indeed, in Siberia and RFE, it is unrealistic that forestry will ever extend significantly further north than the southern fringes where it already is. But there is room to increase cutting within the active geographies.

Forestry operations in Siberia and RFE tend to occur far away from processing facilities like sawmills. This is because the harvesting frontier has moved further away each year, as local forests have been exhausted. Settlements tend to be established around the processing facilities. Forest workers live in camps deep in the wilderness for two or three weeks at a time, then return home for a week before heading back out. Most logging operations in Siberia occur about 150 km away from processing facilities.

Closing thoughts

Slow tree growth rates, long transportation distances, and low timber densities do not necessarily trump the competitiveness of a forestry sector. If these factors did, then most provinces in Canada would not have viable forestry businesses! What does trump the competitiveness of a forestry sector, however, is harvesting methods that reduce productive forests to wasteland. Canadian forestry companies can re-use forest infrastructure and enjoy the benefits of timber rotations, with forests near the mill eventually reaching maturity. These conditions simply do not exist in Siberia and RFE. In summary, when the virgin timber is gone, the forestry sector of eastern Russia will be finished.

19 PwC 2006

20 Valkky, Viitanen, and Ollonqvist 2011

21 PwC 2006

Chapter 3

Governance Structures



Having read Chapter 1 and Chapter 2, most readers will be reasonably familiar with the size of Russia, the scale of the forests, and the scope of harvesting operations. Before focusing entirely on the Russian forestry sector – this will begin in Chapter 6 – it is worth reviewing the government of Russia in the context of natural resource businesses. After all, forestry is a business that is integrated with the political system, society, and economy of the country in which foresters work. One cannot understand forestry in a country without understanding the nation itself.

Brief social history

Siberia was first settled around 45,000 BC by nomads from central Asia. Centuries later, the Mongols developed relations with the “forest people” living in Siberia. It was conquered in 1206 by Genghis Khan, who reportedly had a taste for Siberian women and their furs. In the 1400s, military expeditions from the Novgorod Republic in northwestern Russia and the Grand Duchy of Moscow conquered portions of western Siberia. In the mid-1500s, the Russian Tsars conquered most of western Siberia. Over the course of the 1600s, the Tsars sent mounted troops known as Cossacks to conquer the rest of the region. Even though it was a distant wilderness to the monarchs in Moscow, Siberia was considered a worthy prize because it produced such fine furs, especially sable and ermine.

The Great Northern Expedition of 1733 was a turning point for Siberia. The trip, which commissioned by Peter the Great and lasted a full

decade, was undertaken by cartographers, natural philosophers, and many members of the newly founded Russian Academy of Science. The 3,000 participants on the trip mapped much of Russia's Arctic and Pacific Coasts. The trip cost pyб 1.6 million or about 20% of the national budget. By the end of their trip, the explorers had claimed an immense territory, including Alaska, and established the borders that are still used by Russia today.

Siberia was the last part of Russia to be won by the Bolsheviks during the Russian Civil War, which followed the Russian Revolution in 1917. It was relatively prosperous during Communism: massive government investments in infrastructure and industry brought economic development and education, including research institutes known as Akdemgorodok. Siberia was notorious during this period as a dumping ground for dissidents and criminals, who were housed in penal colonies known as gulags. The gulags focused on gold mining and timber harvesting; annual mortality of prisoners was as high as 30% due to the inhumane conditions. The gulag population of Siberia peaked at about 2 million in the late-1930s and again in the early-1950s.

In March 1990, a new Legislative Assembly of Russia was elected, which appointed Boris Yeltsin as its president. Under Yeltsin, Russia declared itself sovereign over its own affairs and rejecting the authority of the central Soviet government. By December 1991, other Soviet republics were declaring independence and near the end of that month, the republics declared the Treaty of Union of 1992 annulled. By 1994, conditions stabilized and Siberia and RFE became federal districts within the newly formed Russian Federation. For whatever reason, to this very day, Russians across Siberia and RFE are proud of their Soviet heritage.

Modern Russia is a democratic federation with a Federal Assembly that has a State Duma and a Federation Council, which function like a House of Commons and Senate. The Prime Minister is the head of government while the president is the head of state. The country is comprised of 83 constituent entities (regions, territories, autonomous areas, autonomous regions, federal cities, or republics) that are grouped into eight federal districts, like Siberia and RFE. Each federal district is fairly autonomous within the Russian Federation, although the power of the central government is essentially unlimited.

Political stability and transparency

Russia is stable on the whole, and its leaders enjoy the support of most of the populace. In particular, citizens of Siberia and RFE are supportive of President Vladimir Putin and his allies. It is important to note, however, that a growing opposition movement is challenging Putin's right to rule. This opposition has the moral high ground, according to *The Economist*:¹ "Corruption is rampant, a small group of elites control the bulk of the nation's assets, institutions have been corroded by the effects of minerals-based development, and government and social provisioning are poor." The opposition, however, remains weak and fractured.

As *The Economist* has noted, more so than any Russian leader since 1991, Putin has been able to concentrate power within his highly personality regime. Having become president again after a four-year stint as prime minister, Putin is eligible to rule until 2024. If he remains president for this long – and there is every reason to believe that he will – Putin will have ruled Russia for longer than any modern leader other than Joseph Stalin.

Political repression is widespread in Russia today. People are no longer sent to gulags in Siberia, but they are sent to jail if they are too outspoken. Some say that the level of political repression in Russia has gone from "repressive to absurd" with the recent conviction by a kangaroo court of musicians from the protest band Pussy Riot to several years in prison.² Opposition leader Alexei Navalny, who is "arguably the most influential leader of the opposition movement," was recently convicted of organizing the theft of 10,000 m³ of timber from a state company.³ Nobody actually thinks Navalny stole the wood; everyone knows that that the 10-year prison sentence is an attempt to muzzle him for being too outspoken.

In general, it seems that businesspeople and even most pundits are unconcerned about the legitimacy of Putin's power and the questionable constitutionality of his actions so far. Leaders from the natural resource sectors in particular are in favour of Putin's hold on power, as he has demonstrated support for the ongoing development of these industries. He

1 EIU 2012

2 The Guardian 2012

3 Earle 01 August 2012

has also cracked down on corruption at the local level, which has helped Russian businesses attract foreign investors. The stability that Putin has afforded Russians and especially the business community, most businesspeople say, is worth the price of opaque elections.

Ongoing government priorities

Dealing with corruption is a nominal priority of the Russian government. Corruption in Russia is rampant and is believed to cost the national economy about \$300 billion each year.⁴ There are indications that corruption has actually become worse since the collapse of the U.S.S.R. The Russian Bureau of Statistics says that 2,700 cases of corruption were brought to court in 1990, compared to 13,100 in 2009. According to a group of opposition activists, “There can be no comparison between the scale of corruption under Yeltsin or under Putin. Corruption has seized being a problem in Russia; it has become a system.”⁵

Putin is outspokenly committed to fighting corruption, although his government admits that efforts so far have had limited successes. “We created anti-corruption laws, but they failed to achieve their objective,” his officials have said. “The law enforcement system is affected by corruption no less than the state officials are.”

The primary economic objective of the Russian government under Putin is to create a natural resources-based economy that is controlled by Russians. There is great fear throughout the government of foreign capital being used to develop and eventually control the oil, mineral, and timber sectors in rural areas. With this in mind, Putin has snatched oil assets from foreign companies and blocked investments by Chinese businesses. During the last election, Putin used nationalistic rhetoric to express his vision for economic development in Russia:⁶

The battle for Russia continues, and we will be victorious! We ask everyone not to look abroad, not to run to the other side, and not to deceive your motherland but to join us. We won't allow anyone to meddle in our affairs or impose their will upon us, because we have a will of our own.

4 BBC 14 May 2010

5 Milov et al. 2011

6 Closer 23 February 2012

Along the same lines, Putin's government will continue to encourage the settlement and development of Siberia and RFE.⁷ It has offered incentives to Russians to move east. The objective of settling and developing these regions is to address the “China threat,” which assumes that Chinese settlers or soldiers will eventually tumble over the border and claim empty portions of Siberia and RFE. Russian Prime Minister (and former President) Dmitry Medvedev recently said, “Not many live [in eastern Russia], unfortunately, and the task of protecting our eastern territories from excessive expansion by border states remains in place.”⁸

Another top priority of the federal government is the development and exploitation of natural resources like oil, gas, minerals, and timber. Putin has always believed that Russia's economy would hinge on the development of natural resources. In particular, he has advocated the notion of “national champions,” or semi-private corporations that equate state benefits with private profit. In fact, Putin's doctoral dissertation, submitted in 1996, proposed increasing state control of the mining industry in order to provide more benefits to the state.⁹ This attitude – that natural resources should be basis of the national economy but that the state should oversee their development – is definitive of Putin's interactions with the oil and gas sectors. It has been less apparent in his dealings with the forestry sector.

Attitude towards forestry

Over the centuries, the rulers of Russia have exhibited a special interest in forestry. In 1703, Peter the Great mandated that strategic forests along the Dvina River be conserved for future use and ordered an inventory of all forests within 50 km of major rivers and 25 km of smaller rivers.¹⁰ He also forbid the cutting of trees over 50 cm. The penalties for contravening forestry laws included hard labour and death. And it is said that Peter the Great used to plant acorns along the road to one of his palaces. When he noticed one of his favourite courtesans laughing at him, the Russian Emperor angrily shouted at him:

7 Sysoyeva, Rogovskaya, and Grigorieva 2008

8 Grove 09 August 2012

9 Kramer and Herszenhorn 01 March 2012

10 Teplyakov 1998

I know that I will not be alive to see these oaks mature. But you are a fool! I do it so that future generations will build ships from these trees. I do not labour for myself, but for the future of the country!

Soviet authorities were less inclined to plan for the future and encouraged state-run forestry enterprises to harvest timber as fast as possible. Prisoners from the gulags were forced to work in the forests, harvesting timber with handsaws and axes. Soviet officials fired most of the foresters and put silvicultural research on hold.

As a result, the forestry sector was a big mess during the Soviet era. Historians note, “Total anarchy and chaos broke out in the forest management.”¹¹ The national forest administration was reorganized 40 times, or every other year, in attempts to make it more productive.¹² The attitude of the day was that the forests should be exploited to support economic development in rural areas. Eventually, enormous sawmilling and pulping complexes were developed in faraway parts of Siberia and towns grew up around these operations.

The forestry sector was briefly neglected after the collapse of communism. A new forest code was adopted in 1997, which “legislatively affirmed the underlying principles of forest management: sustainable development of the economy and improvement of the environmental [and] rational and sustainable use of forest resources.”¹³ Needless to say, this well-meaning policy neither stopped nor slowed the rampant mismanagement of the forests of Siberia and RFE. In 2007, a modern forest code was adopted, which encourages private investment, provides infrastructure funding, lengthens lease periods to 49-years, and defines the rights and responsibilities of companies with timber concessions.

Closing thoughts

In summary, forestry is politically popular in Russia. It jives with the nationalistic priorities of natural resource development in the eastern territories. In mid-September, for example, a widely-respected national holiday is held in honour of all those who work in the forestry sector. Many

11 Teplyakov 1998

12 Valkky, Viitanen, and Ollonqvist 2011

13 Teplyakov 1998

people in Siberia and RFE spend the forestry holiday drinking vodka and toasting foresters, loggers, and sawmill workers. It is clear that forestry has a special place in the hearts of President Putin and his cabinet. The Finnish Forest Industries Federation has said that this bodes well for investors in the Russian forestry sector: “It’s a good thing that the [leader of Russia] has roots in the forest industry. He understands the problems and language of forestry investors when he meets them.”¹⁴

Chapter 4

Social Trends



Just as the forestry sector of Russia is integrated with the national political system, it is significantly affected by social trends. The demographic decline of eastern Russia, for example, threatens to eliminate the labour pool of the regional forestry sector. Some Canadian foresters are known to say, “Forestry is only partly about the trees. It is mostly about the people.” Ignoring major social issues in a discussion of the competitiveness of Russian forests is almost as bad as ignoring the greatest international economic trends. This chapter assesses the major social trends in Siberia and RFE, and considers their impact on forestry companies.

Population distribution

The population of Russia is approximately 143 million, although there are only 20 million people living in Siberia and 7 million people living in RFE. The population density of Russia is fairly low, at 8.4 people per km². The population density of Siberia is even lower, at just 3 people km². This means that the population of eastern Russia is nearly the same as Canada's (30 million) and the density is the same, too. Also like Canada, the population of Siberia is largely located in the southern regions. Almost all of the major cities and manufacturing centres of Siberia and RFE are on major rivers or near the coast.

Only a small portion of Russians live in the wilderness of Siberia and RFE, with more than 70% of people living in cities. About the same distribution is true of Russia as a whole. By way of contrast, about 80% of

Canadians live in cities. There are fairly few rural industries apart from forestry, mining, and energy. The hamlets that do exist in the countryside tend to be supported through hunting, trapping, mushroom collecting, and related activities. Many urban Russians, however, maintain a connection to rural areas by owning a family dacha, a type of cottage/farm.

There are nine cities in western Russia with populations of more than 1 million: Saint Petersburg, Nizhny Novgorod, Samara, Kazan, Chelyabinsk, Rostov-on-Don, Ufa, and Volgograd. There are also four cities in Siberia with populations of more than 1 million: Ekaterinburg, Novosibirsk, Omsk, and Krasnoyarsk. These four cities are fairly modern by European or North American standards, with good infrastructure and developed if quaint downtown cores. They account for 30% of the population of Siberia, or 6 million of the 20 million living in that region.

There are many demographic similarities between Canada and eastern Russia. The populations of RFE and Siberia are about the same as the Canadian population, and the physical areas of these regions are comparable. The population distributions are similar, too, with the majority of people concentrated in the southern cities and towns, while vast expanses of forest, swamps, and tundra lie empty and unpopulated to the north. And the forests are quite similar. Generally speaking then, whatever forestry-related challenges or opportunities exist in Canada due to demographics, the same are true of eastern Russia.

Demographic trends

Eastern Russia is suffering from a shrinking population. This has been the case since the collapse of the U.S.S.R., when 3% of Siberians and residents of RFE emigrated within four years.¹ Over the course of the last 15 years, the RFE's population has shrunk by 14%. This has not been as drastic in Siberia but a similar trend is evident. Some demographers argue that the depopulation of eastern Russia will be checked over the coming years, as young and unemployed western Russians – as well as migrants from China, Korea, and other Asian countries – seek their fortunes in the forestry, energy, and mineral sectors of Siberia and RFE.²

1 Granasen, Nilsson, and Zackrisson 1997
2 Karlin 19 January 2010

The vast majority (80% or more) of residents in Siberia and RFE are ethnically Slavic, and most are descended from Russians or Ukrainians who moved to Siberia within the last century. But there are also many ethnic Mongol and Turkic peoples, in addition to central as well as eastern Asians. Some indigenous peoples, such as the Buryats and Yakuts, have preserved their traditional cultures; they live in remote rural hamlets and villages. For the most part, ethnic minorities in Siberia and RFE are being assimilated. Inter-racial marriage is not uncommon. Although the minority populations are growing far faster than the ethnic Slavics, there seems to be racial and ethnic harmony in the region.

It is widely anticipated that Chinese migrants will eventually become the largest non-Slavic ethnic group in Siberia and RFE. Official figures are hard to come by, but about 500,000 Chinese workers have already jumped the border, legally or illegally. Most take up transient work in logging, sawmilling, or construction, but some start import/export businesses and others lease farms. In fact, there are almost 200 registered (and probably countless unregistered) Chinese-owned sawmills in eastern Russia with a combined processing capacity of well over 2 million m³, and about 20 more are being opened each year³

It is important to keep in mind that the combined population of the three Chinese provinces bordering Russia exceeds 110 million – not much smaller than the entirety of Russia! Many of these Chinese are unemployed and landless, and presumably wonder about opportunities across the Russian border. Mindful of this, some powerful Russians, including at times President Putin and Prime Minister Medvedev, use nationalistic rhetoric to incite fear of the “China threat.” They claim that the Chinese are infiltrating eastern Russians society so that they can claim the land and steal the resources. However, some Russian demographers convincingly dismiss these claims and put the issues in context:⁴

The average [Chinese] Manchurian has no objective desire to migrate to Siberia and squat illegally on a pre-industrial farm in a God-forsaken corner of the taiga. Alarmism on this issue is a trifecta of ignorance, Russophobia, and Sinophobia.

3 International Forest Industries 07 March 2011

4 Karlin 19 January 2010

Industrial perspectives

Demographic trends are important because the business of forestry requires hardy workers. An industrial problem with the shrinking population of eastern Russia is the widespread unavailability of labour.⁵ Almost every sawmill manager or forester in Siberia complains that is difficult to find and retain employees at all. They say it is even harder to find workers who are both disciplined and sober. In addition to population decline, the energy sector is claiming many workers.

Over the last five years, say some foresters, wages for loggers and machinery operators have had to go up 25% just to keep them on the job. A similar but lesser trend has simultaneously occurred in the sawmills. A researcher from Ason University, who interviewed dozens of businesspeople in Siberia and RFE, found a consensus on this issue:⁶ “Technically qualified workers with forestry related skills are difficult to find and retain. Offering high salaries does not seem to solve the problem.” Forestry executives complain that it is very difficult to find experienced managers since most talented managers head to western Russia.

In 2007, Don Roberts and his colleagues at CIBC World Markets said that Russia is facing the greatest national shortage of workers in the world, with the possible exception of Japan.⁷ They explained that this will hurt the forestry sector more than other industries because most of the timber is located in Siberia and RFE, where the population is shrinking even more rapidly than elsewhere in Russia. It is likely that forestry firms in Siberia and RFE will have to pay increasingly high wages to all workers. This is already occurring in some places: wages in the eastern Russian pulp and paper industry are six to seven times higher than they were in 1999, and are increasing 10% to 15% annually.⁸

The aforementioned cheap Chinese labour waiting in border regions could solve this problem, if Russian authorities welcomed their presence in Siberia and RFE. According to Don Roberts, “While Russia will be eager to accept Chinese capital in developing the Russian forestry sector, we

5 FAO 2012

6 Thomas 2011

7 Roberts, Carreau, and Lethbridge 2007

8 PwC 2006

think they will be much more cautious about allowing China to solve their labour problem.” Additionally, few people realize that wages in China are rising, too. Several owners of Chinese-style sawmills in Siberia explained that Chinese workers in Russia are paid only 25% less than their Russian counterparts.

One advantage that Russian workers have over Chinese labourers is their higher level of education. Like ballet and the circus, schooling has been a valued facet of Russian culture for centuries. In the 1980s, the U.S.S.R. had one of the highest rates of higher education in the world. Even today more than 70% of Russians attend college or university.⁹ Forestry workers in Siberia and RFE tend to be graduates of engineering programs while machinery operators are expected to have attended trade school. As the national forestry sector modernizes, fewer but better-trained workers will be needed in the sawmills and forests of eastern Russia.

There is a dire but highly controversial problem with the workforce in Siberia and RFE that is too infrequently discussed by analysts as well as demographers outside of Russia. Alcoholism is absolutely rampant throughout this region. It is responsible for an immense number of workplace accidents as well as premature deaths outside of the workplace. In this way, alcoholism contributes to the lack of workers in eastern Russia.

A 2009 study published in *The Lancet* found that alcohol was the cause of half of the deaths of Russians between the ages of 15 and 54.¹⁰ Across the entire country, alcohol is responsible for 32% of all deaths, compared to about 2% in Western Europe.¹¹ As a result, the average life expectancy of a Siberian man is about 60, the same as during the last decade of Tsarist rule, almost 100 years ago.¹² It would be radical to claim that this makes eastern Russians bad workers, but it is a significant issue with impacts on the forestry sector.

With that said, credit where credit is due. Residents of Siberia and RFE are raised in a harsh climate with something of a frontier mentality. They are robust, driven, and hardy people. This was reported to Adolf Hitler in 1944 by the Chief of Staff of Germany's Fourth Army, who had

9 Karlin 19 January 2010

10 Zaridze 2009

11 Karlin 19 January 2010

12 Granasen, Nilsson, and Zackrisson 1997

just been defeated by Siberian troops at the Battle of Moscow: “The Siberian is tougher and stronger and possesses considerably more capacity to resist than his European countrymen.”¹³ Foreign investors and sawmill managers often offer the same praise about their workers.

Significance of forestry

The forestry sector is a fairly significant employer in Russia, especially in Siberia and RFE. In 2010, forestry enterprises directly employed 1.1 million people.¹⁴ This accounts for about 1% of the workforce in Russia, but closer to 20% of the workforce in Siberia and RFE. Among those employed in the forestry sector, 40% are engaged in harvesting, 40% in sawmilling, 15% in pulp and paper, and 5% in other activities. Almost 6 million people are thought to be indirectly employed, however, by pertinent servicing and re-manufacturing companies. On the whole, this is fairly comparable to Canada.

Most mills in Siberia seem to have three workers in the forest for every two workers in the sawmill. This will probably be skewed further in favour of forest workers in the future as sawmills in Siberia and RFE modernize. Many of the workers have been employed in the forestry sector their entire lives. In many cases, their fathers were also involved in the forestry sector, and sometimes their grandfathers as well.

The forestry workers of eastern Russia have traditionally worked seasonally, harvesting and hauling timber only in the winter months. During the summer, they recreate, work at cottage industries, and enjoy the local vodka. They are also accustomed to being unemployed whenever sawnwood or sawlog markets collapse.¹⁵ In the 1990s, for example, 90% of employees in the Soviet-run forestry companies known as *lespromkhozy* were dismissed. And after the log export tariff was introduced in 2007, hundreds of logging operations shut down when it became uneconomical to export sawlogs to China.

The social significance of the forests themselves (as opposed to the forestry sector) is high in communities across Siberia and RFE. Hunting

¹³ GeoCurrents 2012

¹⁴ FAO 2012

¹⁵ Eikeland and Riabova 2002

and fishing – as well as simply recreating in the vast expanses of wilderness – are important activities in the culture of eastern Russia. Many communities depend on the forests for non-timber forest products like honey, syrup, furs, and mushrooms. In fact, seasonal employment in the informal non-timber sector exceeds employment in the forestry sector.

In 2000, for example, an estimated 9,000 tonnes of game meat and 20 million hides or furs were harvested by rural Russians.¹⁶ A savvy Siberian can reportedly earn a fairly good living during the summers, collecting 15 kg of mushrooms per day, 100 kg of pine nuts during the month of August, and 50 kg of berries each summer. It is quite common rural roads in Siberia to pass dozens of mushroom hawkers. Most of these products can only be harvested from virgin forests. Unfortunately, this sector is collapsing, as accessible forests are converted from coniferous stands to sparse clearcuts dominated by poplar and birch.

Closing thoughts

The major demographic trends in eastern Russia are not conducive to the viability of the forestry sector. If anything, it appears that companies in Siberia and RFE are facing troubling social issues like rampant alcoholism, a shortage of workers, and rising labour costs. Whether or not this will seriously affect the relative competitiveness of the forestry sector is unclear: every other major forest products producer – Canada, the U.S., Brazil, and others – is facing a similar set of social problems (except perhaps for the alcoholism). If anything can be resolutely concluded from this assessment of social trends in eastern Russia, it is that Siberia and RFE share more social similarities than differences with their competitors in the global timber trade.

16 Wong 2009

Chapter 5

Economic Conditions



When foreign investors contemplate opportunities in Russia, they are frequently deterred by tales of corruption and brutishness spun by the North American and European media. That image of the Russian economy is by no means rebutted in this chapter. Indeed, it is mostly confirmed and then illustrated further. However, there is a truly pleasant characteristic of the Russian economy that is too frequently overlooked by skittish foreign investors: many businesspeople in Siberia and RFE are polite, generous, and gracious, especially those engaged in the region's forestry sector. On the whole, however, foreigners ought to be aware of the dangers of doing business in eastern Russia.

Business climate

Generally speaking, Russia is a sketchy place to do business. It is considered fairly corrupt and economically backward. A majority of businesspeople confirm that unofficial payments and bribes are a part of doing business in Siberia. “This is not the United States,” said one forestry executive. “We must pay officials to prove that we deserve to do business.”

A variety of international observers confirm this notion. The Heritage Foundation's Index of Economic Freedom ranks Russia 144 out of 179 countries, after Syria, Haiti, and China.¹ In the Bribe Payers Index, Transparency International ranks Russia last out of the 28 countries studied – it is considered worse than South Africa, India, Mexico, or China.² In the

¹ Heritage Foundation 2012

² Transparency International 2011a

Corruptions Perceptions Index, Russia is ranked 143 out of 182, behind Nigeria, Sierra Leone, and Pakistan.³ These are, frankly, terrible rankings.

