Regional Competitiveness & MSME Finance: Analysis of the Forest Sector in Tver Region

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<tr>
<td>AAC</td>
<td>Annual allowable cut</td>
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<td>ABC3D</td>
<td>Advanced BioCarbon 3D</td>
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<tr>
<td>ASPPI</td>
<td>Association of Specialists of the Pulp and Paper Industry</td>
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<td>AWC</td>
<td>American Wood Council</td>
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<td>BJC</td>
<td>Builders’ joinery and carpentry</td>
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<td>BGT</td>
<td>Be Green Trade</td>
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<td>BREEAM</td>
<td>Building Research Establishment Environmental Assessment Method</td>
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<td>BSO</td>
<td>Business support organization</td>
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<td>CA$</td>
<td>Canadian dollar</td>
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<td>CARB</td>
<td>California Air Resources Board</td>
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<tr>
<td>CapEx</td>
<td>Capital expenditure</td>
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<tr>
<td>CEN</td>
<td>European Committee for Standardization (Comité Européen de Normalisation)</td>
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<tr>
<td>CIFOR</td>
<td>Center for International Forestry Research</td>
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<td>CFD</td>
<td>Central Federal District of the Russian Federation</td>
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<td>CIS</td>
<td>Commonwealth of Independent States</td>
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<tr>
<td>CLT</td>
<td>Cross-laminated timber</td>
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<tr>
<td>CRM</td>
<td>Customer relationship management</td>
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<td>CO2</td>
<td>Carbon dioxide</td>
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<td>CoC</td>
<td>Chain of custody</td>
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<td>COVID-19</td>
<td>2019 novel coronavirus acute respiratory disease</td>
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<td>DDI</td>
<td>Domestic direct Investment</td>
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<td>DLT</td>
<td>Dowel-laminated timber</td>
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<td>€</td>
<td>Euro</td>
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<tr>
<td>E+C-</td>
<td>Positive Energy and Carbon Reduction</td>
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<td>EASC</td>
<td>Euro-Asian Council for Standardization, Metrology and Certification</td>
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<tr>
<td>EBITDA</td>
<td>Earnings before interest, tax, depreciation, and amortization</td>
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<tr>
<td>EDGE</td>
<td>Excellence in Design for Greater Efficiencies</td>
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<tr>
<td>EN</td>
<td>European Standard</td>
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<td>ENB</td>
<td>Environment, Natural Resources and Blue Economy (World Bank Global Practice)</td>
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<td>EPD</td>
<td>Environmental product declaration</td>
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<td>ESA</td>
<td>European Space Agency</td>
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<td>ESG</td>
<td>Environmental, Social, and Governance</td>
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<td>EU</td>
<td>European Union</td>
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<td>EUTR</td>
<td>EU Timber Regulation</td>
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<td>EWPs</td>
<td>Engineered wood products</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FDI</td>
<td>Foreign direct Investment</td>
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<tr>
<td>FLEGT</td>
<td>Forest Law Enforcement, Governance and Trade</td>
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<td>FSC</td>
<td>Forest Stewardship Council</td>
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<td>GDP</td>
<td>Gross domestic product</td>
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<td>GIS</td>
<td>Geographical information systems</td>
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<tr>
<td>GOST</td>
<td>State standard system</td>
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<tr>
<td>GRP</td>
<td>Gross regional product</td>
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<tr>
<td>Glulam</td>
<td>Glued laminated timber</td>
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<tr>
<td>ha</td>
<td>hectare(s)</td>
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HDF: High-density fiberboard
IFC: International Finance Corporation
ILFI: International Living Future Institute
ICT: Information and communications technology
IE: Individual entrepreneur
ISIC: United Nations International Standard Industrial Classification of All Economic Activities
ISO: International Organization for Standardization
ITTO: International Tropical Timber Organization
Kg: kilogram(s)
LBC: Living Building Challenge
LCA: Life cycle assessment
LCI: Land Cover Institute (USGS)
LSL: Laminated strand lumber
LVL: Laminated veneer lumber
m2: square meter(s)
m3: cubic meter(s)
MDF: Medium-density fiberboard
MEC: Mountain Equipment Co-op
MEDTR: Ministry of Economic Development, Tver Region
mln: million(s)
MLT: Modern Lumber Technology
MSMEs: Micro, small and medium enterprises
NLT: Nail-laminated timber
NTC: New Transport Company
OSB: Oriented strand board
PEFC: Programme for the Endorsement of Forest Certification
PEN: Poverty and Environment Network
RSFSR: Russian Soviet Federative Socialist Republic
PSL: Parallel-strand lumber
Rosstat: Russian Federal State Statistics Service
SEZ: Special Economic Zone
SCL: Structural composite lumber
SW4SW: Sustainable Wood for a Sustainable World
ths: thousand(s)
UK: The United Kingdom of Great Britain and Northern Ireland
UN: United Nations
UNECE: United Nations Economic Commission for Europe
US: United States of America
USGS: United States Geological Survey
US$: United States Dollar(s)
VPA: Voluntary partnership agreement
WTO: World Trade Organization
WWF: World Wildlife Fund
Executive Summary