An unpleasant feature of the Russian economy is the presence of a small group of very powerful businesspeople and their regional political allies. These men are known as the oligarchs. They are tycoons who became fabulously wealthy during the privatization of state assets in the early-1990s. It is said that Putin has reduced the oligarchs' grip on the economy through a combination of imprisonment, intimidation, and taxation. Nonetheless, they remain puissant.

About three dozen Russian oligarchs are believed to oversee 72% of oil production, 71% of automotive manufacturing, 80% of metal production, 46% of fertilizer production, and a substantial portion of many other industries.⁴ Their hold on forestry is less profound, with just 5% of the entire sector and 30% of the pulp and paper business. On the whole, they control 20% of GDP and 30% of industrial output. Doing business in Russia means doing business with oligarchs, directly or indirectly.

In some cases, the oligarchs have afforded stability to the Russian economy. Most economists agree, however, that their presence scares away foreign investors. Between 2000 and 2004, for example, a group of oligarchs fought over forestry assets, using a combination of court action and on-the-ground violence. This period is known as the Forest Wars. In the end, a minor oligarch named Zakhar Smushkin retained control of several mills, which are now held in a joint venture with International Paper. PricewaterhouseCoopers offers sound analysis of the Forest Wars:⁵

The conflict painted a mixed picture. The issues and tactics showed negative aspects of investing in Russia but that the disputes were resolved shows hope for the future. The 2000-2004 Forest Wars had an extremely deleterious effect on investment in the industry. One M&A publication estimated that the Russian forest industry received \$3 billion less in investments as a result.

Russian business culture is fairly rough as a result of corruption and high concentrations of power in the hands of a small elite. At first glance, many of the senior executives at prominent Siberian forestry companies

3 Transparency International 2011b

4 Guriev and Rachinsky 2005

5 PwC 2006

display – for lack of a better term – a thuggish flair, rarely smiling and speaking very gruffly. (They warm up to guests quickly, however). They are always male and their subordinates are obedient. The business culture can be described as very power-oriented: executives want to know right away who has wealth and sway and who does not. In meetings, they appeal to the influential and ignore the unimportant. With that said, Russian businessmen are gracious hosts.

Such economic conditions – corruption, all-powerful oligarchs, and a rough culture – can sound daunting to investors from Europe and North America. But progress is being made towards improving the business. Putin has consistently stressed that he will crack down on corruption. Rival politicians in Moscow and Saint Petersburg say that Putin is on a fool's errand, but businesspeople across Siberia say, "Putin is making the right moves away from corruption. He is improving the situation."

Structure of the economy

The Russian economy has grown at approximately 6% for the last few years but is now slowing. It is expected to continue to grow at an average rate of 4% over the next few years. According to *The Economist*, this can be blamed on slower growth of the energy industry, a weak banking sector, over-dependence on natural resources, and institutional weakness like corruption.⁶

The anticipated fall of energy prices in the mid-term will also slow the Russian economy. It might have a devastating impact on government revenues. In this sense, Russia is like a less developed version of Canada: it has all the natural resources it needs to be a superpower, but it lacks the manufacturing base, services sector, and institutional infrastructure to help it weather commodity boom-and-bust cycles.

Any discussion of the Russian economy must include a discussion of oil and gas. These two products account for 50% of government revenue, 60% of exports, and 30% of national GDP.⁷ For the federal government to avoid deficit spending, the price of oil has to stay above \$100 per barrel,

6 EIU 2012

7 Sharples 2012

although some analysts claim the real figure is \$120 per barrel.⁸ Along the same lines, Citibank says that every \$10 drop in the price of a barrel of equal equals a \$20 billion drop in Russia's federal budget.

At this point, due to low levels of economic diversification, if the oil dries up or prices collapse, the Russian economy will be in big trouble. This was well expressed by an analyst from the Revenue Watch Institute: “A drop in oil prices to \$80 per barrel would cut Russia's economic growth by half, to 2% per year. A fall to \$60 per barrel (as in 2009) would put Russia in recession.”⁹

The government's control of the Russian energy sector is immense. In 2003, the oil industry was dominated by private companies like Lukoil, Yukos, and Sibneft. Fearing that private interests might become too powerful in this sector, the state took a controlling interest in Gazprom in 2005, then granted it a legal monopoly on gas exports in mid-2006. At the same time, the state increased its share of the sector from 6% in 2000 to 44% in 2008 by grabbing control of assets through two state companies, Gazprom and Rosneft. These takeovers (plus rising energy prices) allowed government revenue from energy resources to grow from \$18 billion in 2003 to \$200 billion in 2008. The only major private players in the sector – Lukoil and Surgutneftegaz – have retained independence by pledging loyalty to the Kremlin, and specifically to President Putin.

Being energy-dependent and resources-hungry, Russia's leaders are increasingly turning east and paying more attention to Siberia and RFE. Putin and Medvedev both visit these regions with frequency and often make a point of meeting with regional business leaders.¹⁰ Federal spending on infrastructure and other projects in RFE tripled between 2008 and 2011 to \$21 billion annually. The Priority Investor Program, which grants tax breaks and other benefits to foreigners investing more than \$10 million, was established in 2007 to encourage investment in these regions. It is said that Putin believes that Siberia and RFE will be for his presidency what the Baltic Sea was for Peter the Great: a source of immense wealth and a gateway to modernity.¹¹

8 Reguly 15 September 2012

9 Heuty 2012

10 Thornton 2011

11 The Economist 08 September 2012

Ongoing economic issues

There are a number of major issues that are preventing the Russian economy from achieving its potential. Perhaps the most significant issue in the forestry sector, which is chronically short of capital and in need of modern equipment, is high interest rates. Most of the sawmills in Siberia seem to face interest rates of 12% to 14%. The lowest interest rate (9%) is enjoyed by a Swedish company operating in Siberia. Rates over 40% per annum are common when money is borrowed from non-bank sources.

The high interest rates are driven by inflation, which has hovered between 5% and 8% for the last decade, although it briefly dropped to 4% in early-2012. Surveys of businesspeople conducted in 2010 and 2011 indicated that high interest rates and a shortage of capital are the most important bottlenecks in the forestry sector of Siberia and RFE.¹²

Another major issue, which directly contributes to the shortage of affordable loans for forestry businesses, is capital flight from Russia to Europe. Most of the oligarchs and many rich Russians invest their wealth overseas for stability and diversification. This was particularly pronounced during the financial crisis: in the fourth quarter of 2008, net capital outflows reached \$130.5 billion, compared to incoming foreign loans in 2007 of \$280 billion.¹³ In addition, banks are reluctant to lend money to start-ups, preferring large foreign companies instead. When wealthy Russians do invest in Russia, they speculatively direct their money to mineral and energy plays, not forestry.

Companies are often frustrated at the cost of doing business in Russia. Some of these costs are legitimate, although tedious. An Asian diplomat was quoted as saying, "In order to create a factory that's 100 square meters, you need 100 square meters of documents!"¹⁴ Many companies in Siberia and RFE complain about the dense bureaucracy they must navigate to achieve their business objectives. But many of the costs endured by companies are illegitimate: a rule of thumb cited by government officials and foreign investors alike is that bribes account for

12 Thomas 2011

13 Heuty 2012

14 The Economist 08 September 2012

20% of the cost of doing business in Russia.¹⁵ Almost every Russian businessperson has paid unofficial fees to continue operations without interference from local officials.

Yet another ongoing economic issue is the inconsistency of government policies and regulations, especially in sectors dealing with natural resources. This seems to be a Russian tradition: during the U.S.S.R., the entire structure of the federal forestry administration changed every three years and the administrative personnel were reorganized every other year.¹⁶ This instability discouraged investment and development in forestry.

Even today, in meetings with forestry executives as well as on-the-ground foresters in Siberia, there is confusion over the interpretation and application of even the simplest laws. This is due to ever-changing legislation. The foresters said that even local officials do not know how to interpret laws because they change too often! One executive said that it is simpler to pay bribes and fines than waste time interpreting and following regulations that could change a few months hence.

Economic significance of forestry

The forests of Russia may be vast, but the forestry sector is relatively small within the Russian economy. The forestry sector's share of GDP is only 1.3% and its share of industrial production is just 3.7%.¹⁷ It accounts for 2.4% of export revenues and 0.2% of government revenues. The Canadian forestry sector, for comparison, accounts for about 3% of GDP. The Food and Agriculture Organization believes that the economic insignificance of forestry in Russia points to one conclusion: "These factors prove that the colossal forest potential of the country is under-utilized. The opportunities presented by the forestry sector are clearly underestimated by state economic policy and policymakers."

The under-utilization of forests in Russia, and particularly in Siberia and RFE, can be partially attributed to the historical lack of private interest in the forests. All forests across Russia were nationalized in 1918 and organized into state forestry collectives, or "lespromkhozy." After the

15 Heuty 2012

16 Valkky Viitanen, and Ollonqvist 2011

17 FAO 2012

collapse of the U.S.S.R., the forestry collectives were stripped of forest land assets but retained their processing facilities. Shares in the mill-owning companies were then given to employees.

This aspect of privatization worked, but no capital flowed into the firms. As a result, 10 out of 11 major Russian forestry companies went bankrupt in the early-1990s.¹⁸ A small group of wealthy investors and politicians bought up as many shares as possible, consolidating their hold of processing facilities. Nowadays, the processing assets are held by private investors but the forests are owned by the government and leased to companies for a few decades at a time. For the last 20 years, companies have been understandably reluctant to spend large sums expanding mills and harvesting operations without having control over their wood basket.

This has changed somewhat since 2000. Some avante-garde investors have poured capital into expanding mills and modernizing harvesting operations. Much of the optimism and zeal of these forestry investors is hinged on the future privatization of forests in Siberia and RFE. They believe that one day soon, the government will sell them forestland for cheap, as it did with agricultural land in western Russia in the mid-1990s.¹⁹ This is a plausible scenario. Privatization would attract vast sums to the forestry sectors of Siberia and RFE. It would also provide an incentive for the stewardship of forest resources. Government officials, however, have been coy about commenting on this issue.

Closing thoughts

There is no doubt that the aforementioned group of foreign businesspeople are augmenting the economic significance of forestry in the short term. They are investing in equipment and technology and bringing the productivity of the sector back to near where it was in the 1980s. They have apparently overcome the economic issues and barriers – like corruption, instability, and government intervention – that prevent many others from investing in Russia. Thanks to these movers and shakers, it is an exciting time to be involved in forestry in Siberia and RFE.

18 Eikeland and Riabova 2002

19 Kandell 30 September 2011

But the long term viability of their investments and indeed the entire Russian forestry sector is far from assured. The sector operates on thin margins and is depleting an enormous but finite timber resource. The unpleasant business climate does not help. From this perspective, it is hard to believe that the forestry sector will ever account for more than a few percent of Russian GDP, export earnings, or government revenue. It is not too late to improve this situation. A drastic improvement in forest management practices in the near future would contribute to the future competitiveness of the forestry sector of eastern Russia.

Chapter 6

State of the Forestry Sector



Having reviewed the social, political, and economic situation of Russia as a whole, it is now appropriate to assess the forestry sector of eastern Russia. This chapter explains how the business developed across the country and examines some of the most significant companies in Siberia and RFE. It also describes how much timber is harvested each year and explicates two of the most talked-about issues in the forestry sector today: conservation efforts and illegal logging. This chapter will be followed by more specific discussions of forestry policy in Russia and the methods used for harvesting and processing timber in Siberia and RFE.

History of commercial development

Until the 19th century, it was very expensive to move bulky commodities like lumber overland, so forests were only harvested if there was a nearby market for timber. Essentially empty and lacking populous neighbours, the forests of Siberia and RFE were left alone. This changed in the latter years of the Tsardom, when the railway finally transected all of Russia. Tsar Nicholas II knew that the railway would attract timber businesses, which would help populate the eastern half of his domain.¹ He was correct and the impact of the railway on Siberian forestry was significant. This has been noted by numerous Russian forest historians:²

Between 1860 and 1913, the average annual value of timber exports increased from from pyб 6 million to pyб 164 million and the

1 Eikeland and Riabova 2002

2 RusNature 2012

volume of timber transported by the Russian railways increased by a factor of four.

By the time the Soviets were running Russia, timber was a major export product. The U.S.S.R. was the largest producer of coniferous sawnwood in the world for most of the 20th century, producing about 90 million m³ annually – as much as Canada and the U.S., the next two largest producers, combined.³ More than 90% of lumber production was consumed within Russia. Interestingly, nowadays more than 90% of Russian lumber is exported. Nevertheless, in the 1980s, Russia was the second largest exporter of coniferous sawnwood in the world, selling 8 million m³ to its neighbours each year.

Much of the development of the forestry sector in the U.S.S.R. was at the behest of ambitious but ignorant Communist officials. Several “megaprojects” were constructed in Siberia and RFE, combining hydroelectric dams, pulp mills, and sawmills. These were impressively huge but highly inefficient. Judith Thornton, an economist at the University of Washington has written, “The primacy of political over economic criteria and the lack of realistic measures of opportunity costs meant that, on the eve of the breakup of the former Soviet Union, everyone was in the wrong place doing the wrong thing.”⁴

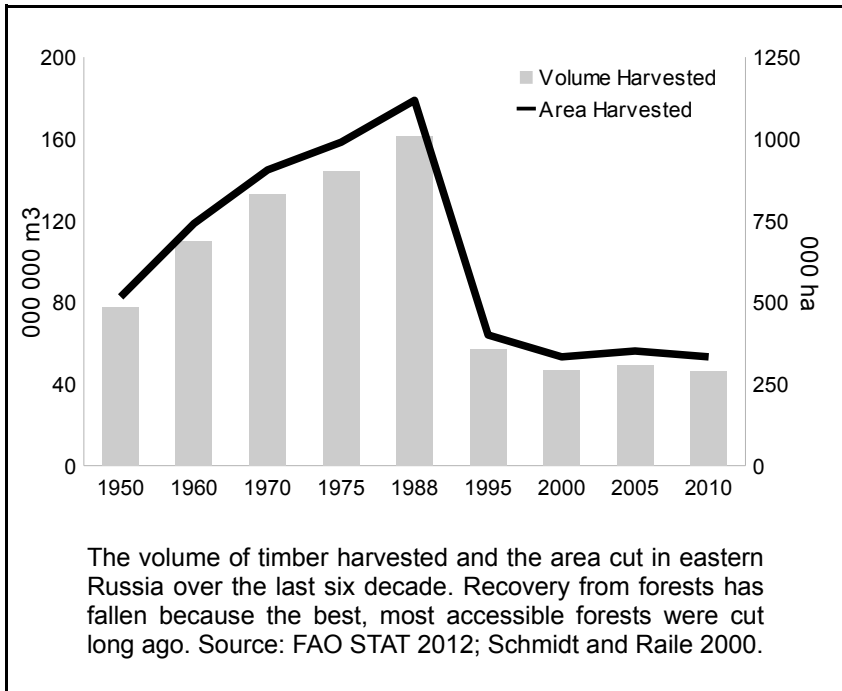
The collapse of Communism obliterated the heavily subsidized forestry sector in eastern Russia. The drop in sawnwood production between 1990 to 1991 was nearly 30%. By 1994, 50% of sawmilling capacity lay idle. Timber harvesting in Russia reached a low in 1998 of 100 million m³, about 40% of the 235 million m³ that was harvested in the early-1990s. For many years, loggers and sawmill workers saw no future for forestry in eastern Russia; many emigrated west or abroad.

Between the mid-1990s and 2007, the forestry business made a slow but steady comeback. Harvesting picked up as the recently privatized forestry companies emerged from bankruptcy and re-opened mothballed sawmills. Lumber production increased and sawlog exports almost doubled every five years, reaching 32 million m³ in 2000 and 51 million m³ in 2006.⁵ This recovery was largely driven by improving export markets: strict

3 Valkky, Viitanen, and Ollonqvist 2011

4 Thornton 2011

5 Teplyakov 2011



logging restrictions were implemented in China in the late-1990s, a booming Asian economy needed wood for construction, and timber export bans in several tropical countries reduced the usual supply.

In 2007, the Russian government imposed a hefty export tariff on sawlog exports that essentially nuked the forestry sectors of Siberia and RFE. Sawlog exports fell from 51 million m³ in 2006 (26% of timber production) to 22 million m³ (15% of timber production) in 2009.⁶ Russia's share of the global sawlog market fell from 40% to 28% over the same period. Although the new policies addressed log exporters, the impact on harvesters was noticeable, as timber harvesting fell from 200 million m³ in 2007 to 185 million m³ in 2010. From the perspective of the Russian government, the export tariff has been successful in the sense that investment in domestic processing capacity has increased since 2007.

Nowadays, the Russian forestry sector is big and ambitious but

6 Teplyakov 2011

relatively inefficient. It produces approximately 175 million m³ annually, making it a top-five global harvester. But an article in *The Moscow Times* recently reported that profit per hectare of managed forest in Russia is a tenth of what it is in Scandinavia.⁷ Other consultancies and research groups have come to similar conclusions: the industry's return on assets is around 3%, half of the Russian average, and profit margins in 2009 were about 1%.⁸ Happily or unhappily, the unprofitability of operations has not deterred investment in the forestry sectors of Siberia and RFE.

Companies and organizations

The Russian forestry sector is fairly fragmented with relatively few integrated companies. As a result, the size of enterprises in Russia is much smaller than the rest of the world. The largest Russian forestry company are dwarfed by their North American and Western European rivals. For example, the largest forestry company in Russia, Ilim Group, has estimated annual revenue of \$1.8 billion, much less than the \$16.8 billion brought in by Weyerhaeuser or \$2.4 billion earned by Canfor. Indeed, the combined revenue of the top-50 forestry companies was only \$7.19 billion in 2009.⁹ This will likely change as further consolidation occurs in the sector and Russian companies merge or partner with overseas competitors.

Harvesting is an especially fragmented business in Russia. The five largest logging companies account for less than 10% of harvesting. It is estimated that more than 20,000 firms participate in the logging business.¹⁰ There are almost 500 logging companies in Khabarovsk Krai alone, which is about the same size as Ontario. The number of harvesting companies in modern Russia is five times greater than during the Soviet period. Instead of relying on the government for further handouts, after the collapse of Communism, thousands of wily loggers snatched equipment and formed their own independent businesses.¹¹

The pulp and paper sector is more consolidated than the logging and sawmilling businesses. Five companies control about 80% of pulp

7 Oliphant 25 May 2011

8 PwC 2006

9 Lesprom 06 October 2009

10 Roberts, Carreau, and Lethbridge 2007

11 Yanfang 2008

production – Ilim Pulp alone controls 61% of this market – and three companies control about 80% of paper production.¹² This can be attributed to the vastly larger capital stocks required to start and operate pulp and paper facilities than logging operations and sawmills.

Even though the Russian forestry sector is fragmented, companies are widely distributed over an enormous land area. As a result, timber producers can find it difficult to acquire competitive bids from mills and sawlog exporters. While logging companies in northwest Russia face approximately five buyers for their timber, sawlog producers in eastern Russia might have only one or two buyers.¹³ According to Tuomos Makela of the Helsinki School of Economics, “When travelling eastwards, the number of [timber] buyers falls, and the distance a company must transport logs if they want to consult another buyer rises rapidly.”

Another consequence of a fragmented forestry sector is a lack of research. What little research capacity survived the collapse of the U.S.S.R. was wiped out after the banking crisis in 1998.¹⁴ The Russian government currently maintains a forest research staff of 3,500 people with a budget equalling just 0.08% of GDP.¹⁵ Russia has three researchers per 1,000 employees in the forestry sector. In contrast, Canada has six, Sweden has 10, and Finland has 16 researchers per 1,000 forestry workers.

Such researchers are critical for improvements in silvicultural sustainability, processing efficiency, and product development. It is worth noting, however, that Russian companies partially compensate for their industry's lack of researchers by importing experts from the most research intensive regions: Scandinavia and North America.

With so many small companies spread across such a large country, relatively few industry associations or lobby groups have been formed. As a result, the industry is incapable of launching united appeals about unpopular legislation or endemic problems like corruption.¹⁶ There does not appear to be a single organization uniting the Russian forestry sector, like the Forest Products Association of Canada or Ontario Forest Industries

12 Thomas 2011

13 Makela 2009

14 Thomas 2011

15 FAO 2012

16 Roberts, Carreau, and Lethbridge 2007

Association. There are, however, a variety of conferences and forums that bring together representatives of the major forestry companies each year. Most of the companies in eastern Russia are very clear about the fact that they collaborate with other firms more often than they compete with them.

Volumes, values, and quality

Over the last few years, the annual timber harvest volume across Russia has been around 175 million m³.¹⁷ About 32 million m³ is harvested in Siberia and 14 million m³ is harvested in RFE. With a national AAC of 570 m³, Russia's forests are largely underutilized. In fact, the harvesting intensity is approximately 0.2 m³/ha/year, much lower than almost anywhere else in the world.¹⁸ About 30% of annual growth is harvested, less than Eastern Europe (35%), Western Europe (45%), or North America (50%). As previously mentioned, this is largely due to a lack of infrastructure.

These figures will probably remain fairly steady over the coming decade, increasing at a rate of 1% or so per year. Some Russian government estimates project a 90% increase in Russian harvest volumes by 2030; this would equal an annualized rate of harvest expansion of 2.5%.¹⁹ This is quite plausible, as investments in infrastructure will surely make large swathes of forest accessible. But it is also highly unsustainable: there will not be much productive forestland left in Siberia and RFE after the year 2030 at current harvest rates, let alone higher future harvest rates.

A noteworthy characteristic of the Siberian forestry sector is low levels of sawlog recovery in the forest. Every sawmill claims that between 40% and 60% of their AAC is waste, left in the forest to rot. This means that if a company wants to produce 500,000 m³ of sawlogs it must have an AAC between 800,000 m³ and 1.2 million m³. These claims have been confirmed by Scandinavian researchers.²⁰

A significant portion of this “waste” is actually sound timber without a market such as birch and poplar. But about 30% of the felled timber is

17 FAO 2012; Kushlin 17 August 2006

18 Killmann and Whiteman 2006

19 Northway et al. 2011

20 Makela 2009

wasted due to butt rot; the bottom 3 or 4 meters of most trees are brittle and rotten, so the butt is cut off and left in the forest. Unfortunately for Siberian forestry companies, stumpage charges must be paid every year on every cubic meter of AAC, whether or not it is harvested and merchantable.

These low levels of product recovery seem to have gone unnoticed by researchers, foresters, and analysts across the world. For example, there does not appear to have ever been a formal discussion of the impact of butt rot on timber productivity. Apparently there is only one recent study, which assessed the impact and frequency of butt rot in Siberian conifers in the context of tree species succession and fire dynamics – not timber harvesting or product recovery.²¹ The researchers found that about 60% of merchantable species (larch, pine, and spruce) are affected with varying degrees of butt rot once they reach maturity. Such a lack of research is amazing considering that this pathogen is affecting 30% of the standing timber volume of one of the largest timber baskets in the world!

It is apparent that most natural forests in Siberia and RFE are of mediocre quality at best. Unfortunately, due to poor silvicultural practices and the historical creaming of the best stands first, the quality of the remaining forests is even lower. The average age of harvested trees is falling, from 94 years old in 1956 to 82 years old in 2010.²² The harvestable volume per hectare has also fallen from 113 m³/ha in 1956 to 105 m³/ha in 2010. Each year, it seems, the trees being felled by Russian loggers are little smaller and the stands are a little sparser, not to mention further away from the nearest processing facility.

There are plenty of articles and publications on the internet that portray Russian forests as huge, productive, and high quality. An article by Courtney Weaver in *The Financial Times*, for example, claims that Russian forests can “sustainably produce 600 million m³/year, more than the entire European continent.”²³ In 2007, an investor newsletter by Aginsky Consulting Group brayed about the expansive infrastructure network and rich timber resources.²⁴ Both of these pieces – and so many others by Pollyanna observers – are utterly misinformed. Their optimism is based on

21 Schulze and others 2012

22 FAO 2012

23 Weaver 24 April 2012

24 Aginsky Consulting Group September 2007

DBH	<u>Larch</u>		<u>Spruce</u>		<u>Pine</u>		<u>Fir</u>	
	Sound	Rotten	Sound	Rotten	Sound	Rotten	Sound	Rotten
	%		%		%		%	
<20	89	11	89	11	57	13	67	33
20-40	50	50	55	45	62	38	67	33
>40	40	60	40	60	58	42	-	-

Many of the mature trees in eastern Russia are rotten. A recent study found that the majority of trees with a diameter at breast height (DBH) greater than 40 cm are rotten, while about half between 20 cm and 40 cm are rotten. This negatively affects the profitability of forestry operations in Siberia and RFE. Source: Schulze et al. 2012.

a lack of understanding of forest management methods, or the assumption that sustainable forestry is occurring in eastern Russia.

A central thesis of this book is not that Russian forests are insignificant or lack potential. Indeed, it should be clear at this point that the forests of eastern Russia are enormous and fairly rich in their natural state. But there are many constraints, both biological (rot, succession, and climate) and anthropogenic (corruption, infrastructure, and silviculture) holding back the eastern Russian forestry sector. At the risk of redundancy, the situation of the industry will be stated yet again: the sector has so much potential, but current management regimes are raping the forests and reducing it to barrens. Forestry companies in eastern Russia do not have a bright future because their forests do not have a future at all, unless they change their methods in the very near future.

Illegal logging and black markets

Illegal logging is rampant in Russian forests. Official figures from the Russian government estimate that about 1.3 million m³ of timber was

illegally harvested in 2010, less than 1% of the timber harvested.²⁵ This is widely dismissed as a gross understatement. International conservation groups and the World Bank agree that the volume is more like 35 million m³, or 20% of timber. Some say it is even higher in Siberia, perhaps between 30% and 50%.²⁶ In RFE, illegal logging accounts for up to 75% of harvested timber.²⁷ Even conservative estimates indicate that there is more illegal logging in Russia than anywhere else in the world.

The value of illegally logged timber in eastern Russia is stupendous. Overall, it is probably worth a bit less than \$1 billion annually, according to the World Bank and Food and Agriculture Organization.²⁸ Exports of illegally logged timber are thought to be worth around \$800 million. This indicates that illegal timber trades at a discount to legitimate wood – an obvious but interesting fact. Nonetheless, it seems illegally logged timber is one of the largest cash crops in Russia.

Illegal loggers use a variety of methods. About 30% of the illegal logging occurs within legitimate logging operations, where concession holders have purposely underestimated their timber stocks to reduce stumpage fees but quietly harvest and sell the full volume.²⁹ Another 20% or so acquire contracts to perform “sanitary logging,” which is meant to thin stands of undesirable species and low-quality stems. The loggers do this job but also high-grade the best trees from the same stands. The other 50% conduct illegal logging the old-fashioned way, bribing local officials who then turn a blind eye to amerciable harvesting activities.

There are a number of negative consequences of illegal logging. At timber markets on the Chinese border, illegally harvested timber tends to be slightly cheaper than legitimate wood. This drives down prices and thereby hurts companies that operate within the law.³⁰ A greater consequence is the impact on the reputation of the Russian forestry sector. Knowing that a significant portion of the national harvest is illegal frightens away potential foreign investors. This fact is also starting to intimidate purchasers, such as IKEA and other furniture manufacturers, who must comply with illegal

25 FAO 2012

26 Roberts, Carreau, and Lethbridge 2007

27 Thornton 2011

28 FAO 2012

29 Strangio 21 April 2011

30 Thornton 2011

logging legislation like the recently revamped Lacey Act in the U.S.

Indifference seems to be the most common attitude of officials and forestry executives towards illegal logging. In most countries, illegal logging is responsible for severe environmental degradation. Unlike legitimate forestry operations, the illegal loggers are not inclined to follow silvicultural guidelines. But illegal logging is fairly benign in Russia for two reasons.³¹ First, the forestry sector does not even come close to harvesting the AAC, so the illegal loggers are not responsible for widespread over-harvesting. Second, illegal loggers aren't degrading the forests any more than the legitimate ones, since most forestry companies in eastern Russia are implementing the crudest of silvicultural methods.

The chairman of a major forestry company in southeastern Siberia expressed sentiments along these lines. "I will let the illegal loggers steal the wood from our concessions," he said. "What else are we going to do, patrol the entire forest with machine guns? It's OK – we will buy the wood back from them at a discount." It is a sad truth that in eastern Russia, illegal logging continues because nobody in a position of power cares to intervene.

Issues with infrastructure

Infrastructure is perhaps the most important issue in the eastern Russian forestry sector. It determines which timber resources can be accessed, and which are passed over as uneconomical. Without good infrastructure, no trees can be profitably harvested. With timber being hauled hundreds of kilometres from the forest to the mill – due to the depletion of the closest forest resources over the last 50 years – this is a make-or-break issue for every company. The Director of a major sawmilling firm in central Siberia said, "There are two big issues in forestry in Siberia: fires and roads."

In Chapter 2, it was explained that permanent roads cost approximately \$20,000 per km while winter-only roads cost about \$10,000 per km. The roads are generally well-built and sturdy, having been constructed with the same methods and machinery used in North America.

31 Katsigris and others 2004

The current road network limits the harvest area, providing access to just 30% of forests in eastern Russia.

It is widely believed that the state and federal governments will continue invest significantly in transportation infrastructure. If tax dollars are used to build all the roads that have been promised, they will boost the remaining accessible forest resource from 10 years' supply to 50 years' supply, at today's levels of production. An important caveat on this issue is that these promises are contingent on private investment in energy and mineral plays, not just timber harvesting and processing.

Many forestry companies in Siberia and RFE are dependant on Soviet infrastructure. For some mills, more than half of the haul distance is on high-quality paved haul roads that were built at great expense by gulag prisoners in the mid-20th century. The cost of hauling on these roads is much less than on gravel roads, as fuel consumption is halved when logging trucks are on concrete straightaways. However, the utility of these roads is temporary: they are crumbling and each year a greater proportion of the haul distance takes place on gravel forestry roads.

In addition to being dependant on Soviet roads, companies make good use of Soviet-built railroads. Although trucks are typically used to haul logs from harvesting sites to processing facilities, a majority of exported timber, sawnwood, and other forest products is exported via rail rather than truck. A report by PricewaterhouseCoopers noted that the rail network is well-managed, all things considered:³²

Proximity to Russia's rail network can be a critical advantage. Although service is slow by American transcontinental standards, and can be patchy in summer when large sections of track are under scheduled maintenance, the service is remarkably reliable given the challenging state of Russia's geography and climate.

Companies that are less proximate to Soviet infrastructure must build dozens of kilometres of roads every year. One mill in central Siberia is reportedly building 25 km each month – at a cost of \$500,000 or more per month – to ensure that it can access sufficient timber during the summer as well as winter months.

The ongoing depletion of accessible forests and construction of new

32 PwC 2006

roads presents a financially as well as environmentally unsustainable scenario. Back-of-the-envelope calculations using industry averages indicate that a forestry company hauling timber 120 km today at an expense of \$30/m³ will face haul distance of 240 km at a cost of \$60/m³ in about a decade. They will also face a capital investment in roads of more than \$5 million over the period. That means that the log transportation cost of the average company will soon exceed the entire delivered log cost of most sawmills in British Columbia!

Furthermore, there is evidence that the cost of building a given distance of road will increase over the coming years. As construction crews move further north, lower into valleys, and higher on plateaus, they will face a variety of challenges. It will be harder to find aggregates like gravel. The soil will be saturated for more days of the year, making the roads unusable for long periods in the late-winter and early-spring. Furthermore, the permafrost makes the roads structurally unstable, requiring more maintenance more often.

As a make-or-break issue for Russian forestry companies, these topics deserve as much as attention as the timber resource itself. The current state of infrastructure and harvesting economics certainly makes eastern Russia unattractive compared to regions of the world that return to harvested forests, and therefore re-use roads on a semi-regular schedule. Investors will be unlikely to invest in existing mills or greenfield projects if opportunities require pouring millions in road construction.

Closing thoughts

The state of the forestry sector of eastern Russia can be summarized in a few words: impressive, with great potential, but on the wrong track. Over the last century, businessmen and politicians alike have created an immense industry in the wilderness of Siberia and RFE. Some people have even become rich while doing it. The forestry sector has endured harsh conditions, Communism, and multiple crises – yet it continues to chug along. Harvest rates have recovered from various crises and lots of money is being well-spent on new machinery and smart personnel. Exports are up and prices for timber are pretty good.

But the best forests are gone and companies are burdened with ever-greater hauling costs and infrastructure costs. Illegal logging is rampant and the industry is disorganized and immature. By the time the sector has the experience and capacity to operate in a world-class manner, the forests will be depleted. It seems that the forestry sector of eastern Russia is in the twilight years of its Golden Age. It's all downhill from here, unless there is a massive shift in attitudes and methods towards the sustainable management of its forest resources.

Chapter 7

Policies & Regulations



Even though a “frontier mentality” permeates the the forestry sector of eastern Russia, such that many regulations are skirted or ignored, the government is a powerful force. Harvesting policies are especially significant because virtually all of the land is publicly owned. The federal and regional government is heavy-handed and prone to intervention. This chapter accounts for the development of forest regulations in Russia, describes the current Forest Code, and assesses the future of resource ownership in Siberia and RFE.

History of forest policy

The first forestry policies in Russia were introduced by Peter the Great during the early-18th century.¹ Some of his science-minded courtisans reported that the clearcutting of forests along the major rivers was causing floods, which affected their orchards. His merchants complained that some waterways were not navigable during the summer due to erosion of the riverbanks. In response, in 1703, Peter decreed that logging operations must leave a buffer around rivers. The ecological and commercial benefits from this policy were many.

Peter and his descendents introduced other important forestry legislation over the next few decades. While progressive in Russia, they were not truly ahead of their time. Foresters in Western Europe, formally trained at special institutes, had been advising their monarchs on forest

1 Teplyakov 1998

policies for centuries. Furthermore, while these policies applied to the forests of European Russia, where the Russian population was concentrated, they did not apply to Siberia and RFE. All resources in those regions – timber, mineral, or other – were fair game for extraction, as far as the Tsars were concerned.

This attitude persisted after the Russian Revolution. The first priority of the forestry sector was to “feed the pig,” or send wood to newly-built processing facilities in southern Siberia. According to Larissa Riabova and Sveinung Eikeland, economic historians from Russia and Finland, “A system of ‘forest mining’ was developed where the only production regulation was the available transport and labour capacity.”² The state-owned forestry enterprises, known as *lespromkhozy*, were established to expedite the harvesting of timber across Russia.

Professional foresters who criticized the mindless resource extraction were attacked and dismissed during the Soviet era. In 1929, the National Board of Forestry was forced to adopt a simple agenda for its meetings: “As long as we need forests, we will harvest them in accordance with our needs without any theoretical discussion.” Some of the professional foresters were rehabilitated and re-hired in 1947, but their primary task was to oversee the production of timber, not the stewardship of national forest resources. This policy framework more or less continued throughout the next 60 years.

After the collapse of the U.S.S.R., the extraction-oriented policies were preserved for a few more years. By the mid-1990s, however, Russia had joined several international conventions on sustainability and environmental conservation.³ This gave way to modern forestry legislation. The Forest Code of 1997 attempted to create a system whereby companies would participate in auctions to gain access to state forests. Strict requirements were imposed on lessees regarding reforestation and resource management.

These policies were advanced and robust on paper, but rarely were they enforced or followed.⁴ It has been said that since the Forest Code of

2 Eikeland and Riabova 2002

3 Valkky, Viitanen, and Ollonqvist 2011

4 Tysiachniouk 2004

1997, Russia's forest policies and legislation have met or exceeded the highest international standards. On-the-ground harvest planning and forest management, however, remain primitive across the country.

The Forest Code of 2007 – which remains current as this book goes to press – is yet another step forward for Russian forestry policy. In practice, it is more carrot than stick. In addition to regulating forest management by threatening penalties and fines, it offers lucrative support to well-behaved forestry companies. Many foresters and mill managers in Siberia are content with the Forest Code. Their affection is insincere: they admit that more often than not they ignore silvicultural requirements because fines are small and the Forest Code has no real teeth.

Modern forestry regulations

The Russian forestry sector is organized under the federal Government of the Russian Federation, which has a Ministry of Natural Resources and Ecology. This body oversees the Federal Forestry Agency, known in Russian as Rosleskhoz. About 94% of the forest area in Russia is under the management of Rosleskhoz, and 20% of logging is overseen by its foresters.⁵ The rest of the forests are managed by the Committee of Environmental Protection and other federal groups, and logging is overseen by regional forestry authorities.

Essentially every forestry company in Russia belongs to a leskhoz, or forestry cooperative. These groups allow a degree of self-regulation in the forestry sector, somewhat akin to Westwind Forest Stewardship in the French-Severn forest of central Ontario. The leskhozoy are guided by 10-year plans developed by federal foresters. They are managed by private interests but answer to the Ministry of Natural Resources and Ecology.

The Forest Code of 2007, often called the New Forest Code, introduced a variety of changes to the Russian forestry sector.⁶ Most importantly, decision-making power was delegated from the federal level to the regional level. The responsibilities of leaseholders were expanded somewhat, such that forestry companies are now responsible for

5 International Arctic Science Committee 09 February 2010

6 Valkky, Viitanen, and Ollonqvist 2011

firefighting and other stewardship activities. Now if there is a major fire and a logging company is not tending to it, the regional government can commandeer both men and machines from the company for as long as it takes to suppress the fire.

Under the Forest Code of 2007, much of the forestland of Russia was reclassified: 24% of forests are protected, 23% are reserved from management, and 53% are eligible for harvesting. On the whole, the Forest Code of 2007 is praised as a step away from the top-down extraction of the past, towards a modern regulatory system that functions with efficiency.⁷

Roslezkhoz is said to be heavy on planning and legislation, but light on regulation and enforcement. For example, every member of a leskhoz must submit a Forest Management Plan that explains the next decade's planned harvesting activities. This plan must include resource information (harvest areas, intensity of removals, etc.) but also fickle data, like the location and size of skid trails.⁸ It is difficult or impossible to plan such details so far ahead of time, especially if a forestry company was just granted its license. Such planning is also costly: preparing the documentation costs around \$17,000, a prohibitive expense for most small mills and logging companies.⁹

Throughout Russian history – but particularly since the fall of Communism – forestry policy has been inconsistently created and poorly enforced. At the federal level, the last 20 years have seen the adoption of the Basic Forest Legislation (1993), Forest Code (1997), Federal Law No. 122 (2004), Acting Forest Code (2006), and New Forest Code (2007). While it is commendable that the Russian government is attempting to advance its legislation, five overarching codes in 20 years is unreasonable. Such inconsistency troubles foresters and investors alike. Economists from the Finnish Forest Research Institute have summarized this problem:¹⁰

Russia has been able to identify the problems of the forest sector and to define the target to aim for, but it has been struggling to come up with the means to achieve the targets set. In this respect, Russia is lacking in patience. Many times, decisions have been made without adequate preliminary preparation and the same decisions have been

7 FAO 2012

8 Valkky, Viitanen, and Ollonqvist 2011

9 Yanfang 2008

10 Valkky, Viitanen, and Ollonqvist 2011

retracted a few years later just as quickly. Rather than basing decisions on proper analysis with scientifically analyzed consequences, the prevailing methods seem to have been on decision-making through trial and error.

Obviously, the impact on the forestry sector is negative. Most forestry companies say that it is difficult to make long-term plans when harvesting regulations change every few years. They say that sometimes the legality of their activities is unknown, since regional officials don't have time to learn the ever-changing policies.

Resource ownership and tenure

The vast majority of forests in Russia are publicly owned. Forests eligible for management are leased by private forestry companies organized in cooperatives known as *leskhozy*. A company can attain a license by participating in an auction, although many of these sales are rigged and “one bidder auctions” are common.¹¹ Companies pay fees and stumpage to their *leskohzy*. This money is sent to Rosleskhoz, then portions are re-allocated to the thousands of *leskohzy* that operate across Russia. About 85% of the budget for forest regulations is derived from stumpage payments and related fees.

Licenses to harvest Russian timber have been fairly cheap by global standards, although permits are becoming more expensive. Most forestry companies say that licenses can be purchased for about \$30/m³ of AAC, which equals about \$35/ha. The richest, most accessible land sells for twice as much, around \$70/m³ of AAC, or \$80/ha. Owning a timber license is not cheap by world standards, however, because lessees must pay stumpage of about \$3/m³ of AAC every year, not just when the timber is harvested. That roughly translates to annual “rent” of \$3.50/ha. In most countries, including Canada, stumpage is only paid when the timber is harvested.

Since 2006, RusForest has purchased 49-year licenses to approximately 3 million hectares for about \$100 million.¹² An investor in the company said, “Russian forestry reminds me of 15 or 20 years ago, when you could buy Russian oil in the ground for 10 to 15 cents a barrel,

¹¹ Yanfang 2008

¹² Weaver 24 April 2012

compared with valuations elsewhere in the world of \$5 a barrel.”¹³ Company officials say this is a coup, claiming that the same investment would cost \$25 billion anywhere else in the world.

At risk of being persnickety, it's worth pointing out that this is a massive exaggeration. Without a doubt, paying \$33/ha (\$13.50/acre) for a timber harvesting license is a good deal. But it isn't *that* good of a deal: virtually nowhere in the world does timberland licensing cost \$8,333/ha (\$3,360/acre). A possible exception is Scandinavia, where decent freehold forest sells for \$6,000/ha.¹⁴ And that's not even taking into account that the forests of Siberia are remote, defined by poor infrastructure, endure a harsh climate, and exist in a country with poor business conditions. Nonetheless, RusForest makes a good point: Russian timberland is pretty cheap.

Since the New Forest Code was passed in 2007, most harvesting leases are for 49 years. This is an improvement from the past, when many leases were for a decade or less, but it is not optimal. It is known throughout the world that the shorter the lease, the less sustainable the forestry practices. Forestry leases ought to be at least as long as the rotation period so that companies have an incentive to prepare the forest for the next harvest. In Siberia and RFE, this would be 80 to 150 years.¹⁵ As there is no culture of sustainability in Russia, there does not appear to be any political appetite for a move in this direction.

A big question in the forestry sector of eastern Russia is the privatization of public timberland currently held by private companies in leases. According to an investment fund heavily invested in the Russian forestry sector, “Forestry is the last great Russian natural resource that hasn't been privatized. We expect it to happen in five years – or at least to have a political commitment by then.”¹⁶ Many businesspeople in Siberia and RFE concur and very few people are speaking out against privatization. It seems there is no doubt that at least a portion of the forests will be privatized in the near future. Yet government officials have barely commented on this issue over the last few years.

In fact, some pundits believe that the New Forest Code of 2007 has

13 Kandell 30 September 2011

14 Statistics Sweden 2012

15 Yanfang 2008

16 Kandell 30 September 2011

been a first step towards privatization.¹⁷ By assigning greater responsibility to leaseholders and extended the terms of leases, the federal government has learned how private companies would function if the forests were privately owned. A similar approach was taken to agricultural land in the late-1990s; the indicators were favourable and hundreds of thousands of hectares of farmland has been privatized since 2001. It is likely that the privatization of forests in eastern Russia would not only improve the business climate, but also provide a basis for more sustainable forestry methods. It would not, however, solve many of the problems faced by forestry companies in Siberia and RFE. Nonetheless, this a major issue worth paying attention to over the coming decade.

Government support and interference

In case it has not already been made clear, it must be emphasized that the government has always had a lot of sway in the forestry sector of eastern Russia. It has the power to impose sweeping policies, like the timber export tax of 2007, with or without commercial support. With impunity, it can also adopt, reform, and reject entire Forest Codes with unreasonable frequency. The enforcement of local laws is subject to the whims and fancies of local politicians. This system can work in favour of companies with strategic connections, but it more often than not leads to inefficiency and corruption within the forestry sector.

Notwithstanding President Putin's vice-like grip on the entire country, since the adoption of the New Forest Code of 2007, regional politicians have become even more influential than federal officials. Just a handful of high-ranking men can control literally all of the resource allocation decisions in some of the more remote pockets of Siberia and RFE.¹⁸ Appeasing these people, as well as their less powerful counterparts, is crucial to doing business in eastern Russia. This is unlikely to change.

Instead of fighting this system, many of the large forestry companies in eastern Russia are intimately involved with influential politicians. In some cases, companies employ power-brokers as board members. In the past, Ilim Group's legal director between 1993 and 1999 was Prime

17 Tysiachniouk 2004

18 Yanfang 2008

Minister Medvedev, for example. A current case is RusForest, whose chairman is Sven Hirdman, the former Swedish Ambassador to Russia. Sometimes the involvement takes the form of joint ventures, with a local power-broker receiving an equity stake in return for being a staunch supporter. This is the case with at least two mills in Krasnoyarsk Krai.

It is often said that regional officials show preference to forestry companies that were established before perestroika, and certainly before the collapse of the U.S.S.R. This might be because the officials already have stakes in these companies, acquired when they assets were privatized at a discount among local workers and bureaucrats. Another point raised with frequency is the tendency of officials to gouge non-Russian firms (and especially Chinese companies) whenever possible. Chinese investors in Manzhouli openly admit to regularly paying “irregular fees” (i.e. bribes) when they start sawmills and distribution companies on the Russian side of the border.

Closing thoughts

Considering the tumultuous modern history of Russia, the fairly modern Forest Code and progressive harvest license structure are commendable. Such regulatory infrastructure is necessary for the development of a modern forest sector. Yet inconsistency has been the most defining characteristic of forestry policy in eastern Russia. This will continue to be the case as politicians and bureaucrats draft new regulations to keep up with the rapidly developing forestry sector. Furthermore, the rules are rarely enforced and when they are, the fines are negligible. Even worse, many auctions for timber licenses are defined by cronyism or corruption.

In conclusion, this assessment of forestry policy in Russia is consistent with the assessment of the entire forestry sector: its recent development is impressive and there is lots of potential, but current conditions preclude the development of a modern and sustainable industry. Some strategic developments, such as the privatization of state-owned forest land, would probably expedite the modernization of the forestry sector, while encouraging more sustainable management practices.

Chapter 8

Harvesting Methods



Relatively few texts document precisely how timber is harvested from the forests of Siberia and RFE. Yet how timber is cut and moved to the processing facilities is the most important determinant of the profitability of many companies. In fact, harvesting and hauling account for almost as much as sawmilling in the total cost of producing lumber. This chapter reviews how the Annual Allowable Cut is calculated and enforced in eastern Russia, since this policy determines the value of timber licenses the volume harvested each year. It also explains how timber is harvested in Siberia and RFE, and accounts for conservation efforts in the region.

Annual Allowable Cut

For the benefit of readers not familiar with forestry terms, before explaining how logging occurs in the forests of eastern Russia, it is worth reviewing the basis of the AAC. This policy determines how much timber can be harvested by each company each year. It is based on the assumption that the taiga grows $1 \text{ m}^3/\text{ha}/\text{year}$. According to forestry theory, if a company harvests at the same rate as the annual growth, the timber will grow back at the same rate as it is harvested; the sector will be sustainable.

Consider an example. A company owns 100 hectares of forest in a region where timber grows at a rate of $1 \text{ m}^3/\text{ha}/\text{year}$, and the harvest rotation is 100 years. This means that a harvested forest will be fully regenerated after a century of growth. The AAC of this property will be $100 \text{ m}^3/\text{year}$, so that timber removal equals timber growth. Throughout

Siberia and REF, official growth rates are 1 m³/ha/year. So if a company owns 1 million ha, they may harvest about 1 million m³ of timber annually.

In eastern Russia, the AAC is based on educated guesses more than facts. The assumption that the taiga grows at 1m³/ha/year is a fair one, based on research in similar forests elsewhere in the world. But there is little data from Russia to confirm this notion. This will change over the next decade. The first modern, scientific inventory of forests resources in Russia will be completed by 2020.¹ It will use remote sensing data (mostly satellite imagery) and more than 100,000 permanent sample plots. In fact, this will probably be one of the largest inventory projects ever completed.

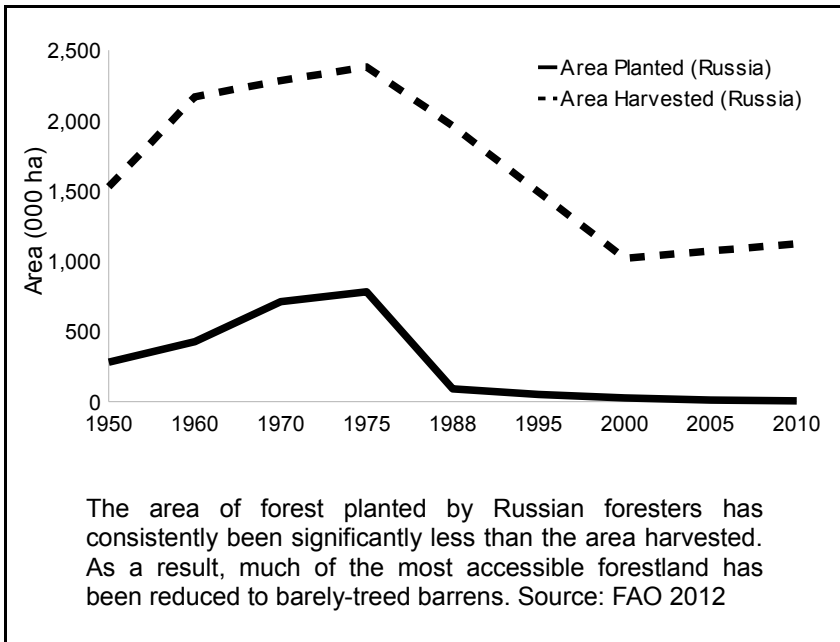
There are numerous problems with the calculation of the AAC of eastern Russia. First, it is not based on the economically available resource, so companies might deplete their accessible timber first then be left with nothing to harvest for decades afterwards.² This means that the AAC overstates the sustainable cut in most concessions. Second, the AAC does not include deductions for unmerchantable timber like off-species (e.g. birch and poplar) or junky wood (e.g. the rotten butts of most trees). This means that companies are often over-paying stumpage for useless wood.