The World Bank, at the invitation of the Ministry of Economic Development of Tver Region, has conducted an analysis of the region’s economy to identify high-potential sectors for development. In Phase I of this analysis, the World Bank team employed a Sector Scan diagnostic, selecting the forest and information technology sectors as priorities for further analysis. This report comprises Phase II of the analytical process concerning the forest sector. It presents a “deep dive”, exploring current global and national trends in the sector and identifying areas where Tver can potentially improve the ability of local industries to participate in global value chains and compete internationally. In doing so, the report’s authors employ methodologies developed by the Bank’s Markets and Technology Global Team’s Competitiveness Reinforcement Initiative.

With the enactment in 2018 of the Strategy for the Development of the Forest Sector Until 2030 and ongoing revisions to the country’s Forest Code, the Russian Government has sought to provide the conditions necessary to boost sector employment and overall production. Specifically, the government’s strategy calls for enhancements to the forest sector’s regulatory environment (including strengthening of property rights, international harmonization of forest certification and standards, reduction of bureaucracy, and digitalization); introduction of sustainable forest management practices; strengthening of feedstock availability and processing capacity; and facilitation of access to capital. The forest sector in Russia has considerable potential: the country is home to the 815 million ha of forestland, the largest total area of any country in the world. Despite this, Russia ranks fifth globally in timber harvesting, due partly to historical faults in reforestation practices.

Globally, the greatest determinants of forest-sector final demand are the construction sector, paper and paper products industries, and the furniture manufacturing industry. Among processed wood products, construction accounts for about two-thirds of overall demand; the share is even higher for sawn softwood and structural wood-based panels. An understanding of trends in construction is therefore critical for producers of such processed wood products seeking to enhance competitiveness.

Growing trends towards sustainable building construction are reshaping the strategies of forest sector companies. Policymakers and stakeholders in the construction sector are beginning to pay an increasing amount of attention to buildings’ embodied carbon—that is, the carbon emissions from the manufacturing and transport of construction materials and the process of a building’s construction. In some cases, depending on the materials employed, embodied carbon can account for as much as half of a building’s total carbon footprint over its lifetime.

These concerns have driven interest in mass timber construction. Mass timber construction is a category of framing styles typically characterized by the use of large solid wood panels for wall, floor, and roof construction. It also includes innovative forms of sculptural buildings, and non-building structures formed from solid wood panel or framing systems of 1.8 meters or more in width or depth. Mass timber projects make use of a range of structural engineered wood products, including glulam and cross-laminated timber.

Analysts estimate that approximately 120 million m² of new housing stock is needed per year in the Russian Federation to meet growing demand and replace aging buildings. In recent years, however, an average of 80 million m² of new housing has been commissioned annually. But despite the country’s massive forest resources, the share of wooden structures in new residential construction is considerably lower in Russia than in other countries with similar climates. Wood is the
primary material in just 10 percent of new housing construction, compared to up to 40 percent in northern European countries. Wood is more commonly used in smaller, prefabricated housing in rural areas; Russia is home to 14 large factories producing prefabricated wooden houses.