The greatest problem with the AAC is that it is not based on any real forest rotation. An AAC only serves its purpose if the forests being harvested today are replanted and prepared for the harvests of tomorrow. Otherwise, the annual growth is actually decreasing each year. Since nobody expects forestry companies in Siberia and RFE to return to the stands being harvested, the AAC isn't ensuring the sustained yield or sustainability of Russia's timber resource. It is merely ensuring companies deplete it over a slightly prolonged period rather than all at once.

In summary, the term “Annual Allowable Cut” is misleading. In Siberia and RFE, it should be called the “Annual Amortized Cut,” because it allocates an annual harvest volume with no regard for future growth. The reaction of the CEO of a major sawmilling company in southern Krasnoyarsk Krai, Siberia, to a question about returning to harvested stands in the future says it all: “We don't believe in... I mean, we just don't cut second-growth forests. It is not economical.”

1 Valkky, Viitanen, and Ollonqvist 2011

2 Schmidt and Raile 2000



Common management methods

The majority of the logging in Siberia and RFE – about 75% of the volume by some counts – occurs during the winter. Conditions are consistently good throughout the winter, although work has to stop if temperatures dip below -40°C . The spring and summer months are unpopular for logging because the conditions are wet, hot, and buggy. Many of the forestry workers spend their summers drinking vodka, collecting mushrooms, hunting, and fishing. This is changing, however, as more forestry companies demand that their loggers work year-round.

The loggers tend to work for seven to 10 days straight, then go home for a week or so. They live in trailers in the bush during the week, where strict rules are enforced regarding drinking and drugs. The loggers typically work 10- to 12-hour shifts, with an hour or so for lunch and breaks. They are fairly well-paid, earning upwards of \$1,500 per month – a lucrative wage in eastern Russia. Most of them have college degrees in mechanics, forest engineering, or a related field.

Russia has fairly modern harvesting regulations but lacks the institutional capacity to ensure compliance during logging operations. For example, forestry legislation in Russia recognizes more than 100 different harvesting practices, compared to just 20 in Finland, where forestry is more sustainable and more profitable.³ But the vast majority of operations employ the crudest possible harvesting technique: clearcutting without forest renewal or structural retention. Furthermore, the Water Code of the Russian Federation prohibits clearcutting along rivers and mandates buffers of 50m to 500m. On a helicopter ride through Krasnoyarsk Krai, dozens if not hundreds of clearcuts along the shores of rivers are visible.

The majority of eastern Russian silviculture is fairly primitive. About 80% of harvesting in eastern Russia employs clearcuts.⁴ The rest uses a combination of thinnings, shelterwood, and selection silviculture. The maximum size of clearcuts is supposedly 50 ha, but this standard varies from region to region, and enforcement of such standards is rare.⁵ In a clearcut, loggers fell every tree except about 100 stems per hectare. These are retained to facilitate the natural regeneration of the forest through seeding. Predictably, the residual stems are usually undesirable species like poplar, birch, and fir – not species that are commercially viable or ecologically appropriate for that site.

Thinnings are rare in Russia compared to other countries with similar forests. For example, clearcuts only account for 30% of harvests in Finland, with thinnings making up much of the difference. The purpose of thinning a stand is to remove the low-quality stems to maximize the growth of the most precocious trees. This kind of silviculture can double the overall income from a forest. Thinnings are only economical in countries with decent infrastructure and markets for a range of timber products. There are also some regulatory barriers to thinnings in Russia:⁶

Russian guidelines do not allow intensive thinning. This lowers the economic efficiency of the cuttings. Thinning intensity is based on reducing the relative density of the stand. In some cases [in Russia], the allowed thinning intensity is so low that after clearing the strip roads, it is impossible to harvest anything else. This makes no sense

3 Valkky, Viitanen, and Ollonqvist 2011

4 Yanfang 2008

5 International Arctic Science Committee 09 February 2010

6 Valkky, Viitanen, and Ollonqvist 2011

from a silvicultural or economic viewpoint.

The generally primitive silviculture of eastern Russia entails poor forest regeneration practices. Only 20% of forests in Russia are planted after harvesting and 80% are allowed to regenerate naturally.⁷ For comparison, the opposite is true in Finland, where 80% are planted and 20% regenerate naturally. The consequence of allowing a forest to regenerate naturally is that it will grow back with scrubby poplar and birch for many decades, with a mature coniferous forest taking well over 200 years to emerge instead of just 80 years. Sometimes sites not planted after clearcutting never recover at all.

Planting seedlings in clearcuts is uncommon in Russia because it is expensive. Finnish researchers have found that planting is twice as expensive per hectare in Russia than in similar forests in Scandinavia or North America.⁸ This is largely due to poor infrastructure and a lack of nurseries. The researchers also found that the poor soil conditions in Russian forests mean that the rate of seedling survival is much lower than elsewhere. This makes planting futile as well as expensive.

Another reason for the rarity of planting is the lack of government support. Between 1988 and 1993, reforestation declined 30% and the production of seedlings in government nurseries dropped 50%.⁹ As a result, the forest area planted each year is less than 5% of what it was in the late-1980s and about 1.5% of the area planted in 1950. (Unfortunately, many of forests planted by Soviet workers were done incorrectly and the reported areas may be exaggerated). The consequences of the lack of planting after clearcutting will be great, according to the Food and Agriculture Organization: “A decrease in the amount and quality of forest regeneration creates a real threat for the future of forestry in eastern Russia.”¹⁰

Technology and efficiency

While the harvesting practices of the eastern Russian forestry sector are fairly crude, the equipment being used is impressive. It seems that

7 FAO 2012

8 Valkky, Viitanen, and Ollonqvist 2011

9 RusNature 2012

10 FAO 2012

every significant mill in Krasnoyarsk Krai and Irkutsk Oblast has spent between \$1 million and \$50 million on new harvesting equipment. Much of the equipment – feller-bunchers, harvesters, grapple skidders, and forwarders – is second-hand, but still state of the art. The most popular brands appear to be John Deere and Caterpillar.

The use of North American equipment presents Russian foresters and loggers with some challenges. For example, few North American equipment suppliers have established networks for delivering parts and servicing in eastern Russia. A forestry executive interviewed by a Finnish researcher said, “Foreign companies that sell us equipment never provide after-sale support.”¹¹ This is slowly changing as John Deere and other major brands build warehouses and train staff in eastern Russia.¹²

In addition to modern North American equipment, some Soviet-era machinery is still operating in the Siberian bush. The Soviet skidders, feller-bunchers, and harvesters built during the 1970s and 1980s are less efficient in terms of fuel consumption and production capacity, but much hardier under extreme conditions. It is the only machinery, for example, that can operate at -40° C. Servicing and parts can be especially difficult to acquire for this equipment. Due to the presence of this old and outdated machinery, numerous reports estimate that most harvesting equipment in Russia is more than 25 years old and at least 80% depreciated.¹³ This does not seem to apply to any of the major mills in Siberia and RFE.

Most logging operations are organized in a manner that is comparable to the forestry sectors of Scandinavia and North America. Equipment is arranged in harvesting complexes, with a feller-buncher paired with one or two skidders. The feller-buncher cuts the trees down and sometimes removes their tops, and then the skidders drags the trees to the roadside. If the tree felling is occurring more than 1 km from the road, a forwarder will haul the logs to edge of the clearcut. The logging crews will venture up to 5 km with forwarders from the main road before they have to build a rough spur road for logging trucks.

At the road, the trees are cut into standard lengths by a processor or

11 Thomas 2011

12 Russia Briefing 28 April 2010

13 Makela 2009; Roberts, Carreau, and Lethbridge 2007;

slasher-forwarder. The worker responsible for slashing the logs is usually very familiar with the quality guidelines. A logging truck is then loaded with timber either using its own crane or with a forwarder/fork-lift. The logging trucks are similar to those used in Scandinavia, although they are about 20% smaller than the average trucks used in Ontario, holding only 30 tonnes of timber on a full load. They have larger tires and higher suspension than most trucks in North America, to help them haul timber when they roads are slushy and muddy in the early-winter and spring.

Harvesting and hauling costs

Despite the modern equipment being used in many logging operations in Siberia and RFE, production costs are very high. The cost of logs delivered to the sawmill ranges from \$30 to \$70/m³. The large range is mostly due to the difference in transport methods from each region, but the most frequently cited delivered log cost is about \$50/m³. This is comparable with delivered log costs in British Columbia.

Of the delivered log cost, about \$30/m³, or 60% of the total, is accounted for by the harvesting costs. This includes labour, felling, and even road construction costs. It is surprising that the logging costs are so high considering advanced machinery being used and the disregard for environmental regulations. Calculations using average productivity rates indicates that a harvesting complex (usually a feller-buncher with a skidder and sometimes a forwarder) can produce between 500 m³ and 700 m³ per shift. Each complex employs between 35 and 50 men, including operators, mechanics, foresters, and support staff. This indicates that the productivity per employee is only 14 m³/day – far lower than in North America.

The calculations in this section are based on data collected during conversations with many of individuals at a dozen or so sawmills, as well as research of product recovery studies conducted in Russia and Scandinavia. The managers of several mills offered productivity figures that sounded impressive at first but upon scrutiny proved to be nonsensical. It is not clear whether they were bragging or simply confused about the productivity of their workers. It is abundantly clear that the senior officers of many forestry companies rarely visit the forest; their focus is on the

processing facilities, where the company makes its money.

The residual \$20/m³ of the total delivered log cost is accounted for by transportation costs, including loading, unloading, and sorting. In eastern Russia, logs are usually moved from the forest to the mill by river or by road. River transportation is preferred because of the lower fuel costs. It does not matter whether the logs are being hauled with or against the current, as the fuel consumption of the tug-boat is virtually the same.

A forestry company can venture 400 km up- or down-river for timber, and the maximum distance from the river that loggers can venture into the forest is about 150 km, but the average is about 65 km. The average distance is about 200 km up- or down-river, and 50 km into the forest from the riverside. The logs are hauled to the shore and stored up during the winter, then pushed into the water after the ice melts in the spring and summer. A few hundred logs are bundled together using thick cables, then towed by trawlers. They are stored next to the sawmill until large cranes pull them up and out of the water. Each barge contains about 12,500 m³ of timber.

It can take 18 months for a log to reach to the saws of the mill when timber is transported by river. This requires high levels of working capital. It also degrades the quality of the wood, which stains as it sits in the water for over a year. Furthermore, about 2% of logs are lost as floatsam each year. The cost of moving timber by river is about \$3/m³/150 km, or 1/4 the cost of moving it by road, not counting the cost of road construction.

With road transport, the maximum haul distance is about 250 km. The average haul distance is about 120 km, although this varies significantly between regions, ranging up to 200 km in central Siberia. About 70% of the haul distance is on paved roads (where fuel consumption is half the rate on gravel roads), while 30% is on bush roads. Most of the paved roads are part of the Soviet infrastructure that is now crumbling. It is anticipated that more hauling will occur on bush roads in the future, as forestry companies venture further into the forest to access timber. The cost moving timber by road is about \$20/m³/150 km, with 40% of this expense being fixed costs like road building.

Certification and conservation

There are hundreds of community-based environmental conservation organizations operating in the forests of Russia. These groups tend to focus on local issues like water quality or animal habitat protection. Some international groups like Greenpeace and WWF also have national offices throughout the country. There was a time – and it was not long ago – when conservation groups were reluctant to enter Russia because of the dangerous conditions and rampant corruption.¹⁴

A major accomplishment of such conservation groups is the protection of ecologically significant forests. The area of forest available for timber harvesting will fall from 677 million ha to about 655 million ha between 2010 and 2030 due to the establishment of new wilderness reserves.¹⁵ Several hundred scientific research reserves, known as zapovedniks, are also distributed throughout Russia. These have been established at the urging of conservation-minded scientists, who need natural areas for research about wildlife, climate change, and biodiversity.¹⁶ It is also expected that more of these reserves will be established by 2030.

In addition to conservation organizations, several of the major third-party forest certification schemes are present in Russia. Companies that voluntarily join these schemes are audited for a variety of sustainability criteria, like protection of endangered species and cooperation with aboriginal communities. Forestry companies receive the scheme's stamp of approval if it meets all of the criteria. As of mid-2012, over 30 million ha are certified by FSC, with an additional 2.7 million ha being certified by the scheme each year.¹⁷ PEFC has also certified almost 200,000 ha. Russia has more certified sustainable forests than any country in the world apart from Canada, which has 50 million ha certified by FSC and another 100 million ha certified by others like the Sustainable Forestry Initiative.

It is worth briefly digressing to note that environmental conservation organizations and certification schemes alike have adopted a similar strategy for operating in eastern Russia. For the most part, the conservation

14 Tysiachniouk 2004

15 FAO 2012

16 International Arctic Science Committee 09 February 2010

17 FAO 2012

groups overlook the unsustainable forestry practices of the major forestry companies. They focus their energies on the worst of the big “big picture” problems presented by the shadier firms in forestry sector, like illegal logging and wildlife poaching. This method allows the groups to continue operating in the forestry sector while targeting the worst offenders.

The strategy of certification schemes like FSC in eastern Russia is to certify a company's timber as sustainably harvested – even if it obviously is not, for the aforementioned reasons – if the company agrees to protect the area with the highest conservation values.¹⁸ This strategy is unpleasantly Machiavellian. The scheme's brand would be tarnished if the global public were more aware of this situation. Nonetheless, FSC's strategy is effective in ensuring that the most ecologically important forests in Russia are spared unsustainable harvesting.

Most overseas forestry companies are horrified when they discover that Russian forest products bear the FSC logo. To earn such a certification in North America, Western Europe, or Oceania, a company must comply with stringent environmental regulations. This compliance entails great expenses – usually between \$1/ha and \$5/ha – for modifying operations and regular auditing. Yet their wood bears the same logo as the Russian wood, which is usually harvested by blatantly unsustainable methods. Certified companies from abroad feel the easy-pass policy offered to eastern Russia forestry companies cheapens their own FSC certification.

The Russian firms are unsentimental about sustainability certifications. For them, certification is not about sustainability. It is just another way to make money. This was noted by Mikhail Karpachevskiy, a researcher at the Russian Biodiversity Conservation Centre, in a report about the function of FSC in Russia:¹⁹

Two of seven major certified companies [in Russia] are ecologically irresponsible, rarely have even a minor interest in certification, and tend to use it for green-washing purposes. About half of the certified companies are considered only somewhat ecologically responsible.

Russian companies are attracted to FSC and other certification schemes because the vast majority of their products end up in markets that

18 Tysiachniouk 2004

19 Karpachevskiy 2006

spurn illegally harvested timber, often by way of manufacturing facilities in China. End-markets in North America and Western Europe increasingly demand certified wood products. For example, the U.S. Congress amended the Lacey Act in 2008, which forbids the import of illegally harvested timber.²⁰ Certified timber is presumed by U.S. regulators to come from legitimate operations. Many wood products retailers in North America and Western Europe, such as Ikea, Home Depot, and Walmart, are also adopting policies that preferentially purchase certified timber.

For the foreseeable future, the growing demand for certified lumber, paper, and furniture will increase the role of certification schemes like FSC and PEFC in the Russian forestry sector.²¹ Hopefully these schemes will act with integrity and push Russian forestry companies to adopt an attitude of stewardship towards their entire forest resource, rather than just a fraction of it. If they don't, international timber markets will continue to be flooded with "green-washed" timber.

Closing thoughts

The harvesting methods of forestry companies in Siberia and RFE are both old-fashioned and technologically advanced: foresters often implement cookie-cutter clearcuts without silvicultural principles but many loggers use state-of-the-art machinery. Their productivity rates are fairly low and their production costs are high. Much money is being spent to modernize harvesting operations, and the majority of forestry firms in this region have been built through the exploitation of virgin forests in easily accessed valleys and plateaus. Such forests are running out due to the continued implementation of unsustainable harvesting methods. Unless companies adopt sustainable practices that utilize a combination of thinning (to increase tree growth) and planting (to ensure post-harvest regeneration), the forestry sector of eastern Russia will find itself on a one-way road to obsolescence.

²⁰ Strangio 21 April 2011

²¹ PwC 2006

Chapter 9

Processing Methods



Although a large portion of harvested timber is exported from Siberia and RFE as logs, significant volumes are directed to sawmills and other processing facilities. Since the log export tariff was introduced in 2007, the growth of this sector has increased. It is anticipated that over the next decade, an even greater share of harvested timber will be processed within eastern Russia because log exports will prove to be uneconomical. With this in mind, this chapter describes some of the major forest products – lumber, panelboards, and pulp – in eastern Russia, and accounts for the costs and methods employed to produce these goods.

History of wood processing

The history of wood processing in Siberia and RFE before the Russian Revolution of 1917 is an enigma, having been barely studied by historians or academics. It is logical to assume that the vast majority of sawmilling capacity during the Tsardom was east of the Urals. The only wood processing in eastern Russia would have been on a cottage scale, for firewood and some lumber for local use. During the last few years of Tsar Nicholas II's reign, small sawmills were constructed at the major stations along the Trans-Siberian Railway in eastern Russia to provide timbers for the construction of the railroad and dependent villages.

After the Russian Revolution, an influx of hundreds of thousands of settlers and more than 2 million gulag prisoners supported the development

of a wood processing sector in Siberia and RFE.¹ A survivor of the gulags, Gennady Andreev-Khomiakov, noted in his memoir how this affected the sawmilling sector: “The Bolsheviks, concerned with putting order into life and organizing it according to their scheme...arrived at complete chaos in lumbering.”² In this way, a dozen or so “mega-projects,” or wood processing complexes with adjacent towns and electric generation facilities, were constructed. Data is hard to come by, but it appears that under the Soviets, the wood processing capacity of Siberia and RFE increased more than a thousand-fold between 1922 and 1989.

After the collapse of the U.S.S.R. in the early-1990s, wood processing fell by 50% throughout Russia. The impact was especially profound in Siberia and RFE. Within a few years, most of the sawmills, pulp mills, and panelboard production facilities were privatized and then went bankrupt. Some resumed operations immediately, but many lay dormant until the late-1990s, when the restructuring and refinancing of these firms was completed.³ As discussed in Chapter 5, a small group of affluent businessmen snapped up many of the wood processing assets in eastern Russia during the post-Soviet period.

Today, the wood processing sector in Siberia and RFE is modern by Russian standards but disorganized by North American or Western European standards. Many executives in eastern Russia are so focused on getting their own operations running efficiently that they have a poor understanding of global wood markets. Indeed, many of them are unaware of major developments within the forestry sector of their own country. Furthermore, there is virtually no consideration of worker health and safety – a symptom of old-fashioned thinking. Many of the mills use obsolete technology, such that in some sectors it takes nine employees in Russia to match the production of one employee in Finland.⁴

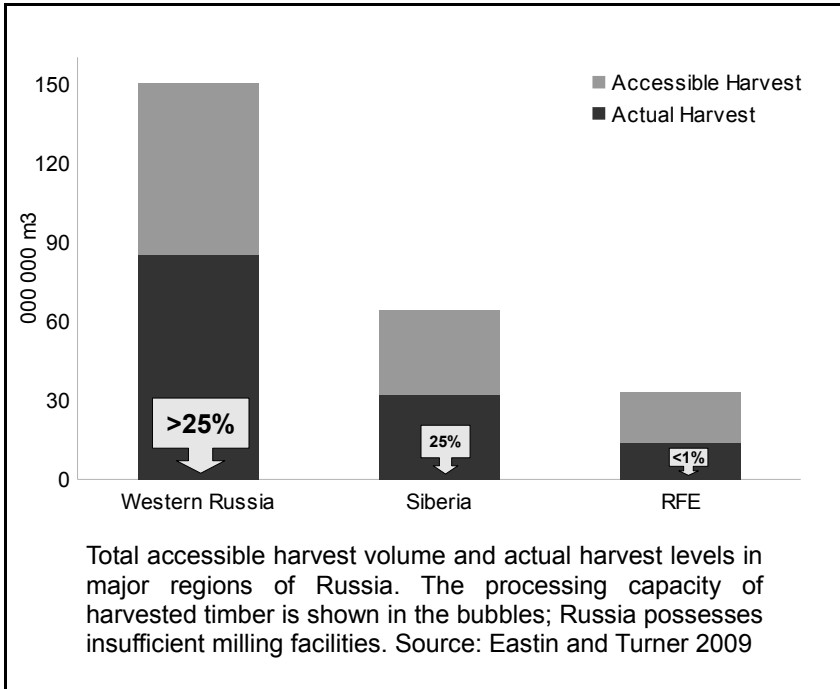
Nonetheless, both domestic and foreign investors are pouring money into sawmills and other processing facilities in eastern Russia. They see an opportunity in the fact that the region can process less than 20% of harvested timber, and that the production of value-added wood products is

1 Thornton 2011

2 Andreev-Khomiakov 1997

3 Nysten-Haarala 2009

4 Makela 2009



so low that Russia must import more than \$600 million worth each year.⁵ These investors believe that with modern facilities, the eastern Russian forestry sector will be competitive with their competitors in Scandinavia, North America, and New Zealand. And they might be right, if they can achieve the difficult task of keeping raw material costs low.

Lumber and sawnwood

Like most wood processing sectors in Russia, lumber production capacity is large in terms of volume but small in terms of harvesting rates. Sawmilling capacity across the entire country is 28.5 million m³ and has grown about 20% over the last decade.⁶ About 20 million m³ of processing capacity is located in western Russia while 8 million m³ is in Siberia and 0.5 million m³ is in RFE. Most measures agree that sawmills in Siberia can process about 25% of the total harvested timber volume, while RFE can

⁵ Teplyakov 2011; Valkky, Viitanen, and Ollonqvist 2011

⁶ Eastin and Turner 2009

process only 3%. This is not a lucrative ratio. President Vladimir Putin commented on the lack of processing capacity in 2007:⁷

We are desperately short of processing capacity. The result is that, although we are rich in forest resources, our imports of wood and paper products are growing every year, paradoxical though this may seem, and has already reached a figure of more than \$3 billion. This is how much we spend to import wood and paper products into Russia – the country with the biggest forestry resources in the world.

Part of the shortfall in sawmilling capacity can be attributed to a lack of facilities in eastern Russia. But it has more to do with unsophisticated milling techniques in the existing mills. Many sawmills are very small: the top-five producers of lumber in Russia account for only 5% of production.⁸ Furthermore, their processing costs are 25% higher than the average Scandinavian mill and 50% higher than the average German mill.⁹ Many sawmill owners admit, “We can’t compete with the Scandinavians with our technology. We have to modernize our mills or we will not be here in 10 years.” The majority of mills kiln-dry their lumber before sending it away.

In addition to using outdated machinery, many sawmills are generally dilapidated. It is common to see chipped paint, leaking steam vents, broken lights, and exposed wiring. The Soviet-era sawmills are dark and dank. Noticing this, an investor in a major sawmilling firm in Krasnoyarsk Krai said, “If you saw a normal Soviet mill, you would think you were in a horror movie.”¹⁰ These conditions may not affect processing costs, but they are symptomatic of deeper issues.

With that said, some of the larger sawmills in eastern Russia have undergone modernization programs. They are world-class and very impressive. They tend to use German, Finnish, and other European technologies, like Linck and HewSaw. The Food and Agriculture Organization believes that Russian sawmilling capacity will grow to about 40 million m³ by 2030, but that it could more than double to reach as high as 60 million m³ if the Russian government invests in roads and other harvesting infrastructure.¹¹

7 Roberts, Carreau, and Lethbridge 2007

8 PwC 2006

9 METLA 2012

10 Weaver 24 April 2012

11 FAO 2012

Panels and panelboard

The panelboard sector is the only facet of the wood processing business with greater capacity today than during the Soviet period.¹² It has grown 10% annually since 2005, and plywood production has doubled since 2000. This is thanks to significant capital injections from foreign investors over the last two decades, particularly in northwestern Russia. Investors' confidence has been based on a consistently robust Russian housing market, which consumes about half of panelboard production.