According to the Ministry of Economic Development of Tver Region and other sources, the region’s forest sector accounted for RUB 12.0-14.7 billion in revenues in 2018. However, these statistics only take into account companies registered in the region. Modern Lumber Technology, the holding company that owns the Talion Terra and Talion Arbor plants, is registered in St. Petersburg; including it brings the region’s total forest sector revenues to RUB 20.7 billion. In total, there are 322 companies spanning several industries within the sector in Tver, with the lumber (sawn timber) industry accounting for the largest number of businesses. The forest sector accounts for approximately 5.5 percent of Tver’s total economic output.

We employ a strategic segmentation analysis to identify opportunities to strengthen Tver’s forest sector competitiveness. We propose considering construction-sector consumers of processed wood products as being divided into ‘standard’ buyers, whose purchasing decisions are mainly motivated by cost considerations, and ‘discerning’ buyers, for whom special elements of a structure’s design drive purchasing behavior. For wood products supplied to the construction sector, end use matters most, meaning that wood products must perform up to a certain standard. It is therefore useful to consider wood products as being ‘structural’ or ‘non-structural’. Design-driven buyers of structural wood products generally often place the greatest demand on manufacturers in terms of product performance—especially when it comes to innovative mass-timber projects. Perhaps most crucial to advanced buyers in this segment is the ability of suppliers to fulfill custom orders on a timely basis. Supplier execution is therefore a critical success factor.

To understand how Tver Region’s wood processors and wood-product manufacturers can better meet the needs of advanced buyers present in domestic and international markets, we analyze the value chains of two attractive strategic segments. Broadly speaking, Tver Region is well connected to many of the global and national-level value chain inputs necessary for success in forest sector activities. However, the forest sector in Tver suffers from many suboptimal links between activities. While the challenges of coordination hinder the growth of the region’s forest sector business, they also present opportunities for investment and job creation at relatively low cost.

On the whole, the diversity of federal and regional governmental ministries and agencies—and quasi-governmental organizations—supporting and regulating the forest sector in Tver Region creates both challenges and opportunities for private-sector actors. It is difficult to say with certainty how this dynamic is likely to affect the development of the sector’s component industries and various firms. However, it can generally be said that this complexity benefits larger players with sufficient resources and institutional knowledge to navigate this landscape, and places at a disadvantage smaller firms and new entrants.

Lack of information and difficulty in obtaining state support as well as perceived difficulties in obtaining bank loans constraint access to finance for Tver’s forest sector MSMEs. These companies report that it is too difficult to meet the requirements of government support programs, and that there is insufficient awareness of the availability of support. Generally, forest sector companies do not spend significant resources in seeking external financing due to high interest rates, instability of the ruble exchange rate, lack of sufficient collateral, discomfort with loan terms, and lack of trust in financial institutions.

The report suggests actions that the Government of Tver Region may take to strengthen the overall competitiveness of the region’s forest sector. The primary objective of these
recommendations is to enable Tver’s forest-sector enterprises to earn continuous, sustainable profits. To be consistently profitable, most firms will need to compete not only more effectively in the domestic Russian market in the shorter term, but also orient themselves towards development of export capabilities in the long run.

The current development plan for the forest sector in Tver Region is largely operationally oriented. It focuses on the effective use of forest land; reforestation and forest protection; and forest fire prevention. Other Russian regions appear to be making more concerted efforts to develop their respective forest sectors: Vologda Region, Khabarovsk Krai, and the Komi Republic have all announced strategic development plans in recent years. To better compete with these regions, we suggest Tver adopt a more strategic approach by focusing on the strengthening of its wood processing industry.

<table>
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<th>Objectives</th>
<th>Short-term actions to take</th>
<th>Long-term initiatives</th>
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| 1. Improved Quality & Availability of Wood Stock | • Enable information-sharing and inter-firm trading  
• Enact transport reforms and allow for infrastructure cost-sharing | • Create an open-source reforestation plan |
| 2. Increased Innovation in Wood Processing | • Undertake branding and wood-processing industry promotion  
• Create a platform for knowledge-sharing | • Assist firms in product differentiation  
• Promote the region for investment |
| 3. Expanded Firm Marketing & Export Capacity | • Develop a network of export agents  
• Identify opportunities for sharing of export infrastructure | • Enhance firms’ internal export capacities  
• Provide financial support for exporters |
| 4. Greater Impact of Public Investment | • Conduct an economic constraints analysis  
• Develop commercial skills capacities | • Enhance technical and vocational skills development |
| 5. Stronger Support for MSME Sector Participation | • Support MSME access to finance  
• Provide business advice tailored to the needs of MSMEs | • Support inter-industry linkages  
• Develop a digital ecosystem |
| 6. Enhanced National Policy Environment | • Update Russia’s building code to reflect developments in wooden building construction  
• Undertake leasehold reform | • Incorporate sustainability in finance |

However, in deciding which specific policy actions to take, the Government of Tver Region and MEDTR should supplement the analysis contained within this report with further conversations with local forest-sector stakeholders. There are two reasons for doing so. The first is that the authors’ access to these firms was limited due to the restrictions surrounding the COVID-
19 pandemic. As a result, firms profiled in this report are larger enterprises, while MSMEs in this sector have not received the same level of attention due to data-gathering issues. Representatives of these firms, which are often found in the upstream segments of forest-sector value chains, may provide a different perspective to that offered by the authors of this report. The second—perhaps more important—reason for engagement is that measures undertaken to support the growth of the forest sector in Tver Region are more likely to be successful if they are developed in concert with, and clearly communicated to, all concerned parties.
Introduction

While Russia has developed considerably since its transition to a market-based economy in the 1990s, the benefits of growth have accrued in an uneven manner, with larger cities and resource-rich regions benefitting more than other parts of the country. Regulatory reform, liberalization of financial markets, greater trade openness, and federal investment and transfers, have improved the growth prospects for many of Russia's regions, but broader structural transformation of the economy has remained elusive. This is due to a variety of factors, chief among them reliance on declining Soviet-era legacy industries, a persistent infrastructure gap, and the migration of younger and higher-skilled workers from less-populous regions to Moscow and St. Petersburg in search of higher wages. National and regional policies and support programs have been designed to enhance regional competitiveness, but policymakers require better guidance on the competitive potential of local sectors in order to better prioritize the deployment of financial and political resources.

The World Bank has worked closely with national and sub-national policymakers on a range of topics related to economic growth including competition policy, productivity, human capital, innovation, and sector competitiveness. The current project is very much aligned with this wider strategic focus of the World Bank and aims to provide regional policymakers with the information and analysis necessary to shift economic development policy toward a competitiveness-based, market-oriented approach. This project serves as a pilot for sector competitiveness projects that can be replicated across other regions.

The approach is centered around a methodology for analyzing sector competitiveness that is not a one-time activity, but rather a long-term capability that should be replicated on an ongoing basis. Determinates of competitiveness change over time, sometimes rapidly, so it is essential that policymakers and industry advocates have the capacity to assess competitiveness on an ongoing basis. The approach piloted by the project will have the greatest impact through its regular use by regional officials over time. The capacity to analyze sector competitiveness can be incorporated into various institutional structures including line ministries (economy, industry, etc), cross cutting agencies focused on investment promotion, or even non-governmental bodies such as think tanks or sector associations.

The project employs a two-staged approach, which began with a Sector Scan diagnostic analysis. The Sector Scan offers a high-level analysis of a range of economic sectors and industries based on competitiveness indicators, potential contribution to regional income growth and employment, and global value-chain participation based on a mix of quantitative data and qualitative inputs from sector stakeholders and experts. Analyzed sectors and industries are evaluated according to their perceived investment attractiveness (‘feasibility’) and the expected economic and social benefits of increased investment (‘desirability’). The Sector Scan in Tver Region was conducted in February 2020 in the following sectors/industries: agriculture, flax production, food processing, information technology (IT), forestry and wood products, tourism, logistics, and transport vehicle manufacture. Based on subsequent consultation with the regional government, IT and forestry/wood products were selected for deep-dive analyses.