Annual plywood production is 2.69 million m³, particleboard production is 5.47 million m³, and fibreboard production is 1.67 million m³.¹³ Less than 10% of Russian panelboard is produced in Siberia or RFE. Surprisingly, Russia produces no OSB whatsoever; the country imports about 0.4 million m³ of OSB annually, sourcing 40% from Latvian Bolderaja Corp. and 30% from Canadian Norbord Inc.¹⁴

Like the sawmilling sector, many panelboard facilities being used today were built by the Soviets. They are quite inefficient by global standards. For example, a plywood mill in Irkutsk requires 2.72 m³ of raw timber to produce 1 m³ of plywood, compared to an international standard of 1.96 m³ of timber for 1 m³ of plywood. The lower levels of efficiency in Russia were true in the past, too. In 1988, the Russian wood processing sector produced 25 tonnes of panelboard and 28 tonnes of cardboard from 1,000 m³ of raw timber. The same year, using the same input, the Finnish sector produced 27 tonnes of panelboard and 190 tonnes of cardboard.¹⁵ Despite inefficiency, the quality of panelboard is mediocre to high.

The growth of the panelboard sector is contingent on the ongoing construction of houses and furniture in Russia and Europe. Some mills see potential to develop customer bases in Africa and the Middle East. In any case, unlike other value-added wood products, Asia is not a strong market for Russian panelboard because China is already among the world's top producers of low-cost panelboards.

The production of all kinds of panelboard is expected to grow

12 PwC 2006

13 FAO 2012

14 FAO 2011

15 RusNature 2012

significantly by 2030, especially plywood (+70%), particleboard (+100%), and fibreboard (+150%).¹⁶ According to the Food and Agriculture Organization, at least 2 million m³ of panelboard production capacity will be built in eastern Russia by 2030. There are more than two dozen panelboard projects planned for completion between 2011 and 2015, half of which are in Siberia and RFE.¹⁷ Most of the projects will produce plywood and fibreboard, although the first OSB plants in Russia will be built during this period. These facilities will present considerable demand for a variety of log types when they begin operations.

Pulp and paper

Since the collapse of the U.S.S.R., many pulp mills in Russia have added to their capacity, but no greenfield facilities have been built. A few old mills have shut down, so there is a shortage of pulp and paper products in most regions of Russia.¹⁸ As a result, existing mills are enjoying a seller's market. Current pulp production is 2.1 million tonnes annually, while paper and paperboard production is almost 8 million tonnes.¹⁹

This is perhaps the least fragmented segment of the Russian economy, with the top five companies accounting for more than 80% of the pulp market and a single company (Ilim Group) accounting for 60% of production.²⁰ There are approximately 30 wood pulp mills spread across Russia, about a dozen of which have an annual production capacity of less than 50,000 tonnes. The paper business is slightly more fragmented, with the top five companies accounting for 55% of production. According to PricewaterhouseCoopers, the residual 45% of Russian paper production is comprised of more than 8,000 small companies.²¹

Some of the Soviet-built pulp mills are enormous complexes integrated with nearby sawmills, housing developments, power plants. The Ilim Group pulp mill in Ust-Ilimsk, for example, is contained within a 14 hectare building. It was built in the mid-1980s in conjunction with a town

16 FAO 2012

17 FAO 2011

18 Makela 2009; PwC 2006

19 FAO 2012

20 Thomas 2011

21 PwC 2006

of 100,000 and a hydroelectric dam with a capacity of 3,840 MW. Like many other wood processing facilities build by Soviet officials, this old pulp mill is outdated and inefficient but immense and functional.

A number of modernization projects within the Russian pulp sector are currently underway. A major initiative is the “larch project,” which aims to improve the efficiency of kraft pulping larch, a dominant tree species in many parts of Siberia and RFE. A variety of equally significant initiatives are targeting the waste streams of old mills. One article estimates that about 25% of the investments made over the next decade will be spent on reducing the environmental impact of pulp mills.²² The involvement of North American as well as European pulp and paper companies in this sector is encouraging, as they have demonstrated records of ongoing research and development.

The Food and Agriculture Organization believes that pulp capacity will increase about 50% by 2030 to 3.35 million tonnes, 2.9 million tonnes of which will be in Siberia.²³ The same group projects that paper capacity will increase 140% by 2030 to 18.8 million tonnes, with 2.8 million tonnes in Siberia. Much of this development will rely on the use of low-grade wood from overlooked stands and undesirable species. The major driver of this expansion in capacity will be a three-fold increase in the consumption of pulp and paper products by Russians over the next two decades.

Closing thoughts

If the sawmilling sector of Siberia is a predictor of things to come for other wood processing businesses in eastern Russia, the planned facilities will be world-class and extremely efficient. They will use European or North American processing systems and enjoy very low processing costs. As mentioned in all of the previous chapters, it is fair to assume that the competitiveness of the wood processing industry in Siberia and RFE will depend on the cost of producing and delivering timber to the mills. Whether these costs rise indefinitely or are controlled will depend on the forest management methods employed by foresters in eastern Russia.

22 Paper Industry Magazine June 2010

23 FAO 2012

Chapter 10

Investment Trends



The ongoing competitiveness of the forestry sector of eastern Russia requires massive investments in infrastructure, processing capacity, and harvesting and milling technologies. Much of the investment is foreign due to high capital costs in Russia and a general lack of interest in forestry opportunities by Russian investors. This chapter explains government initiatives to stimulate foreign as well as domestic investment in the forest-based industries of Siberia and RFE. It also accounts for some of the major investments in eastern Russia made over the last few years by North American and European companies.

Impact of log export tariffs

Investment trends in Russia have been so intensely impacted by the introduction of the log export tariff of 2007 that the levy warrants lengthy consideration at the beginning of this chapter. It was introduced in 2007 to make exporting unprocessed logs to China or Scandinavia prohibitive, so that forestry companies and foreign investors would invest in processing facilities on the Russian side of the border. The tariff started at 6.5% in February 2007 and was slated to increase to 25% by April 2008 then to 80% in January 2009. It was bad timing: the onset of the global economic downturn in 2008 forced officials to keep the tax around 25%.

In terms of reducing log exports, the tariff certainly worked. Exports of unprocessed timber fell from 51 million m³ (26% of harvested timber) in

2006 to less than 22 million m³ (15% of harvested timber) in 2009.¹ Exports were 19 million m³ in 2011, but probably fell to 15 million m³ during 2012.² Overall timber production fell from about 200 million m³ in 2007 to 185 million m³ in 2009. Over the same period, Russia went from supplying 40% of global sawlogs to 28%. Thanks to the tariff, 2009 is the second year in post-Soviet history (the first was 1993) when the export value of processed wood exceeded the export value of logs. This is probably the only sense in which the tariff worked.

The tariff backfired because many logging businesses shut down after its introduction. Instead of log prices falling across Russia, which would have spurred the development of domestic wood processing businesses, log prices increased 24% between 2009 and 2012.³ Many wood processing companies also relied on log exports for cash flow before 2007, so the tariff cut out a profitable part of their businesses and forced them to hold back on modernization programs.⁴ In the words of the Finnish Forest Research Institute, “[The tariff] not only wiped out several harvesting companies and demolished established procurement chains, but it also weakened the whole structure of wood procurement in Russia.”

The tariff also backfired in the sense that it may have discouraged foreign investors, who were intimidated by such heavy-handed government interference in a lucrative sector. Furthermore, the tariff did everything to punish log exporters but little to help log processors, because it did not address more pressing fundamental problems like burdensome bureaucracy, poor infrastructure, lack of affordable capital, and rampant corruption.⁵ In fairness to Russian policymakers, investment in the domestic forestry sector did slightly increase after the tariff was introduced. In 2009 and 2010, greenfield sawmills and sawmill modernization projects were announced to the tune of \$2.1 billion, amounting to additional capacity of 4.8 million m³ by 2014.⁶

When Russia ascended to the World Trade Organization in August 2012, the log export tariff was revisited. Tariffs will remain between 25%

1 Teplyakov 2011

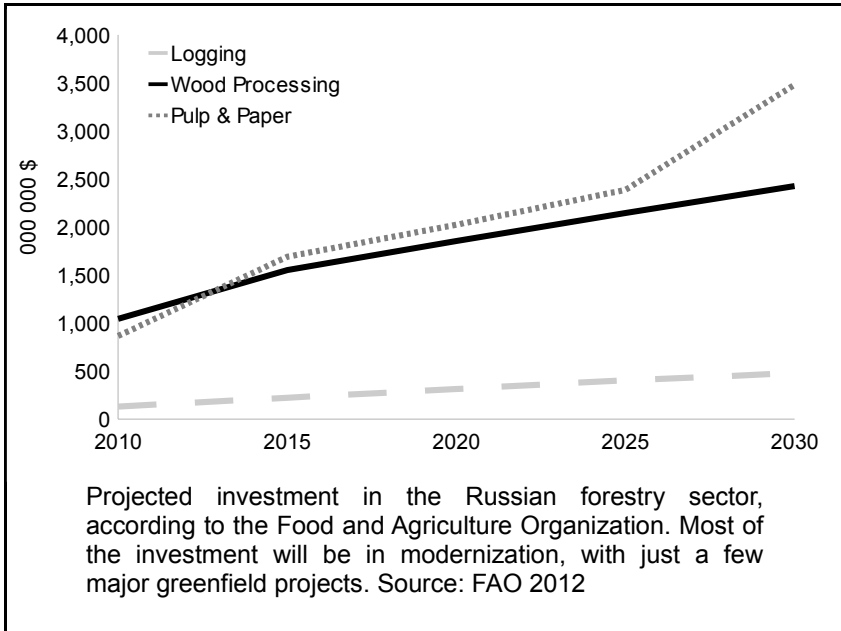
2 WhatWood Analytics 2011

3 WRQ 2012

4 Valkky Viitanen, and Ollonqvist 2011

5 Makela 2009; Eastin and Turner 2009

6 International Forest Industries 07 March 2011



and 15%, depending on species and log size. An export quota for each species and destination will be allocated to sawmills in each region. Logs exported in excess of the quota will be subject to a far higher tariffs. Mill owners agree that exporting beyond the quota is “suicidal” and uneconomical due to the tariff. Every mill appears to have a different deal with the government yet few sawmill owners or managers appear to understand how the new tariff/quota system will work.

Incoming foreign investment

To encourage foreign investment, in 2007 the federal government introduced the Priority Investor Program, also known as Government Act 419. The program grants investors benefits like free stumpage and tax breaks on projects worth more than \$10 million. By late-2011, the program attracted \$12 billion for almost 100 projects, with more than 30% of the projects located in Siberia.⁷ Through the Priority Investor Program and subsequent programs of the same nature, the Food and Agriculture

⁷ Valkky, Viitanen, and Ollonqvist 2011

Organization expects foreign investment in Russia to increase four-fold over the next two decades, to more than \$2 billion annually.⁸

The Russian forestry sector needs foreign investors because its machinery is outdated and domestic capital is expensive. Some researchers have found that Russian timber processors need \$3 billion annually to remain competitive, but investment stalled around \$600 million in the early-2000s.⁹ Now it is picking up, and rapidly. There is lots of room for foreign investment to take on a greater role. It currently accounts for just 5% of investment in the Russian forestry sector, whereas more than 80% is invested by Russian forestry companies themselves.

Most of the investment dollars coming into the Russian forestry sector are European, and especially Scandinavian. The most active companies have been Swedish (Swedwood and Ikea), Finnish (Botnia, Stora Enso, and UPM), and Austrian (Mayr-Melnhof), with investments concentrated in northwestern Russia.¹⁰ For example, investments in the Russian forestry sector by Swedes between 1991 and 2011 amounted to \$2 billion, and Finnish investments amounted to \$1 billion.

Along the same lines, European investments may account for more than half of foreign investment as a whole in the Russian forestry sector. German money accounts for 13% of all foreign investment in Russia.¹¹ Many of these European investors have turned to Russian forests because timberland is too expensive in their home countries.¹²

Although Chinese investment accounts for less than 1% of total foreign investment in Russia, the country is active in establishing small businesses throughout Siberia and RFE.¹³ More than 80% of Chinese investment has been in eastern Russia. There are hundreds, if not thousands, of Chinese sawmills and timber procurement firms operating in the region.¹⁴ Most of these firms employ less than 15 workers and trade largely in illegally harvested timber. There are dozens of Chinese-owned sawmills and related businesses opening each year in Siberia and RFE.

8 FAO 2012

9 Tysiachniouk 2004

10 Valkky, Viitanen, and Ollonqvist 2011

11 Romanova 2012

12 Weaver 24 April 2012

13 Romanova 2012

14 Pereltsvaig 16 April 2012

Generally speaking, Chinese investors are eager to pursue opportunities in eastern Russia because it is proximate and the forests of China nowadays are mostly protected or exhausted.¹⁵ Chinese investment in Russian forestry took on a new image in late-2012, however, when the China Investment Corporation joined the Russia Direct Investment Fund and pledged to invest \$2 billion over the next few years. Its first investments will be directed at forestry projects in Siberia and RFE.¹⁶ This will be the largest Chinese investment in Russian forestry to date.

Following the lead of a few successful pioneers, North American companies are starting to get involved in the Russian forestry sector in a serious way. Over the past five years, International Paper has taken a 50% stake in Ilim Group for \$400 million, while Denham Capital of the U.S. and TriNorth Capital of Canada have both made significant investments in Russian forestry.¹⁷ Many other less publicized investments of this nature have been made as well.

There are rumours that other major North American forestry companies are eyeing assets and joint venture opportunities in eastern Russia, but few official announcements have been made. The chance to manage enormous swathes of virgin forest in Siberia and RFE is surely appealing. But with the Canadian and American forestry sectors warming alongside the recovery of the U.S. housing market, some North American companies may prefer to focus on opportunities nearer to home.

Despite the influx of foreign capital, many investors remain wary of the business climate in Russia. Some investors remember the early-1990s, when a group of North American investors were stood up by Russian thugs. One executive's family members were kidnapped during a business trip in Moscow. Others are simply spooked by the fact that “rule of law” is interpreted as “those who rule make the law” in Russia.¹⁸ There are many confirmed stories of officials and oligarchs grabbing assets from competitors – sometimes with the use of mercenaries. Many more economic issues, which were discussed in Chapter 5, deter other investors.

Nonetheless, foreign investors with a healthy appetite for risk are

15 Rousseau 28 June 2012

16 Fedorova 07 September 2012

17 Weaver 24 April 2012

18 Roberts, Carreau, and Lethbridge 2007

seeing opportunities in Russia and pursuing them. It seems that their investment strategy is similar to the one employed by oligarchs during the privatization of state assets in the early-1990s: buy lots of assets for very cheap while the national economy is frazzled and disorganized, and sell the assets in the future at a higher price. “I would not be surprised if in the future [our forest license purchase] looks like a steal,” wrote the Managing Director of a fund heavily invested in a Siberian forestry company in its 2011 annual report. It seems that the investments are a land-grab made in the hopes that the government will privatize the forests within the next few years, thereby considerably enhancing portfolio values.

Government investment

The federal government is eager to facilitate investment in the eastern Russian forestry sector for several reasons. The primary consideration is the need for jobs throughout Siberia and RFE. In many towns throughout these regions, timber harvesting and processing is the only local industry. An analyst with GeoCurrents said, “Without modern sawmills, people will abandon the towns of the forest zones, exacerbating the depopulation of RFE [and Siberia].”¹⁹ Officials also know greater revenue will be collected from an advanced wood processing sector.²⁰

With this in mind, various levels of the Russian government have made a plethora of commitments to invest in much-needed infrastructure, housing, industrial complexes, and other projects. For example, officials have recognized that the country's road network ought to be four times its current size of about 1.6 million km.²¹ Local and national officials have pledged to build thousands of kilometres each year, with development focused in Siberia and RFE. There are also commitments to build bridges, railways, and other transportation infrastructure.

A common complaint is that plenty of money has been set aside by the government but very little is actually being used to build roads and other infrastructure.²² This is a typical situation in Russia. It indicates yet again that the country often lacks the social and institutional infrastructure

19 Pereltsvaig 16 April 2012

20 Northway and others 2009

21 PwC 2006

22 Thornton 2012

needed to support a truly modern forestry sector.

In a few cases, the federal government has partnered with private investors to build “show-case” forestry complexes that demonstrate how efficient and lucrative the forestry sectors of Siberia and RFE can be. Many of these complexes are being built on a biblical scale. KrasLesInvest in Boguchany is an example of a partnership between the federal government, the local government, and a major Russian bank. The total construction cost will be about \$500 million. It will be the largest sawmill in Russia when it is completed, with processing capacity of 800,000 m³, as well as the most advanced, with only ten men operating the entire complex.

Like most government projects in Russia, KrasLesInvest is an impressive operation. But it is also proving to be a boondoggle: more than \$100 million was spent on “studies” before ground was ever broken. Nonetheless, it has demonstrated the federal government's commitment to supporting the development of wood processing capacity in eastern Russia.

In addition to directly investing in the sector, the federal government of Russia has attempted to encourage investment in its forestry industries with a variety of policy mechanisms. These include tariffs and taxes. While it imposes a hefty levy on unprocessed timber, tariffs on the export of 25 major processed wood products like plywood and paper have been reduced since 2007. Duties of around 30% are imposed on the import of several value-added wood products like wooden windows and doors.²³ By protecting its wood processing industry from European and Asian firms, the government hopes to attract foreign and domestic investors.

There is talk of developing “special economic zones” throughout southern Siberia and RFE but especially along the border with China. Foreign investors would be granted special privileges like tax-exempt status if their operations were based in these zones. The government has also suggested that it will help fund amenities that attract foreign investors, like decent hotels, airports, and banks – conveniences that are absent from many eastern Russian towns.²⁴ It may sound petty, but few investors or executives are keen to invest millions of dollars in towns where it is impossible to take a hot shower with clean water.

23 Valkky, Viitanen, and Ollonqvist 2011

24 The Siberian Times 17 October 2012

New products and innovation

Much of investment coming into the Russian forestry sector, and especially the wood processing businesses of Siberia and RFE, will be used to modernize and expand existing mills. Many investors believe that it is better to stick to conventional products in a country like Russia, which has such a tumultuous business climate and lacks sophisticated markets for a diversity of forest products. Despite this common attitude, there are a handful of companies and investors exploring opportunities with new, innovative products. Their presence in Siberia and RFE today is small but their potential is great.

An enormous opportunity in the forestry sector of eastern Russia is the utilization of undesirable species. In Chapter 9, for example, it was mentioned that Ilim Group is currently experimenting with the kraft pulping of larch, a species that is not used by pulp mills in Russia. When technicians perfect larch processing, it will be a boon for the company.

There is especially huge potential for birch and poplar lumber. Currently these trees – which account for 15% of the standing timber in virgin stands – are felled during harvesting operations but usually left in the forest to rot, despite being decent sawlogs.²⁵ When asked why this is the case, the chairman of a forestry company in southern Siberia said, “There is no hardwood culture in Russia. We don’t have respect for hardwood.” Both of these types of trees make good lumber, and the species is slowly increasing its presence in eastern Russia due to a lack of post-harvest planting.²⁶ Creating markets for birch and poplar products in Russia and abroad will require active marketing by sawmills.

Another opportunity for innovative forest products companies in eastern Russia is panelling and pre-fabricated homes. There are a few companies engaged in this business in Siberia, such as KLM-Art in Krasnoyarsk and LesoBalt in Bratsk. They purchased European moulder-router sets that mill cheap local lumber (worth about \$250/m³) and produce high-grade Panabode-style timbers that sell for over \$1,000/m³. Their markets are mostly within Russia but the products are also popular in

25 Teplyakov 2011

26 Canby 15 August 2006

France and Germany. Although these innovative companies are small, producing less than 5,000 m³ per month, their profit margins are a multiple of the producers of conventional wood products.

Perhaps the most lucrative up-and-coming product within the eastern Russian forestry sector is wood pellets for energy generation. Western Europe already imports immense volumes of wood pellets from Canada each year, so there is a ready market to the west. The opening of the Northeast Passage would make it inexpensive to ship pellets from Siberia to Sweden. There are also huge markets for wood pellets developing in China, Japan, and South Korea. Thus, it is anticipated that current production of wood pellets in Russia, which is about 800,000 tonnes, will likely double by 2015 and reach 4 million tonnes by 2020.²⁷

Closing thoughts

Every level of government in Russia appears eager to welcome investors who will develop domestic industries and employ local workers. Officials are apparently trying to compensate for the sketchy reputation of the Russian economy by introducing programs that reward large investors. They are, for the most part, doing a good job. The significance of the sums being invested in eastern Russia indicates that investors globally see opportunities to build successful businesses in Siberia and RFE.

A central thesis of this book is that the future of the forestry sector in eastern Russia is uncertain due to a finite resource and inherently high production costs. But it is worth asking a simple question: Would so many investors be so excited about forestry opportunities in Siberia if the future was grim? Perhaps their interpretation of the facts is more poignant, leaving them with a positive disposition to the long-term viability of wood products businesses in eastern Russia. Only time will tell whether or not the thesis of this book is too negative – and more importantly, whether these bullish investors are being thrifty and brave or foolhardy and ruinous.

27 FAO 2012

Chapter 11

Sawlogs & Roundwood



The objective of this book so far has been to offer a general description of the conditions faced by foresters, sawyers, and investors in Siberia and RFE. The previous chapters have explained the social, political, and economic conditions of Russia, and reviewed the operational methods of major forestry companies. The picture painted is cause for optimism as well as worry: forestry companies in Siberia and RFE have an unmatched resource and nearly unlimited opportunities, but face severe challenges. With this background in mind, this chapter offers a detailed description of the business of producing sawlogs and roundwood in eastern Russia.

Volumes and values

Production of industrial roundwood in Russia is about 175 million m³, with 32 million m³ produced in Siberia and 14 million m³ produced in RFE.¹ A bit less than half of the AAC is harvested in eastern Russia. The country produces 90 million m³ of softwood sawlogs each year.² Hardwood sawlog production is less significant than softwood production in Siberia and RFE, accounting for 22% of production. The focus of this chapter will be entirely on the softwood log market. It is important to note that whereas industrial roundwood refers to logs suitable for any application including fuel and pulp, sawlogs are high-quality logs used for lumber production.

Species vary between regions but in eastern Russia about 75% of sawlogs are pine, 10% are larch, and 10% are spruce and fir. The

1 FAO STAT 2012; FAO 2012

2 METLA 2012

remaining 5% is split between birch and poplar. RFE also produces some valuable hardwoods like oak and ash, which are ruthlessly high-graded and account for 15% of exports. Softwood sawlogs can be purchased in central Siberia and RFE for approximately \$60/m³ but they cost about \$120/m³ along the Chinese border due to supply constraints and greater demand. The average value of softwood timber exports from Russia in 2011 was \$88/m³. Due to their rarity, the hardwoods produced in RFE can be worth ten times more than the softwood produced in eastern Russia.

The minimum diameter accepted for sawlogs at most sawmills is about 12 cm and the maximum diameter is about 50 cm. The average diameter of softwood sawlogs across eastern Russia is about 24 cm with an average length of 4 m. This indicates that the average log has a gross volume of 0.22 m³, with a scale of 19 board feet according to the Doyle Log Rule and 30 board feet according to Scribner's Log Rule. The quality of the logs transported to sawmills is fairly high with very little rot or defect. Standing in a mill yard, it is clear that the virgin forests of eastern Russia produce desirable timber when they are harvested.

It is difficult to project how sawlog characteristics will change in the future. On the one hand, the average size of sawlogs will fall because harvesting operations will target less productive stands and more northern sites. The difference in the size of timber harvested in 1956 versus 2010 is already apparent.³ On the other hand, as transportation distances increase it will be necessary to be choosier about which logs to transport all the way back to the sawmill. Smaller and more defective timber will be left in the forest. In any case, regardless of what happens to sawlog quality, there is no doubt that delivered sawlog costs will increase throughout eastern Russia as the best and most accessible stands are depleted.

Most significant markets

The domestic market for softwood sawlogs in Russia is large. About 50 million m³ of softwood sawlogs are consumed within Russia while 19 million m³ were exported in 2011.⁴ It is expected that about 15 million m³ will be exported in 2011 due to reduced orders from China, Finland, and

³ FAO 2012

⁴ FAO 2012; METLA 2012

Japan.⁵ Confusion over the new export regulations, which were introduced upon Russia's ascension to the World Trade Organization, also played a role in reduced log exports in 2012.

Russian wood exports account for 28% of the world softwood log market, although before the introduction of the log export tariff in 2007 – which was discussed in Chapter 10 – it accounted for almost half.⁶ With so much timber exported as logs or rough sawnwood, about 90% of Russian wood exports are considered “low added value” compared to just 7% in Western Europe.⁷ This is slowly changing as more timber is processed into finished products within Russia.

North Africa, the Middle East, and the Commonwealth of Independent States (CIS) are not significant purchasers of sawlogs or industrial roundwood from Russia. Altogether the countries in these regions account for just 4% of log exports. At this time, they purchase mostly lumber and other processed wood products. Their significance in this regard is discussed in Chapter 12. It is unlikely that North Africa, the Middle East, or the CIS countries will become purchasers of Russian sawlogs or industrial roundwood in the foreseeable future, mostly due to the logistical difficulties of transporting logs to these countries.