The second stage of the project is a “deep dive” of high-priority sectors. This stage explores current global and national trends in sectors selected under the Sector Scan, identifying areas where regions can improve the ability of local industries to participate in global value chains and compete internationally. To do so, the analysis employs methodologies developed by the Bank’s Markets and Technology Global Team’s Competitiveness Reinforcement Initiative.
The Ministry of Economic Development of Tver Region has agreed for the region to be the first to participate in this project’s implementation. In identifying candidate regions for the study, the World Bank team considered both the federal government’s priorities for regional development, as well as which of Russia’s regions might be considered broadly representative of others in the nation with respect to challenges faced in socioeconomic development—thereby allowing for future replication of the project. Other important factors in selection was the anticipated cooperation of regional leadership with regard to project implementation and expected receptiveness to the project’s ultimate findings and policy suggestions. The Minister of Economic Development of Tver Region, Igor I. Egorov, has been a strong advocate for the project.

The sector deep dives were carried out from March to August 2020. After an extensive literature review and identification of global and national trends in these sectors, the team spoke to a range of leading companies active in Tver’s IT and forestry sectors, as well as relevant local officials. (These interviews were conducted via videoconference due to the COVID-19 pandemic.) Based on analyzed data, the Bank’s team developed a strategic segmentation for the respective sectors in order to identify development opportunities. In each of the reports, this strategic segmentation is accompanied by an exploration of the buying criteria of advanced users in the most attractive segment(s), and an analysis of Tver’s position in the segment’s value chain and its enabling business support ecosystem.

The sector deep dives also contain assessments of government policies and other issues surrounding access to finance among micro-, small and medium-sized enterprises (MSMEs). This analysis focuses on the role of access to finance in driving firm growth and competitiveness in the selected sectors. It includes both a demand-side assessment based on interviews with MSME owners and representatives about their experiences of accessing capital, and supply-side analysis based on survey responses from financial institutions and public entities supporting MSMEs.

The findings of each report contain a set of actionable measures for Tver Region’s policymakers to take in order to support the development of the IT and forest sectors. These measures were designed to address both extant market failures and emerging opportunities within each of these sectors. In both reports, suggestions for short- and longer-term policy measures are provided. Where necessary adjustments are beyond the remit of the Government of Tver Region, suggestions are provided as to how the region’s officials might address them through collaboration with stakeholders at the federal level. The deep dive analysis is intended to be the starting point of a more comprehensive approach to improving sector competitiveness in Tver.

The approach to sector competitiveness analysis may also be replicated in the region for other value chains/sectors. In addition to the specific recommendations on the forestry and IT sectors, an important outcome of the work is the transfer of the methodology itself so that the region could build the capacity to apply it to other sectors. This will be one focus of the dissemination activities for the project.

The World Bank wishes to sincerely thank the Government of Tver Region, especially the Ministry of Economic Development of Tver Region, for supporting this project. The team is grateful for the assistance of Ivan I. Egorov, Minister of Economic Development of Tver Region, and Vera I. Lebedeva, Head of the Department of Socio-Economic Forecasting and Planning, without whom this work would not have been possible.
1 Forest Sector Overview & Trends

Key Findings

- Russia’s largest forest-sector exports by value are sawnwood (lumber), plywood, sulfate chemical woodpulp, and industrial roundwood.

- In 2016, the Government of the Russian Federation announced its intention to double the forest sector’s share of economic output by 2030.

- Russia’s sawmilling industry is characterized by a few large players and many smaller, regional sawmills with annual capacities of less than 100,000 m³. These smaller mills rely on outdated machinery and are unable to produce higher-value types of lumber.