Europe is a significant consumer of Russian logs. Sawmills in Europe have some of the lowest processing costs in the world, which means they can afford to purchase high-quality raw timber from Russia. European countries like Finland, Sweden, Estonia, and Norway (among others) purchased 40% of sawlog exports in 2000, or 8.9 million m³. Currently their share is still significant but much smaller at 11% of Russian exports, or 1.9 million m³. Scandinavian countries in particular seek out large diameter and long sawlogs from Russian harvesters because such logs are no longer available domestically.⁸ About 80% of the non-coniferous roundwood, like birch and poplar sawlogs, is exported to Finland.

The Russian-European log trade has all but collapsed since the introduction of the log export tariff in 2007: log exports to Europe fell from 6.4 million m³ in 2006 to only 600,000 m³ in 2012. The significance of this

5 WhatWood Analytics 2012

6 Teplyakov 2012

7 Thomas 2011

8 Valkky, Viitanen, and Ollonqvist 2011

trade to Siberia and RFE is limited, as the vast majority of exports to these countries originate in northwestern Russia. It is not anticipated that Europe will become a major consumer of eastern Russian logs in the foreseeable future.

The Chinese market for industrial roundwood and sawlogs is the most important for Siberia and RFE. This business grew quickly before the imposition of the log export tariff in 2007. In 1995, only 13.5% of Chinese log imports came from Russia but by 2006 more than 70% of Chinese log imports were of Russian origin.⁹ About 35% of Chinese log imports come from Russia today. As discussed in the Appendix, the remainder comes from North America and New Zealand.

Export volumes have dropped from over 25 million m³ in 2007 to less than 15 million m³ in 2011. China's share of Russian roundwood exports increased, however, from 35% in 2001 to 77% in 2010. It appears that New Zealand, Canada, and the U.S. have filled the void, increasing their combined exports to China from just 1.7 million m³ in 2007 to 18.1 million m³ in 2011.¹⁰ New Zealand's share will likely continue to increase, but exports from Canada will probably fall as the U.S. housing market recovers and some mills in British Columbia resume operating.

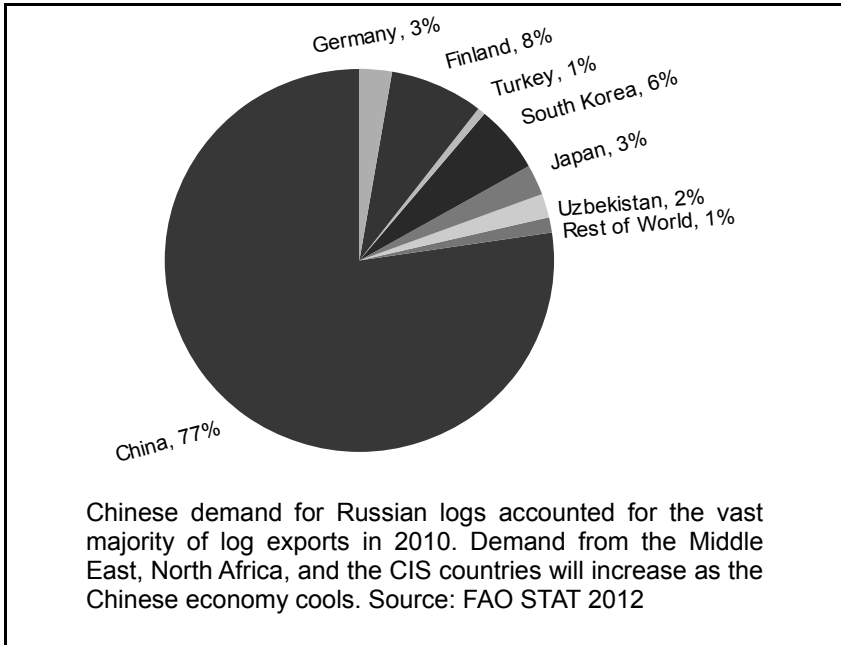
Most Russian logs are imported to China via rail but some logs from RFE are transported by ship. Anecdotal evidence shows that the logs transported by rail are high-quality and average size, whereas the ones transported by ship seem to be low-quality and small. The reason for this difference is not clear. In any case, Chinese demand for Russian logs has grown consistently and will remain strong in the future, even if the Chinese economy slows significantly over the course of the next few years. Chinese log imports from Russia in 2012, however, were 21% less than imports in 2011.¹¹ The basis for the trade is low processing costs in China, which makes it more economical to buy Russian logs than Russian lumber.

The rest of Asia is also a significant consumer of eastern Russian timber. Japan is important, as it buys about 3% of coniferous sawlog exports (0.4 million m³) from Russia. Non-Chinese Asian countries like

9 Eastin and Turner 2009

10 METLA 2012

11 WRQ 15 October 2012

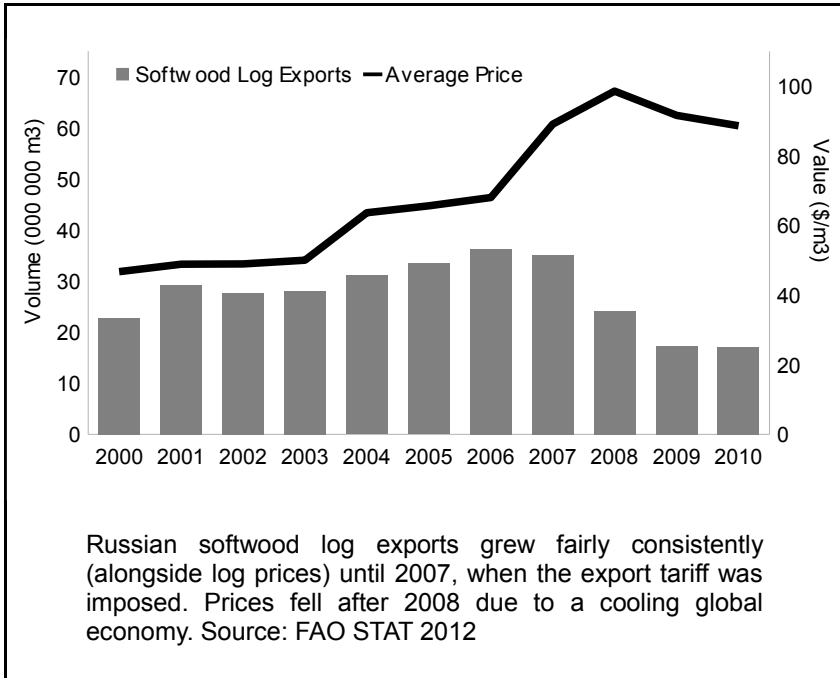


Japan and Korea tend to be interested only the top-10% of sawlogs in terms of quality. Unlike the Chinese, they reject low-quality wood. As a result, the average price of logs exported to Japan in 2011 was \$117/m³ compared to \$98/m³ in China. Russia used to supply half of the sawlogs imported by Japan but now provides just 12%, due to the log export tariff of 2007. Demand from the Asian countries other than China is expected to grow over the coming decade, especially as the Japanese housing market rebounds from the tsunami of 2011.

Production and delivery costs

It is worth paying attention to the production and delivery cost structure of logs in eastern Russia. Logs typically make up 70% of the variable cost of producing lumber, 65% of the variable cost of producing plywood, and 50% of the variable cost of producing pulp.¹² Furthermore, the cost felling and transporting logs in Siberia and RFE are approximately

¹² Makela 2009



double the cost in northwestern Russia due to poor infrastructure and challenging terrain.¹³ These costs, which were discussed briefly in Chapter 8, will be reviewed in greater detail here.

The delivered cost of logs at the sawmill vary between \$30/m³ and \$70/m³. (Please note that all harvesting and transport costs are reported on a log basis). The huge range is due to varying transportation distances and methods in each region. An average delivered log cost of \$50/m³ is commonly cited, however. Logging typically accounts for \$30/m³ and transportation accounts for \$20/m³. This cost is rising rapidly due to increasing transportation distances.

Based on estimates by the Finnish Forest Research Institute and International Wood Markets Group, it seems that the delivered cost of logs has increased more than 15% since 2010 and doubled since 2004.¹⁴ This indicates an annual increase of approximately 8% – a rate that far exceeds

13 Thornton 2011

14 METLA 2012

the appreciation of forest products in global markets.

About 60% of the cost of transporting logs to sawmills in eastern Russia is variable, indicating that forestry companies have huge exposure to fuel expenses as well as road construction costs. Fuel costs in Siberia have risen steadily over the last few years, and by about 5% in 2011 alone. Transporting timber via river is inexpensive, or about \$3/m³ for the average distance of 150 km. The utility of river transportation is shrinking as forests along the waterways are being depleted. Loggers venture an average of 65 km from the river bank into the forest to access timber. Transporting timber via road is costlier, at about \$20/m³ for the average distance of 120 km.

While the average transportation cost today is about \$20/m³, basic calculations with logical assumptions (e.g. companies must travel 10 km further for timber each year) indicate that this will double in 12 years and triple in about two decades. These calculations do not even account for the capital cost of building roads, which is considerable with a road building cost of at least \$20,000/km. The annual increase in hauling costs will occur simply because forestry companies must venture further afield every year to access pristine forests.

Most logs in eastern Russia are exported by rail. The cost of shipping logs to China or Europe is considerable. It is also inconvenient. It is difficult to secure railway cars to move logs within Russia; “unofficial payments” are reportedly required to convince railway officials to ship a firm's timber. There are just a few major rail companies in which the government has significant stakes. Some forestry companies own or lease their own railway cars, but they still contract out the hauling of timber.

To send logs from Boguchany in central Siberia to Manzhouli on the Chinese border costs about 40/m³, for a delivered log cost of \$90/m³. The cost of sending logs to Kaliningrad on the Baltic Coast is \$60/m³, for a delivered log cost of \$110/m³. Transporting the logs from the Chinese border to a major consumption centre like Shanghai costs an additional \$50/m³, for a delivered log cost of \$140/m³. The price of exported logs (around \$170/m³ in Manzhouli in September 2012 and \$150/m³ in Shanghai in June 2012) also usually include a charge by the importers of \$8/m³, applicable tariffs and duties, and taxes of 13%.

General competitiveness

Comparing the production and export of sawlogs and roundwood by the forestry sectors of eastern Russia and western Canada can indicate the relative competitiveness of firms in each country. British Columbia produces about 70 million m³ of roundwood annually by harvesting 200,000 ha.¹⁵ This indicates per-hectare productivity of 350 m³/ha, almost double the rate in Russia. Forest rotations in British Columbia vary between 60 and 120 years on the interior and coastal regions, respectively, with an average of 90 years. The province cuts within its AAC, which means that transportation infrastructure can be re-used from time to time.

A big caveat must be issues at the outset of this comparison between the forestry sectors of eastern Russia and British Columbia. Although the western Canadian forestry sector has historically harvested within the sustainable growth of its forests, the Mountain Pine Beetle epidemic has killed enough trees to supply three decades' worth of single-family housing in the U.S.¹⁶ The long-term impact on wood supply and therefore log production costs in western Canada will be significant.

In any case, forestry companies in British Columbia can produce more timber on less land with far greater frequency than Russian firms. This is especially poignant considering that foresters in Siberia and RFE will never return to the forests they are harvesting today. Thus, in terms of long-term forest productivity, British Columbia is more competitive.

The quality of timber harvested in British Columbia and eastern Russia is comparable. Red pine and larch logs produced in Siberia and RFE is among the best in the world due to tight growth rings and good log form, after the rotten butts have been removed.¹⁷ Pine and fir sawlogs produced in British Columbia and shipped to Shanghai appeared to be of higher quality and slightly larger than the Russian timber. This is partially because the best Siberian logs were sent to Japan and Korea, but U.S. Forest Service surveys have found that British Columbia produces better, bigger timber on the whole.¹⁸ All things considered, neither western Canada nor eastern

15 Ministry of Forests 2012

16 Woodbridge 24 July 2012

17 Valkky, Viitanen, and Ollonqvist 2011

18 Spelter and Alderman 2005

Russia has a clear competitive advantage in terms of log quality.

Delivered log costs in most regions of British Columbia are \$60/m³, or 20% higher than in eastern Russia. The distribution between harvesting costs and transportation costs are comparable between the two regions, indicating that harvesting costs in British Columbia are about \$36/m³ and transportation costs are \$24/m³. This has been the case consistently since 2006.¹⁹ Delivered log costs in Canada are not rising rapidly.

The higher production and transportation costs in British Columbia can be attributed to more stringent environmental regulations, higher labour expenses, and challenging terrain. In the long run, however, delivered log costs in western Canada will be less than in eastern Russia because there is a notion of “rotation” in almost every region of North America. In other words, transportation costs won't rise indefinitely on this side of the Pacific Ocean, but they will in Siberia and RFE.

How much the Mountain Pine Beetle epidemic will drive up log costs in interior British Columbia, however, is not clear.²⁰ It is likely that 30% fewer logs will be available for export to China, where Canadian timber competes with Russian timber, after the last of the beetle-killed trees are salvaged around 2015.²¹ The shortage of timber in western North America will potentially drive up prices to such an extent that Canadian wood will be affordable only to U.S. buyers – where the housing market will hopefully be strong once again – leaving Russia and New Zealand as the major suppliers of logs to China. Nonetheless, comparing the competitiveness of Canadian and Russian wood is worthwhile because it reveals the relative strengths and weaknesses of each forestry sector.

The superior competitiveness of Canadian timber over Russian timber is clear with regards to export costs. Moving timber from Siberia to Manzhouli on the Chinese border costs the same as shipping timber from Vancouver to Shanghai, about \$40/m³. The total delivered log cost of Canadian timber in Shanghai is about \$100/m³, virtually the same as the total delivered log cost of Siberian timber in Manzhouli at \$90/m³. However, Manzhouli is a backwater border town on the northern edge of

19 METLA 2012

20 FAO 2011

21 Working Forest Staff 27 April 2012

Inner Mongolia, while Shanghai is a booming metropolis close to many of China's urban centres. Not surprisingly, log prices tend to be stronger more consistently in Shanghai than in Manzhouli.

Julia Thornton, an economist at the University of Washington, found that 52% of logging companies in Siberia and RFE are operating at a loss.²² This indicates that log pricing in Manzhouli and other Chinese border towns of \$90/m³ is not covering all the costs of timber growers. A review of the annual reports of some major public forestry companies in eastern Russia indicates that few are generating operating surpluses. The same, in fairness, has been said of the forestry sector in British Columbia, which has achieved only a 4% return on capital over the last two decades, less than the average cost of capital.²³

Closing thoughts

In summary, it appears that Canadian timber currently has an edge over Russian timber in terms of accessing the Chinese market. It costs almost the same amount of money to move Russian sawlogs to northern China as it does to move Canadian sawlogs to the urban metropolises in southern China. Admittedly, as previously mentioned, supply constraints in western Canada due to the Mountain Pine Beetle epidemic will probably affect delivered log costs in British Columbia. But the increase of these costs could be overshadowed by ballooning harvesting and especially transportation costs in eastern Russia. In conclusion, Canadian logs in China appear to be more competitive than timber from Siberia or RFE.

22 Thornton 2011

23 Woodbridge 24 July 2012

Chapter 12

Lumber & Sawnwood



The forestry sector of eastern Russia has depended on the production and marketing of logs for almost twenty years. Export tariffs on unprocessed wood, government incentives for milling investments, and a variety of other factors are changing this situation. The future of many forestry companies in Siberia and RFE will be founded on the production and export of value added wood products, with lumber and sawnwood at the forefront. This chapter offers a detailed description of the business of producing lumber and sawnwood in eastern Russia, with a focus on the global competitiveness of lumber exports to China.

Volumes and values

Russia produces 29 million m³ of softwood sawnwood and lumber annually.¹ Around 35%, or 10 million m³, is consumed domestically while the rest is exported. Current sawnwood output is a fraction of what it was during the last decade of the U.S.S.R., when 80 million m³ was being produced each year. Lumber production is expected to grow fairly rapidly in the foreseeable future but it probably will not reach 1990 levels of more than 60 million m³.²

More than 90% of the sawnwood production in Russia is coniferous. Markets for hardwood lumber are insignificant and largely concentrated in RFE and northwestern Russia. Interestingly, hardwood lumber production

1 FAO STAT 2012; METLA 2012

2 FAO 2012

was 13 million m³ in 1989 – five times greater than currently – because the Soviets created markets for its use.³ Lumber exports are 96% softwood and just 4% hardwood. It is very difficult to find an accurate breakdown of softwood lumber production by species, but it appears that pine accounts for 80% of sawnwood, with larch, spruce, and fir making up the rest. A few mills in Siberia focus on larch because it is popular for flooring, outdoor panelling, and furniture.

The quality of lumber produced in Russia has been low by European and even North American standards. As a result, prices for Russian sawnwood has traditionally been 45% lower than prices for Scandinavian lumber. This is changing as eastern Russian sawmills modernize and focus on adding value to their products with kilns, planes, and moulders.⁴ The vast majority of lumber produced in modernized mills is kiln-dried; this adds value to the end-product. This has been confirmed by researchers at the Finnish Forest Research Institute.⁵

Russian sawnwood has been regarded as a low-grade bulk product for structural use in construction. It seems that this may still be the case in European and Chinese markets. However, in North African and Middle Eastern markets, the willingness to pay for Russian sawnwood has increased rapidly since 2006.”

Several other factors have resulted in Russian sawnwood producers being price takers rather than true competitors in global lumber markets.⁶ For example, the inability of sawmills to deliver products in a timely and efficient manner due to poor infrastructure and different railway gauges has affected the price paid for their products. Furthermore, like Canada, the competitiveness of Russian lumber depends on the value of rouble. When the rouble is weak, the competitiveness of Russian exports improves, allowing producers to accept lower prices in most foreign currencies.

The average value of softwood lumber exports from Russia in 2010 was \$151/m³.⁷ It appears that the most valuable timber was sent to Egypt (\$298/m³), Japan (\$306/m³), and Finland (\$347/m³). The least valuable lumber was sent to China (\$137/m³) and Uzbekistan (\$154/m³).⁸ Prices

3 Valkky, Viitanen, and Ollonqvist 2011

4 Mutanen and others 2005

5 Valkky, Viitanen, and Ollonqvist 2011

6 Mutanen and others 2005

7 FAO STAT 2012

8 Valkky, Viitanen, and Ollonqvist 2011

have fluctuated significantly since then and tend to vary depending on inventory levels and even the scheduling of holidays in importing countries. Average lumber prices in 2012 in China were between \$200/m³ and \$250/m³, depending on the port and time of year.⁹ Softwood lumber prices have climbed fairly steadily over the last decade: the average value of Russian exports in 2001 was just \$101/m³.

Such appreciation in the value of lumber will likely continue due to the simultaneous development of supply constraints around the world and increasing global demand. This plays into the Supercycle theory that foresees “peak lumber” occurring within the next decade. Rising lumber prices might be a saving grace for the forestry sector of Siberia and RFE, allowing loggers to venture further afield. Despite the ability to justify ongoing operations, most company's margins will remain slim due to resource depletion and skyrocketing harvesting and hauling costs.

Most significant markets

Consumption of softwood lumber is not very significant within Russia, with less than 35% of production or 10 million m³ being used domestically each year.¹⁰ This is a striking difference from the late-1980s, when more than 90% of the 90 million m³ of lumber produced each year was consumed within Russia.¹¹ A primary cause of the reduced softwood lumber consumption has been a decline in the wood-based home construction industry, which accounts for almost 70% of lumber consumption in Russia. While cement consumption grew 40% between 1999 and 2003, annual per capita consumption of lumber dropped from 0.4 m³ in 1990 to 0.07 m³ in 2001.¹²

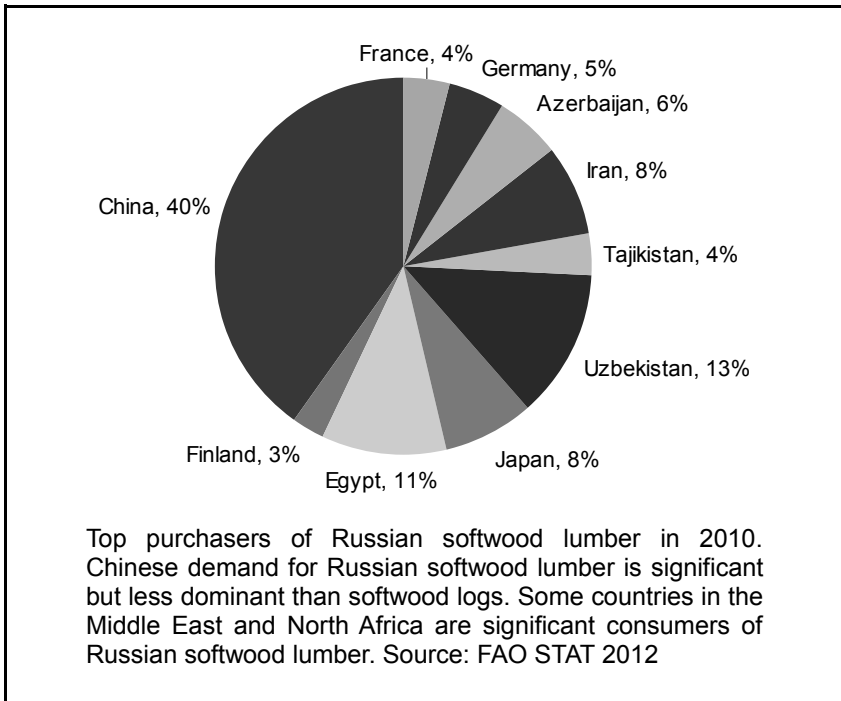
As domestic consumption of softwood lumber has stagnated, exports to the CIS countries have grown from 7% of Russian exports in 2000 to 20% in 2010. The countries in this group are generally treated as a dumping ground for off-size, off-grade, defective, low-quality lumber. Many sawmill owners say, “CIS nations like Uzbekistan will take anything. They don't care about quality – if the price is right.” Demand in the CIS

9 WRQ 15 October 2012

10 FAO 2012

11 Valkky, Viitanen, and Ollonqvist 2011

12 Mutanen and others 2005



countries is driven by a booming urban construction industry and a rapid decline in domestic logging over the last decade. In 2010, Russia exported 2.8 million m³ of lumber, or 20% of exports, to CIS countries.

Like the CIS countries, the Middle East and North Africa consume large volumes of low-grade Russian lumber. The Middle East imports 11% of Russian exports (1.6 million m³) and North Africa imports 9% (1.8 million m³). Egypt, which is a distributor of lumber for both regions, is a larger purchaser of Russian lumber than Germany, France, and Finland combined. Some of the countries in these regions, like Egypt and Jordan, demand high-quality lumber, while Iran and Iraq buy low-quality lumber. Unrest in Syria, Egypt, and the rest of the Middle East over the last two years has interrupted shipments to the region from time to time. Sawwood exporters say that business has tended to resume immediately after protests or revolutions quiet down.

The European Union imports about the same volume of lumber –

about 3 million m³ or 21% of exports – as the Middle East and North Africa. The amount sent to European countries has fallen over the last decade, from 60% of exports (4.3 million m³) in 2000. This is due to an oversupply of softwood lumber on the continent, a very slow construction sector, and discerning purchasers who want only high-quality sawnwood. In particular, Czech and German production has grown over the last five years. Sawnwood production costs in Europe are very low compared to Russia, and some of the major producers of lumber like Sweden are currently enjoying the benefits of discounted currencies relative to the Euro. Nonetheless, the Europeans paid around \$180/m³ for Russian lumber in 2010, significantly more than the average export price.

Exports to China account for about 31% of Russian coniferous sawnwood exports, or 4.3 million m³. This is almost twenty times the volume of lumber exported to China in 2001. Interestingly, the price of lumber imports to China increased 37% between 2001 and 2010, from \$100/m³ to \$137/m³, annualized appreciation of 3.5%. About 30% of Chinese softwood lumber imports are sourced from Russia, compared to 32% from Canada and 13% from the U.S.¹³ Apparently, Russian firms dislike exporting lumber to China because importers always pay about \$50/m³ less than the rest of the world, regardless of product quality. The general sentiment among sawmill managers in Siberia is that the Chinese market is slowing down but will remain strong over the next few years.

Other countries in Asia receive an additional 8% of Russian lumber exports. Japan is the largest of these buyers, importing about 0.8 million m³ annually. The average price of sawnwood sent to Japan (\$306/m³) is double the price of the sawnwood being sent to China, because the Japanese demand the best lumber and are willing to pay for it.¹⁴ To service this market, some Russian forestry companies are retooling their sawmills to produce specific high-quality grades of lumber like tariuku, which are used in the construction of traditional houses in Japan. Japanese demand for Russian lumber is expected to grow significantly over the next few years as the housing sector rebuilds homes destroyed during the tsunami of 2011.

An obvious but noteworthy trend with Russian softwood lumber

13 METLA 2012

14 Teplyakov 2011

exports over the last decade has been a concentration of buyers. In 2001, the five biggest customers accounted for 47% of Russian lumber exports. In 2006, they accounted for less than 40%. In 2010, however, the top-five consumers of Russian lumber accounted for 62% of exports. This has been largely driven by the emergence of China as the natural and per-eminent buyer of Russian sawnwood. The volume of lumber exported to every top-10 buyer other than China declined between 2001 and 2010. It seems likely that this will hinder the long-term development of the Russian forestry sector: having a large customer next door is a good thing, but China's rate of economic growth (and therefore wood imports) is slowing.

Production and delivery costs

Production costs of lumber in eastern Russia are fairly high by Western European and Asian standards, which is why Russia is currently a more competitive exporter of logs than sawnwood. The most efficient sawmills in Siberia can produce lumber for about \$25/m³. (Please note that all sawmilling costs are reported on a lumber basis). These mills use German, Austrian, and Finnish equipment. Eastern Russian mills that have at least partially implemented modernization programs experience processing costs between \$35/m³ and \$50/m³ on a lumber basis, excluding log costs. However, mills that have not modernized endure costs around \$80/m³, according to Siberian sawyers and their consultants.¹⁵

Based on these figures, it appears that by modernizing equipment and processes, a sawmill in Siberia or RFE can cut its costs by 40% or more. This is a testament to the inefficiency of some of the large Soviet-built sawmills. Managers of modernized mills in Siberia said that they anticipate being able to reduce sawmilling costs in most facilities by an additional 30% over the coming decade, to below \$30/m³. It is their hope that such achievements will compensate for rapidly rising sawlog harvesting and transportation costs.

Lumber recovery rates inside modernized sawmills in Siberia and RFE are consistently high, around 43% of inputs. This means that a sawmill will produce 43 m³ of lumber by processing 100 m³ of sawlogs.

15 METLA 2012

Some of the best sawmills, using European sawmill systems, boast recovery rates of 50%. Practically speaking, this is about as good as it gets when companies are focused on volume production.

It is interesting that note that the Russian sawmilling industry is sandwiched between some of the lowest-cost sawmilling regions in the world. To the west, central European and Scandinavian sawmills have processing costs around \$30/m³ with recovery rates around 50%. To the east, Chinese sawmills have processing costs below \$20/m³ with recovery rates over 60%. Needless to say, the low sawmilling costs in these regions are tempered by other factors: the Europeans are burdened with high sawlog costs, while the Chinese are dependant on cheap labour and also endure high sawlog costs.

Delivered log costs in eastern Russia, which were discussed in Chapter 11, are approximately \$50/m³ on a log basis, resulting in lumber basis costs of \$120/m³. If processing the logs costs \$40/m³ on a lumber basis, the total production cost of lumber is \$160/m³ at the mill gate. This is high by European as well as Chinese standards.

Moving the lumber from the sawmills in central Siberia to markets in China, the CIS countries, or elsewhere is very expensive. This is due to poor infrastructure and a chronic lack of transportation capacity like railway cars. To transport lumber from Siberia to Manzhouli on the Chinese border costs between \$40/m³ and \$60/m³, depending on the location of the sawmill. This means that the cost of Russian lumber delivered to Manzhouli is \$210/m³. To ship the lumber further south to Shanghai costs an additional \$50/m³, for a delivered cost of \$260/m³. This is greater than the cost of purchasing Canadian-milled or Chinese-milled lumber in central or southern China.

General competitiveness

Canada, which exports about 24 million m³ of sawnwood annually, is a slightly larger distributor of lumber than Russia.¹⁶ There are more similarities than differences between the two countries, however. Both have softwood lumber as their most important forest-related export product.

16 Valkky, Viitanen, and Ollonqvist 2011

Lumber exporters in both countries are heavily impacted by the value of their currency and the state of the Chinese economy. Russia and Canada have also come to depend on the Chinese economy as a major consumer of softwood lumber: exports have grown in tandem since 1997, with Russian lumber exports to China growing faster since 2007.¹⁷

There is a noticeable difference in the quality (and thus the value) of softwood lumber produced by Russian and Canadian sawmills.¹⁸ As previously mentioned, Russian lumber is known throughout the world as a bulk, low-grade product, whereas Canadian lumber is known as a high-quality commodity. This has been reflected in the value of their exports to China, by far the largest importer of both Russian and Canadian sawnwood. Average prices since 1997 have been \$70/m³ lower for Russian lumber than for Canadian lumber. This is changing as the quality of Russian lumber improves. In 2010, for example, the average price for Canadian softwood lumber in China was \$170/m³ versus \$137/m³ for Russian lumber.

Lumber production costs in Canada and Russia are comparable, but not equal. Logs delivered to the sawmill cost more in Canada than in Russia – between \$55/m³ (interior British Columbia) and \$60/m³ (coastal British Columbia) versus \$50/m³ in Siberia on a log basis.¹⁹ This cost advantage is based on the disregard for environmental stewardship in eastern Russia, among other factors. It will probably be short-lived as log hauling distances inflate over the next decade.

Sawmilling costs in Russia and Canada are also similar. The average cost of producing lumber in a western Canadian sawmill is comparable to an old-fashioned Russian sawmill, about \$80/m³ on a lumber basis. The best Canadian mills and the most modern Russian mills both have processing costs between \$30/m³ and \$40/m³.²⁰ This is indicative of a need to modernize sawmills in Canada as well as Russia.

In the context of supplying softwood lumber to China, forestry companies in Canada enjoy an unquestionable advantage because of favourable transportation logistics. Instead of moving wood across central Asia by decrepit rail like most Russian firms, Canadian companies can

17 FAO STAT 2012

18 WRQ 15 October 2012

19 Burdikin 2012; Schuler 2003

20 METLA 2012

float the wood across the Pacific Ocean. It only costs between \$40/m³ and \$60/m³ to move lumber from Vancouver to Shanghai. At the ports in that city, Canadian lumber is sold for about \$205/m³. It costs the same to move lumber from Siberia to Manzhouli and \$90/m³ to move lumber from eastern Russia all the way to Shanghai.

In summary, due to the greater cost of transporting Russian lumber cross-continent versus transporting Canadian lumber across the Pacific Ocean, lumber from Siberia and RFE is not competitive in central or southern Chinese markets. Furthermore, Russian costs are increasing quickly due to greater haul distances among many other factors. Canadian sawmilling costs are projected to remain about the same for the next few years. Over the course of the next decade, however, the fallout of the Mountain Pine Beetle epidemic may have an impact on sawlog costs in British Columbia, and thereby affect the competitiveness of Canadian lumber in China. In any case, more lumber from Canada will be directed to the U.S. rather than China as the American housing sector recovers.

Nonetheless, the point stands: Russia's ability to produce lumber and move it to China is good, but it is as good as it ever will be. This has been summarized by researchers from the Finnish Forest Research Institute:²¹

The Russian sawmilling industry's competitiveness has most certainly weakened against the sawnwood production in Sweden and in the Euro Zone. According to macroeconomic fundamentals, it is likely that the real price competitiveness of Russian sawnwood will decrease rather than increase in the near future. With the problems of accessibility and increasing sawlog prices in Russia, these terms do not support Russian sawnwood exports.

Tuomas Makela from the Helsinki School of Economics has arrived at the same conclusion:²²

The Russian forest sector is competitive primarily in products with a low added value. The competitiveness of the sector is not below what is expected from a country in Russia's stage of development, measured by GDP per capita. The competitiveness of the national forest industry is based on vast underutilized forest resources, cheap energy, and a well-educated, fairly cheap workforce.

With that said, a major caveat of this analysis ought to be issued.

21 Valkky, Viitanen, and Ollonqvist 2011

22 Makela 2009

Focusing exclusively on China is unfair when eastern Russian mills are sending close to 20% of output to the CIS countries and another 20% to the Middle East and North Africa. The logistics of exporting lumber to these regions are challenging, but few countries are as well positioned as Russia to supply them with softwood lumber. Their demand for building materials is expected to rapidly increase over the next decade as their populations are enriched and their economies stabilize. Whether or not export opportunities in these regions can save the eastern Russian forestry sector from skyrocketing log production costs is unclear, but plausible.

Closing thoughts

In closing this chapter, it is worth posing and then answering the question on the mind of every Canadian forester and sawyer: If the U.S. market were to implode (again) tomorrow, would Canada be able to competitively supply China and other Asian economies with softwood lumber, today and in the future? The answer is yes – the Canadian forestry sector is competitive with the eastern Russian forestry sector today, and its edge will probably increase as the Russians suffer from ever-increasing haul distances and high harvesting costs.

Having answered that question, the end of this chapter warrants an additional thought. Whether or not Canadian lumber is competitive with Russian lumber in the Chinese market might prove to be a moot question. As the impact of the Mountain Pine Beetle epidemic is realized in western Canada and as the U.S. housing market recovers, more Canadian wood will be sent to its southern neighbour. And as the Chinese economy slows, more Russian wood will be sent to the Middle East, North Africa, and the CIS countries. With that said, Canada and Russia are competitors today in the Chinese timber trade and it is both interesting and informative to consider their relative competitiveness in the production and export of softwood lumber.

Conclusion

Winners & Losers



This book has shown that forestry companies in eastern Russia are fairly competitive at supplying softwood products to the global timber trade. The sector falls short of matching Canada's current ability to supply the Chinese market with logs and lumber. This might change as supply constraints are felt in British Columbia and as the entire Canadian forestry sector turns back to the U.S. for the majority of exports. Eastern Russia is well-positioned to be the foremost supplier of wood to a variety of countries in the Middle East, North Africa, and CIS. Without a doubt, the wood business in Siberia and RFE has great potential.

This book has also demonstrated that the future of the forestry sector in Siberia and RFE is not bright unless there is a major effort to improve the sustainability of forestry practices in the region. This thesis was summarized in the *Introduction* in the following way: “Without a radical change in the way forestry is done in eastern Russia, what is a timber empire today might be a state of stumps tomorrow.” This effectively answers the question put forward at the beginning of this book: How competitive is the forestry sector of eastern Russia?

With this in mind, a new question arises: What happens if the forestry sector of eastern Russia stays on its current path? Fully answering such a query would require another book altogether. By way of conclusion, a cursory response is offered here.

There is abundant evidence that the forestry sector of Siberia and RFE will experience skyrocketing raw material costs over the coming

years. This will occur because companies will be forced to harvest more marginal, remoter stands. Most harvested forests have been insufficiently planted and tended, so there is no notion of rotation in eastern Russia.

The oncoming Supercycle might change this situation, boosting the value of wood products enough to justify ongoing operations in regions that are currently uneconomical. But it appears that rising prices will be trumped by rising costs, especially as companies target sparser stands. In any case, the benefits of the Supercycle will only last as long next wood products cycle or the forest resource itself, whichever is shorter.

Forestry companies in Siberia and RFE will surely make more money in the short term by maintaining current methods of resource extraction while investing in efficiency. Sustainable silviculture is expensive and has a very long payback period. However, most of these companies aren't making much money in the first place. Few forestry firms in eastern Russia appear to be profitable, and rates of return on forestry investments are low.

Obviously the forestry sector of eastern Russia will lose in the long term if it depletes its accessible forests. Improving harvesting and processing capacity as well as efficiency will mitigate the impact of this loss, but only to an extent. Without accessible and well-stocked forests, there is no forestry sector. This projection of resource depletion is not an alarmist prophecy. It is a long-term forecast of the economics of an industry that can still save itself from the ballooning production costs that are the direct result of unsustainable forest management.

Forestry companies in Siberia and RFE have everything they need – investors, expertise, equipment, and purpose – to adopt better forest management methods in step with the modernization processing facilities. The only thing that is lacking is an inherent incentive for companies to steward the land. Above all else, the privatization of forests in eastern Russia would expedite the on-the-ground implementation of better forestry practices by giving landowners an incentive to steward rather than exploit their resources. Supposedly this is already being discussed by political leaders in Siberia and RFE. Hopefully the matter is settled soon.

Forestry sectors in countries that have developed wood processing

industries and relatively sustainable operations stand to benefit from the depletion of eastern Russian forests. A global shortage of wood fibre is already projected. Wood markets will be even tighter if the Russian forestry sector runs out of economically accessible timber within the next few decades. In particular, North American and European producers of forest products will “win” if the Russian forestry sector declines.

But it would be a Pyrrhic victor. There are no real winners when a country or region eradicates its natural resources in pursuit of profit – especially if it a slim profit, as the case seems to be in eastern Russia. Environmental degradation is not a source of profit for anybody in the long term. The positive externalities of sustainable forestry, however, are many and universal.

It seems appropriate to end this book on a personal note. I am very fortunate to have travelled to many countries where forestry is a significant industry of national importance. Some of these countries have terrible reputations of environmental degradation, while others are upheld as paragons of sustainability. Some are making a concerted effort to ensure their resources are available in perpetuity, but others are exploiting forests without reserve. Every forestry sector is different and every country has a unique combination of priorities and advantages.

What I have consistently witnessed, however, is that stewardship always beats exploitation in the long term. Through my travels, I have seen that it is never too late to adopt an attitude of stewardship or implement a program of sustainable management. I sincerely hope that forestry companies in eastern Russia change their ways, so that they may always be competitive harvesters and processors of softwood products.

Appendix

The Role of China



The economic situation of China is perhaps the biggest question in the global timber trade. The country has emerged as a major consumer of lumber and logs from Russia, Oceania, and North America. It is the largest market for Russian forest products, and the second-largest market for Canadian timber after the U.S. Indeed, the interaction of Russian and Canadian wood occurs almost entirely in China. Some say that China will continue to have a voracious appetite for softwood products from around the world, but others say that China will soon be irrelevant to Canadian and Russian forestry companies alike.

This section seeks to address these issues, and explain some practical issues with the Chinese timber trade. This section has been included as an Appendix because its focus is somewhat peripheral to the discussion of how harvesting and sawmilling companies operate in Siberia and RFE. However, it is highly relevant to the future competitiveness of the eastern Russian forestry sector. Portions of this section were originally printed in “Timber in Asia: Informal Notes on China and Malaysia,” a report by the author first distributed in June 2012.

Basis for the timber trade

China will never be self-sufficient in timber because it has few trees but many people. Consider that Canada has 7.9 ha of forest per capita and the world average is 0.6, but China has only 0.1. Its per capita timber

growing stock is just 9.5 m³, whereas the global average is 57.¹ While China has the largest planted forests in the world, these forests are young (decades from maturity), sparse (70% as dense as the world average), and more valuable for environmental services than for timber production (Beijing is smothered with dust storms when deforestation occurs around the Gobi Desert). Thus, the forests of China are incapable of providing sufficient timber to the country's 1.3 billion people.

While there is some domestic forest management in China – most Canadians know the saga of Sino-Forest Corp – relatively little commercial timber is harvested each year. In fact, a logging ban has been in place in many parts of China since the late-1990s, when deadly flooding was blamed on over-harvesting in northern China. Timber consumption in China is growing and will reach about 280 million m³ in 2015, resulting in an annual timber shortfall of more than 140 million m³.

Unfortunately, traditional suppliers of timber to China like Indonesia, Papua New Guinea, Vietnam, and others are depleting their natural forests. These countries have also established enormous timber plantations but they are at least 20 years from maturity. For this reason, China has been looking abroad for timber, focusing on three regions: Russia, Oceania (especially New Zealand), and North America.

China has actually been trading timber with Russia for decades. Conveniently, the northeastern provinces in China – the country's traditional wood basket – have similar tree species to Siberia and RFE. Decent rail links and peaceful if chilly diplomatic relationship for most of the 20th century facilitated a steady trade in wood throughout the 20th century. In the 1980s and early-1990s, for example, the timber trade between Russia and China amounted to 500,000 m³ or so each year. Coniferous sawlog imports surpassed 1 million m³ in 1998 when China's logging ban came into effect. They have remained over that level since.

Sino-Russian relations

Relations and trade between China and Russia were tense for many years in the mid-20th century because Russian leaders presumed the right to

1 Yanfang 2008

dictate global Communist policy – a sentiment the Chinese under Mao Zedong rejected. When China and the U.S. normalized relations after the visit of U.S. President Richard Nixon in 1972, the Russians had a fit. For many years after, there was a peaceful tension between the countries.

But their relationship started to improve in the 1990s. This was especially noted in cross-border commercial relations in the east. The Chinese logging ban was introduced in 1998. In 1999, China eliminated its log import tariffs and simultaneously created favourable tax policies for border trade and the development of small sawmills in the northern provinces. This development stimulated further growth in commercial relationship between China and Russia.

Between 2005 and 2010, Chinese investors negotiated with eastern Russian officials to create 34 special economic zones in RFE alone.² This attracted \$3 billion in investment from China – more than three times the amount invested by Moscow in the region during the same period. Today, according to most pundits and politicians, Sino-Russian diplomatic and commercial relations are at an all-time high.³ The countries are allied within the UN Security Council, the BRICS, and the G20.

However, a defining characteristic of modern Sino-Russian relations is the “China threat.” This takes the form of a wariness among Russian leaders of China's desire to claim portions of Siberia and RFE. The Russians might have a point: there are 30 million people living in Siberia and RFE, which combined are 20% larger than China, yet 110 million people in the Chinese border provinces. Between 50 million and 70 million Chinese peasants lack adequate agricultural land, and many of the former collective farms in eastern Russia lay fallow.⁴

Yu Bin, a Senior Research Fellow at the Shanghai Association of American Studies, noted Russian perceptions of the “China threat.”⁵ He has said, “Russians, instead of seeing our vast population and rapid economic growth as a golden economic opportunity, their [federal ministries] look at us and feel nervous.” The policy outcome of this attitude is limits on Chinese commercial ventures in Russia and restrictions on the use of

2 Romanova 2012

3 Rosseau 28 June 2012

4 Rosseau 28 June 2012

5 Romanova 2012

Chinese labour in Siberia and RFE. It will certainly be a significant factor in future relations between these countries. At the moment, however, there is limited tension between the nations, whose diplomatic and economic relations are warmer than ever.

Shipments by land

Three land ports in Inner Mongolia account for the vast majority of the Sino-Russian timber trade: Manzhouli is the most important and receives 45% of Russian imports, while Suifenhe and Erlian receive about 30% and 15%, respectively.⁶ These border towns have an unpleasant, boom-then-bust feel about them. The zeitgeist of Manzhouli is particularly caustic. It is overstocked with gaudy lights, tacky monuments built in a Classical style, and poorly built luxury apartments that are almost entirely empty. Manzhouli was clearly built up by Chinese property speculators – there is enough housing for almost 1 million people but the population is less than 300,000 – who are now presumably going bankrupt.

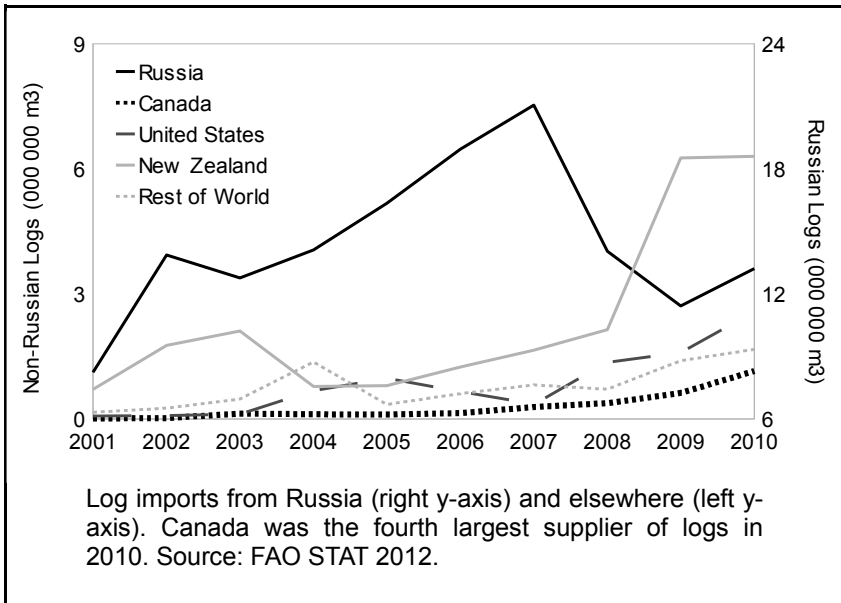
Anyway, the logs arriving at these railway hubs are usually bought at the mill gate in Siberia or RFE. Chinese traders prefer to buy the logs directly from the sawmills, then make all of the transportation and customs arrangements. They sometimes hire Russian intermediaries to “negotiate” with Russian border officials, providing extra payments when necessary. Regardless of origin, whether wood is illegal or legal is of LITTLE consequence to these men, as long the logs can get through the border.⁷ One Chinese trader in Manzhouli estimated that 80% of the timber coming through that land port was illegal at times over the last few years.

There are about 500 Chinese traders spread between Manzhouli, Suifenhe, and Erlian. The top 10 importers account for nearly 30% of total lumber and log imports from Russia, while the top 60 account for 80% of the trade.⁸ To limit their exposure to risks of fluctuating prices or seizures by border officials, most traders only purchase one or two rail cars of wood on each train. Nobody ever purchases an entire car. Moving timber or lumber to the Chinese border from central Siberia costs about \$40/m³ and

6 Hongan 2007

7 Jacobs 29 November 2012

8 Sun 2006

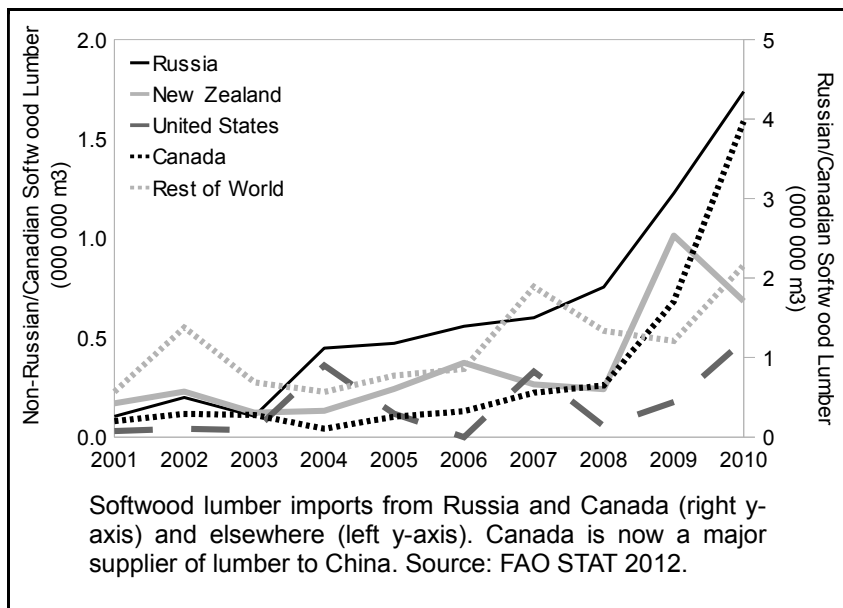


then an additional \$50/m³ to ship it to a major city in central or southern China like Shanghai or Guangzhou.

The importers run a fairly profitable business, earning a commission of \$16/m³ on lumber and \$8/m³ on logs. This amounts to a profit margin of between 5% and 9%, depending on the product and sale prices for imported lumber and logs. It appears that their profit margins have shrunk over the last few years. In 2005, profit margins of Chinese log and lumber importers were reported as 20% to 30%.⁹ This is probably due to higher sawlog prices in Russia and a slowing of the Chinese economy.

While the log importers are knowledgeable about the logistics of moving wood from eastern Russia to China, it would be fair to call them speculators. Their entire business is based on the assumption that prices will continue to rise, yet their understanding of the economics of timber markets is poor. Indeed, these merchants could be selling cotton candy, fancy hats, or matrushka dolls, and their business models would be exactly the same. This is why, from time to time or whenever there are price shocks, dozens of the less conservative traders go out of business.

9 Lankin 2005



Most of the Chinese traders operating in Russia or along the border are of a single cultural group, the Putian from Fujian province. Having developed supply networks throughout the border regions, they control more than 80% of the timber trade.¹⁰ They are notoriously aggressive negotiators and are not deterred by the shady business practices that define the Russian economy. While explaining methods for sourcing timber from Russia, a Chinese timber merchant proudly stated, “Only the Chinese can do business with the Russians.”

Shipments by sea

All of the logs and lumber from North America and New Zealand, as well as some from Russia, are shipped to China by sea. Both logs and lumber are shipped in a similar manner to similar customers: the buyers are typically sawmill collectives that mill logs or re-process imported lumber to Chinese specifications. Although New Zealand is a significant supplier of logs (6.3 million m³) as well as lumber (0.6 million m³) to China, this

¹⁰ Yanfang 2008

section focuses on exports from Canada, which sends some logs (1.1 million m³) and plenty of lumber (4 million m³) to China.