It is estimated that activities in the formal forest sector directly contribute over US$ 600 billion to the global economy annually, or about 1 percent of gross domestic product (GDP). When non-cash benefits derived from the sector are taken into account, this figure likely exceeds US$ 1 trillion. Globally, over 50 million people are believed to be directly employed (either formally or informally) in timber-related activities. In addition to these more frequently measured contributions, forests and trees provide vital services to the global economy as part of climate and hydrological systems: they maintain soil fertility, protect watersheds, provide habitat for biodiversity, and reduce the risk of such natural disasters as floods and landslides. These ecosystem services sustain such key sectors as agriculture, energy, water, mining, and transport. However, these services are generally not monetized; the economic value of forest lands is frequently underestimated as a result.¹

More than half of the world’s forests are situated in only five countries (the Russian Federation, Brazil, Canada, the United States of America and China). Deforestation and forest degradation continue to take place, although the rate of deforestation has decreased over the last few decades.

The forest sector economy has a complex structure that includes a range of industries and processing tiers. As outlined in Section 1.1, products and services derived from forests are versatile; the respective market statistics and trends may differ significantly. Therefore the economic analysis of the sector divides in separate studies for more homogeneous groups of products or services. In this report such analysis is performed with a key focus on wood products.

The forest sector of the Russian Federation accounted for just 0.5 percent of the country’s total GDP as of 2016. However, the sector remains significant from the standpoint of international trade—in 2018, the sector accounted for US$ 14.6 billion in exports, the equivalent of 9.5 percent of the country’s non-energy exports. Generally speaking, Russia competes in higher-volume, lower-margin markets: its largest forest-sector export is sawnwood (lumber), of which it exported US$ 4.5 billion in 2018; with Chinese demand accounting for 52 percent of that amount. This was followed by plywood (US$ 1.6 billion exported in 2018, with Egypt, the US, and Germany being the largest buyers), sulfate chemical woodpulp (US$ 1.5 billion, with China accounting for 68 percent), and industrial roundwood (US$ 1.5 billion, with China and Finland importing 75 percent and 18 percent, respectively).² From an employment standpoint, the forest sector in Russia today is far smaller than


it was in the Soviet era: the number of workers has fallen from 1.7 million in 1991 to just 315,000 in 2018. This is due to several factors, including decreases in overall timber production volumes, mechanization of harvesting and processing, reductions in administrative staff and public-sector employees, and increases in informal employment.

The Russian Government has sought to provide the conditions necessary to boost forest sector employment and overall production. With the enactment in 2018 of the Strategy for the Development of the Forest Sector Until 2030 and ongoing revisions to the country’s Forest Code, the Russian Government has sought to increase forest sector output to 1 percent of total GDP by 2030. The government’s strategy calls for enhancements to the forest sector’s regulatory environment (including strengthening of property rights, international harmonization of forest certification and standards, reduction of bureaucracy, and digitalization); introduction of sustainable forest management practices; strengthening of feedstock availability and processing capacity; and facilitation of access to capital (see Section 5.4 for further detail).

1.1 Sector Definition

There is no singular definition of what constitutes the ‘forest sector’ or ‘forestry’ in economic literature. However, in line with prior literature produced by the World Bank’s Environment, Natural Resources and Blue Economy (ENB) Global Practice, the authors of this report adopt a broad definition of the forest sector, defining it as consisting of a wide range of products and services derived from forests and trees. The sector can be segmented as consisting of primary production, processing, and services.

- **Primary production.** This upstream segment of the forest sector includes such industries as silviculture (the planting, replanting, transplanting, thinning and conserving of forests and timber tracts); forestry services (forestry inventories, timber evaluation, firefighting and protection, forest management, including afforestation and reforestation); logging (the felling of timber, the transport of logs, and the production of wood in the rough); and the production of industrial roundwood (which includes sawlogs, veneer logs, pulpwood and other industrial roundwood and, in the case of trade, chips and particles and wood residues); and other services and activities related to the aforementioned. This segment also includes the gathering of non-timber forest products (fruits, nuts and seeds; oils and resins; fiber products; ornamental plants; and medicinal plants). It aligns closely with U.N. International Standard Industrial Classification (ISIC) Division 02 – Forestry.