A log or lumber merchant will collect orders from a group of Chinese sawmills then obtain a Letter of Credit (normally at a cost of 1% of its value) before approaching a forestry company in North America. No sawmills in China are large enough to commission an entire ship, so all orders are conducted through middlemen. Forestry companies will not send wood overseas without a Letter of Credit. As a result, whenever the availability of Letters of Credit is restricted by international banks, shipments to China from North America come to a halt. This occurred in late-2011.

After obtaining a Letter of Credit, Chinese merchants typically charter a ship, which costs approximately \$1.3 million, or \$37 per m³ of logs. This usually accounts for 40% of the delivered price, although prices vary significantly from year to year. Most companies in this business agree that there is no shortage of shipping capacity at the moment. There are at least five shipping companies competing with each other to provide the best service at the lowest price.

The scale of the shipyards is impressive: the ships are massive and the volume of timber being moved is immense. It takes approximately ten days to load a ship in North America or New Zealand, which typically contains 35,000 m³ of tree-length logs. The timber on a typical ship from North America is worth approximately \$5 million, or \$143 per m³. Most timber is debarked at North American ports before being packed onto ships, although some is sent abroad with the bark still on.

The journey from North America takes 15 to 22 days, depending on the weather. It then takes one week to unload the ship in China. There are different ports for logs from different countries. For example, one of the ports in Shanghai has two berths for North American vessels and one berth for small Russian vessels, while another port in the same city has just one berth for vessels from New Zealand. Sometimes there is significant congestion at the ports. Apparently, ships often wait two or three days before being unloaded. The majority of ships back-haul empty while some take small loads of other products on the return trip.

After logs are unloaded by cranes, they are measured and scaled by workers employed by Chinese middlemen. This is to ensure the North American exporters are providing fair volumes of timber. The logs are then loaded onto trucks and transported to fumigation facilities, where they are gassed for 24 hours at a cost of \$4 per m³. After that, they are moved by truck to sawmills, which are located within a few kilometres of the ports.

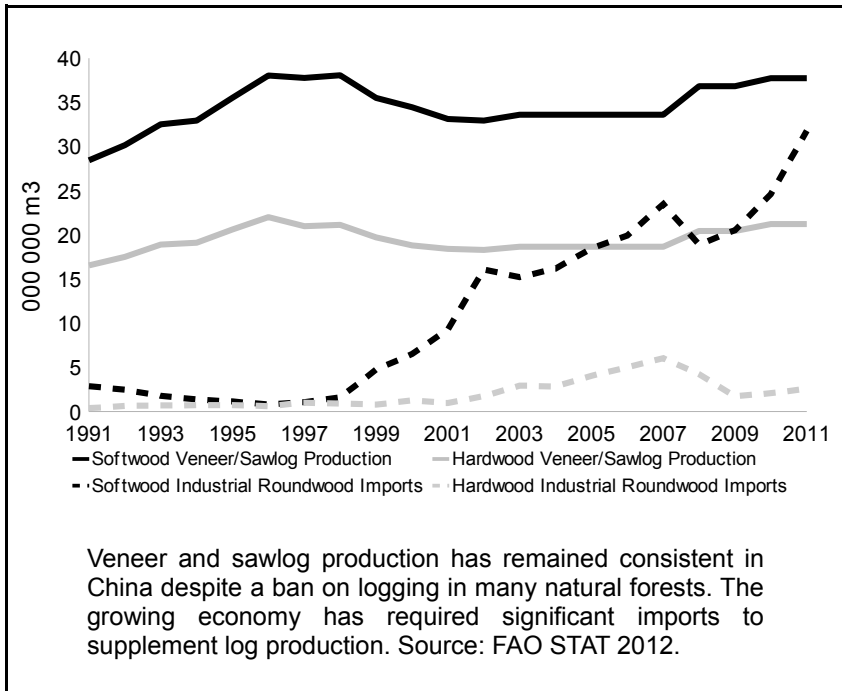
There is a small army of workers at each port doing everything from driving loaders to operating cranes to scaling logs to sweeping up bark. Due to all the activity and the volumes of timber being moved, the shipyards are huge, bustling facilities packed with timber, shipping crates, and pallets of lumber. Government inspectors often audit the shipping operations but the officials tend to be very cooperative, since the majority of companies are compliant with most important regulations.

The log merchants operate on small margins and tend to guess at the future value of timber. This leads to enormous inventories and inflated prices from time to time, but eventually results in price collapses and reductions of timber imports until inventories are cleared. Large state-owned companies are charged with the responsibility of stabilizing timber markets by dumping timber when prices are too high and purchasing large volumes when prices are low.

There is tangible distrust between the representatives of these different entities. The state-owned companies say that the log merchants are mere speculators driving prices up and down without rhyme or reason. (For the most part, this seems to be a legitimate point). But the log merchants claim that the state-owned companies are coddled by Beijing and intervene unfairly in international timber markets. With that said, representatives of both kinds of businesses are knowledgeable and competent, but the worldliness and confidence of the managers at state-owned companies is especially impressive.

Chinese-style sawmills

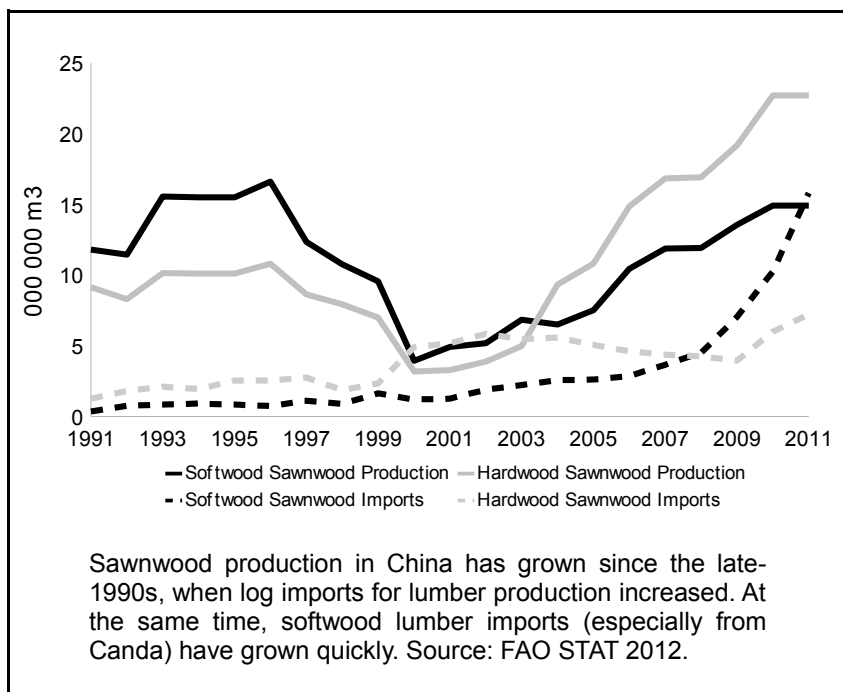
The basis of much of the timber trade between Russia and China is the low-cost sawmilling industry in hubs like Manzhouli and Shanghai. These sawmills are amazing, operating with crude equipment yet achieving



impressive production and product recovery rates. It is unlikely that any other country in the world has such an immense yet primitive sawmilling industry. The sawmilling business in China experienced annualized growth of 25% in terms of production capacity between 2005 and 2010.

There are thousands of small sawmills in China. Within an hours' drive of Shanghai, there are more than 300 sawmills. It is a highly fractured business, with the top four sawmills accounting for less than 9% of industry revenue. The small mills tend to cluster into complexes of 20 or more to facilitate bulk purchases of sawlogs, since no single mill can afford to buy the logs on an entire ship or train. The sawmills are basically manually-driven modular band-saws, like large WoodMizers. They are the kind of sawmill one would expect to find in an Ontario farmer's barn. Each unit costs approximately \$15,000.

Despite their crude technology, the sawmills are highly productive. Each saw is staffed by about six sawyers, as well as a few auxiliary



workers who collect the sawdust, bark, and offcuts. One saw can process about 50 m³ of logs each day, although this varies significantly between winter and summer because the sawmilling complexes are unlit and the workers labour from sunrise until sunset. The sawyers are paid about \$7.25/m³ of logs processed. Lumber recovery rates are close to 70%.

Labour accounts for 80% of processing costs. This indicates that sawmilling costs in China are between \$12/m³ and \$15/m³. Over the last few years, log costs in Manzhouli have been approximately \$150/m³ on a log basis or \$215/m³ on a lumber basis. This means that lumber can be produced in northern China for a bit less than \$230/m³ on a lumber basis. It is sold in Manzhouli for around \$240/m³ before taxes, resulting in a profit margin of \$10/m³ or 4% – not much, but enough to justify operations.

It was variously reported that the profit margins of these sawmills range from 2% to 7%, with an average of 5%. These margins are pinched to almost nothing when log prices rise, however. The wages of sawyers have

tripled since 2003 and are now rising about 5% annually. This increase in costs could be matched with a slowing national economy and reduced construction throughout the country. The ongoing profitability of the Chinese sawmilling industry is therefore questionable.

In addition to milling logs into lumber, some of the Chinese sawmills import lumber and re-process it into the dimensions preferred by the Chinese contractors. Most Chinese construction is metric while most imported lumber is imperial. Some of the sawmills use band saws to cut lumber into thin strips that are used as the base for floor tiles, drywall, and ceiling panels. Others cut the boards to metric sizes: at some sawmills, there are workers taking standard boards (e.g. 2"x6"x10') off a pallet from a North American company like Canfor, cutting a few inches off each board with a scale saw, and re-piling the lumber on another pallet. It is hard to believe that this kind of operation is efficient, but labour is still so profoundly cheap in China that it works.

It is important to note that most of these sawmills shut down as soon as log prices rise above a certain threshold, or lumber prices fall below a certain point. It costs virtually nothing to mothball the mills and there are no regulations on hiring and firing employees. For example, in April 2012 all of the mills around Shanghai were buzzing with activity, but in September 2012 the majority of sawmills in Manzhouli were empty and silent. Such is the nature of an industry based on speculation.

Chinese businesses in Russian

Over the last 20 years, quite a few Chinese sawmills and logging operations have jumped the border and established themselves in Russia. Most of the Chinese businesses operating in the forestry sector of eastern Russia are small, with less than 15 employees.¹¹ Like most Chinese companies, these firms are quick to be established and quick to close, with few making permanent bases in Russia. Many are not legally registered.

It is believed that the annual lumber production capacity of Chinese-style sawmills in eastern Russia is more than 2 million m³ and growing at a

11 Pereltsvaig 16 April 2012

rate of 10% each year.¹² This implies that there are currently 200 or so Chinese sawmills in Siberia and RFE, although such a number is almost impossible to confirm. However, an article by Marina Romanova, an analyst with *Russia Briefing*, estimated that 152 Chinese sawmills are registered in Irkutsk alone.¹³ In any case, it is likely that a significant portion of the lumber imported from Russia to China each year is milled by Chinese workers in Chinese-style sawmills in eastern Russia – perhaps as much as 50% in some years!

There are also a few hundred Chinese logging firms in eastern Russia.¹⁴ Each crew consists of about five workers with one skidder for hauling trees and one forklift for loading trucks. Each crew is paid about \$10/m³ by the licensee. This is significantly less than a Russian crew would be paid. A great portion of the illegal logging in eastern Russia, and especially in the valuable but rare hardwood forests of RFE, is carried out by small Chinese logging companies.

The Chinese sawmills and logging operations operating in eastern Russia are run in much the same way as they would operate within China. It is twice as expensive to operate a Chinese-style sawmill in Russia than in China because of unofficial payoffs and the higher wages demanded by the Chinese workers, who dislike living in Russia. Controversially, some say that the Chinese dislike working with the Russians because they tend to be drunk at work with unacceptable frequency.¹⁵ In any case, Chinese firms only employ Chinese workers because Russians labourers are apparently unwilling to work under such strenuous conditions for such low wages.

State-owned companies

While an enormous volume of timber is entering China through private enterprises, state-owned companies are pillars of the Chinese economy. This is particularly true of the trade in forest products between China and suppliers like North America, New Zealand, and Russia. The main state-owned player in the timber business is China National Building Materials Corporation (CNBM). It is the largest buyer of cement, steel,

12 International Forest Industries 07 March 2011

13 Romanova 2012

14 Yanfang 2008

15 Lankin 2005

timber, and other building materials in China. The Forest Products division was created in 2010 and imports about 2.5 million m³ of softwood logs and lumber worth \$500 million each year.

The dual mission of such state-owned companies is to stabilize timber markets in China by acting like a market maker and to ensure that the country's construction sector has sufficient building materials at reasonable prices over the long term. They are aggressive players in Chinese timber markets. When prices rise too high, according to smaller private importers, the companies dump timber to drive prices down; when prices fall, they purchase enormous inventories. When this occurred in mid-2011, some state-owned companies essentially wiped out many of the speculators who had driven the price up, then profited from their downfall by purchasing their inventories.

Senior officials at one state-owned company predict that the chaos that currently defines timber markets in China will soon be replaced by stability, as speculators are replaced by long-term contracts with established companies:

What we see in China today – no standard lumber grades, no standard sizes, no standards at all – is no different than what you would have seen in the U.S. in 1940. The only difference is that China is struggling to deal with 2040s volumes of wood while using 1940s technology and procedures. But a process of consolidation, stabilization, and maturity is already underway.

In practice, senior politicians and bureaucrats in Beijing set the objectives for state-owned companies, then leave its managers to create strategies. Unlike the log merchants that charter one shipload of logs at a time based on gut feelings about price fluctuations, most state-owned companies commit significant resources to the collection of market data so that managers can evaluate short- and long-term plays. The companies are more versatile than the other log merchants in terms of their ability to react quickly to market conditions. They are among the only companies in China that do not need Letters of Credit to import timber because they have the backing of Beijing.

Part of the long-term strategy of state-owned companies in China is the ownership of forest resources around the world. In the words of a senior

manager from one of these companies, “We are Chinese. We look to the future. To make sure we have a good supply of timber in the future, we will have to control the resources.” The managers know that Canadian companies will never enter long-term contracts because Canadian forestry executives dream of being able to play U.S. and Chinese buyers off against each other. One state-owned company purchased forests in New Zealand in 2010 that are now managed by local foresters. The same firm hopes to implement a similar model in the U.S. and Canada through TIMOs and public forest licenses in the future.

The management teams of these companies are impressive. The companies are run by executives who answer to policymakers in Beijing. Then there are managers, most of whom complete their educations overseas (Germany, New Zealand, U.S., Canada, etc.) and tend to be younger than 30 years old. These individuals are very impressive. They tend to be very knowledgeable about their portfolios, speak excellent English, and display an obvious hunger for data and ideas. The quality of the staff results in effective corporate strategies.

The leader of a state-owned company that is a major purchaser of forest products in China said, “Everybody seems to think a state-owned company is always a dumb elephant. Well, we are not a dumb elephant. We are a hungry lion.” When considering the economics of the forest products sector in China, it is important to give due consideration to the influence and strength of state-owned companies.

Importance to Canada

Although the U.S. is still the largest purchaser of Canadian forest products, China has emerged over the last decade as a significant importer of softwood logs and lumber from Canada. In 2000, for example, China bought just 2,800 m³ of coniferous sawlogs and 41,000 m³ of softwood lumber from Canada.¹⁶ But in 2010, China bought 1.1 million m³ of coniferous sawlogs and 3.9 million m³ of softwood lumber from Canada. In this way, China has become almost as significant to Canadian foresters as the U.S. In 2011, for example, exports to China accounted for 32% of

16 FAO STAT 2012

British Columbia's softwood lumber exports, compared to 42% begin sent to the U.S.¹⁷

Canada is more or less tied as the largest supplier of softwood lumber to China. About 39% of China's softwood lumber imports come from Canada compared to 42% from Russia. This is thanks to a glut of lumber in western Canada and cheap transportation across the Pacific Ocean. It is nowhere close to being the largest supplier of softwood logs, however, as China sources 54% of these imports from Russia and just 5% from Canada.

China will likely never offset the U.S. as the largest purchaser of Canadian forest products – especially if its economy cools off over the next few years – but it will probably continue to be a strong second. In 2011, however, China was clearly the largest purchaser of forest products from British Columbia. The U.S. housing market is expected to show signs of recovery in 2013 through 2015. This will drive lumber prices up and result in greater exports from Canada to its southern neighbour. The dangers of depending on Chinese buyers of Canadian wood were noted in *Canadian Forest Industries*:¹⁸

There are concerns about the stability of China's economy and Canada's lumber industry needs to make sure it doesn't set itself up for a repeat performance of what has transpired in the U.S. As we all know, by putting almost all of its eggs in the red, white, and blue basket, the Canadian industry was essentially crippled when annualized U.S. housing starts dropped from a high of 2.2 million in early-2006 to under 500,000 in 2009. Our U.S. neighbours had a huge appetite for lumber many years. Now it might be China's turn, but will that bubble burst as well?

That bubble isn't bursting as of late-2012, but it seems to be slowly deflating. Imports of softwood logs and lumber in China are down almost 20% in 2012 compared to 2011.¹⁹ The biggest declines have been in log imports from Russia and lumber imports from North America – but note that U.S. lumber exports have fallen more than Canadian lumber exports. Prices have also fallen between 5% and 10% at most ports in China.

Despite the slowdown, Canada will export large volumes of

17 Hein 2012

18 Tice 2010

19 WRQ 2012

softwood lumber as well as coniferous logs in 2012. Indeed, Canadian companies will continue to enjoy the party while it lasts. Many analysts agree that having China as an alternative buyer of Canadian softwood added 15% to 20% to softwood lumber prices in 2011. This has supported an impressive recovery in the western Canadian forestry sector, despite the U.S. economy being in the pits. In many cases, it is purely thanks to China-bound exports that sawmills and harvesting companies have continued operating in British Columbia.

Changing wood demands

It is only due to its size that the Chinese construction industry is a significant consumer of forest products. On a per unit basis, Chinese homes and apartments contain relatively little wood. Canadian lobbying efforts have tried to change Chinese building codes to accommodate wood-frame houses for almost a decade. Many Chinese builders say that these efforts are wasted and wood-frame housing will never be popular in China for cultural as well as engineering reasons. While the Chinese tend not to build wood-frame houses, their new buildings still require significant volumes of low-grade lumber for concrete forms, floor strips, ceiling strips, doors, frames, and other basic furnishings.

Indeed, these strips are by far the most significant lumber product in China in terms of volume. Oftentimes, when a family purchases a house or apartment, it is usually an empty concrete shell without anything inside – not even a floor. Oftentimes these units are only affordable because the couple is responsible for finishing and furnishing it themselves. As a result, it is common to see people delivering small loads of strips for construction in run-down as well as posh areas of cities like Shanghai and Beijing.

Since the application of the wood is low-end during construction, Chinese timber importers are more concerned with price than quality when they purchase timber from abroad. This is apparent at the shipyards (and to a lesser extent, rail terminals) where imported timber is sorted. Many of the logs are defective and show evidence of rot, shake, and stain. Consequently, these logs produce small-dimension, low-grade lumber.

It is interesting to note that Chinese demand for hardwood and

softwood forest products has reversed itself in less than 15 years.²⁰ In 1997, 1.05 million m³ of hardwood lumber was imported to China compared to just 0.3 million m³ of softwood lumber, whereas today 10 million m³ of softwood lumber is imported compared to 6 million m³ of hardwood lumber. Similarly, China imported equal volumes of hardwood and softwood logs in 1997 but nowadays imports 12 times more softwood logs than hardwood logs. The major cause of this shift is the growth of the Chinese housing market, which relies on softwood rather than hardwood.

When considering whether the Chinese will ever buy large volumes of high-end products like hardwood flooring from Canada, consider that the Chinese middle class enjoys an annual income of about \$6,000. They cannot afford such luxuries when earning that kind of money, although they may conspicuously consume hardwood furniture. However, the Chinese upper class is enormous and distinctly concerned with material possessions that indicate status, like fancy flooring and fine furniture. In fact, the value of hardwood lumber imports to China (\$2.2 billion) are actually greater than softwood lumber imports (\$2.02 billion), even though twice as much softwood is imported.²¹

This means there may one day be large as well as lucrative markets for high-end hardwood products, similar to the markets today for low-end timber. More of the hardwood might come from North America, as Asian and African sources of tropical hardwood are depleted. At the present, however, imports of softwood logs and lumber are the bread and butter of wood suppliers to China.

Economy and housing market

A small portion of the softwood timber imported to China each year is processed for re-export as furniture and other consumer products. The bulk of the timber imported to China – up to 90% by some counts – is used for construction of infrastructure and buildings.²² The housing market is among the biggest drivers of the Chinese economy: about 13% of Chinese GDP is derived from real estate investment and housing accounts for 41%

20 FAO STAT 2012

21 FAO STAT 2012

22 Yanfang 2008

of Chinese household wealth (compared to 26% in the U.S.).²³ In contemplating the future of forest products imports to China, one must consider the country's housing sector and economy.

Most significantly, the Chinese federal government pledged to construct 36 million housing units between 2011 and 2015. Government housing construction will account for 7 million units in 2012, and private sector housing will account for a few million more. The intention of these policies is to encourage urbanization but reduce urban sprawl and to increase the standard of living by doubling the average living space in each household. Entire city blocks of low-rise housing are being converted to high-rise apartments in urban areas. Driving along the highways around Beijing and Shanghai, which are new and in excellent condition, there are dozens of new high-rise buildings.

What is not clear is if this new housing is actually being used, or if development has been fuelled by speculative Chinese investors eager to park their money in something tangible. A short drive along the eastern seaboard and through the boom-towns of northern China reveals obscene overcapacity of housing and office space: many of the buildings are completely empty with no lights on inside or cars in the lot.

Yet prices remain frighteningly high. Apartments in suburbs of Beijing cost \$1,300/m² or \$150/sq.ft. House price-to-income ratios in major Chinese cities are around 30:1 – six times the 5.1:1 ratio in the U.S. before its housing bubble burst in 2008 – yet vacancy rates remain above 10% in most cities and above 30% in Beijing!²⁴

Many Chinese businesspeople and homeowners believe that the Chinese housing market will continue to be huge for the foreseeable future. While economists abroad have reported a housing bubble emerged in some regions of China over the last few years, many Chinese dismiss this notion. These market bulls argue that the population of the country is just so huge and currently deprived of many of the accessories of modern life, that there will always be demand for housing, furniture, and other derivatives of forest products.

23 Yang 02 October 2012

24 Jian 01 July 2012

The McKinsey Global Institute, for example, believes that between 2005 and 2025, the urban population of China will grow by 350 million and the middle class will grow by almost the same amount.²⁵ There will be 221 cities in China with populations over 1 million by 2025. Those people will need homes and goods, say the China bulls, and their activity (matched with savvy fiscal policies) will help the economy grow about 8% each year.²⁶ Recent trends have shown this to be case. An executive from CB Richard Ellis commented in 2010, “In many cases you look at empty buildings and say, that's never going to be fully occupied, but somehow 12 months later the building is full.”

Government policies have been implemented to cool the housing market and curb speculation. If a family wants to buy a second home (presumably for investment purposes) they must make a down-payment of at least 50%. There is also a limit on the number of homes a family may own. Furthermore, in the words of Bloomberg News, “China has the firepower to deal with a [housing/property crisis]...with the world's largest foreign exchange reserves and government debt of only 20% of GDP.”²⁷

These are convincing data but there is evidence that prices have been too high for too long and are starting to fall. Many real estate agents in China claim that prices fell 20% between June 2011 and July 2012.²⁸ In 2010, the Shanghai office of China Banking Regulatory Commission warned that a 10% drop in property values would triple the number of delinquent mortgages in China.²⁹ It hasn't happened yet, but the potential is scary. A downturn in the Chinese housing sector would drastically reduce the need for imported softwood lumber and logs.

Closing thoughts

Over the course of a decade, China has become one of the world's largest consumers of forest products, especially softwood logs and lumber. Its demand has supported forestry companies in western Canada during the downturn in the U.S. housing industry. To a large extent, it has also

25 Woetzel and others 2009

26 Bradsher 09 June 2012

27 Bloomberg News 12 February 2010

28 Bradsher 09 June 2012

29 Bloomberg News 12 February 2010

supported the modern development of the forestry sector of eastern Russia. At this point, it is the only major arena in which the Canadian and Russian timber industries compete with each other.

China will likely continue to be a major importer of softwood logs and lumber for the foreseeable future, but a slowing of its economic growth seems imminent. When major Chinese banks start reviewing their nonperforming loans to speculative property buyers, they will be forced to write many off. Then the Chinese housing market will be in for a major correction. As a result, the Chinese economy will falter at least temporarily. Forest products imports will be reduced at the same time, since demand for lumber by construction outfits will be constrained. But whether this will occur all at once as a bursting of the Chinese property bubble, or whether it will happen slowly as Chinese economic growth plateaus, is up for debate.

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