- **Processing.** This includes the manufacture of wood and wood products (ISIC 16) and of paper and paper products (ISIC 17). The manufacture of wooden furniture (a subdivision of ISIC 31, which covers all furniture production), is also included in this grouping. The segment involves a wide range of value-additive activities, and can be further divided accordingly:
  - **Lumber.** This is defined as sawn softwood and hardwood.

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- **Conventional wood-based panels.** These include particle board, fiberboard, plywood, oriented strand board, and veneer sheets.

- **Engineered wood products.** Often also called mass timber, as well as a range of products typically used for load-bearing purposes: structural composite lumber (laminated veneer lumber and oriented-, laminated- and parallel-strand lumber), glued laminated timber (glulam), and cross-, nail-, and dowel-laminated timber.

- **Secondary-processed wood products.** Products include builders’ joinery and carpentry (BJC), shaped wood, and wooden furniture and furniture parts.

- **Wood energy products.** Products include fuelwood, charcoal, and wood pellets.

- **Pulp, paper and paper products.** Wood pulp is mostly used to produce paper and paper products. This includes graphic papers (newsprint, uncoated mechanical paper, woodfree uncoated paper, and coated paper), packaging material (case materials, folding boxboard, and wrapping papers), household and sanitary paper, and others.

- **Services.** Services in the forestry sector include not only overtly monetized activities such as eco-tourism, but also those to which an economic value may be accorded, such as biodiversity conservation, watershed protection, carbon sequestration, and so on.

### 1.2 Global & Country-Level Sector Analysis

#### 1.2.1 Primary Production

The Russian Federation is home to the 815 million ha of forestland, the largest total area of any country in the world. According to the Land Cover Institute (LCI) of the United States Geological Survey (USGS), 45 percent of the country is covered by forests or trees.\(^8\) Despite this, the country ranks fifth globally in timber harvesting (see Figure 1.1),\(^9\) due partly to historical faults in reforestation practices, which have resulted in the partial depletion of the most accessible industrial forest areas.\(^10\) Further, as shown in Table 1.1 below, Russian Federal Districts vary significantly in terms of wood reserves, annual allowable cut (AAC), and actual harvesting.

Sustainable forestry practices are gradually being introduced to primary wood production in Russia. In 2018, Russian firms harvested a total of 238 million m\(^3\) of forest, a 12 percent increase over the prior year and a record for the post-Soviet era. (Annual wood felling in the Russian Soviet Federative Socialist Republic (RSFSR) peaked at 369 million m\(^3\) in 1977 and declined thereafter. In 1991, when the RSFSR became the Russian Federation, harvesting was 304 million m\(^3\).)\(^11\) One of the reasons for lower production levels in recent years is the legacy of

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\(^11\) FAO (2012).
overexploitation of forest land during the Soviet era—a problem which is believed to have worsened due to a lack of enforcement in the 1990s. To address this, firms have sought to invest more in road infrastructure to better access reserves, as well as in forest conservation and reforestation programs. In 2018, 172,000 ha of forests were artificially planted, compared with an estimated 751,000 ha of natural reforestation. However, these figures pale in comparison to 2019 forest losses in Siberia due to wildfires, with unofficial estimates ranging as high as 14.9 million hectares damaged or destroyed. At the national level, sector experts have noted the need for greater investment in firefighting capacity. This appears to be of lesser concern to forest sector stakeholders in Tver, however.

Table 1.1: Forest Reserves & Harvesting by Russian Federal District, 2018

<table>
<thead>
<tr>
<th>Indicator / District</th>
<th>Far Eastern</th>
<th>Siberian</th>
<th>North-western</th>
<th>Ural</th>
<th>Volga</th>
<th>Central</th>
<th>Southern</th>
<th>North Caucasian</th>
<th>Tver Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest land, ths ha</td>
<td>505,864</td>
<td>373,061</td>
<td>118,323</td>
<td>115,242</td>
<td>41,290</td>
<td>24,665</td>
<td>3,793</td>
<td>2,212</td>
<td>4,874</td>
</tr>
<tr>
<td>Forest land share of total area</td>
<td>73%</td>
<td>86%</td>
<td>70%</td>
<td>63%</td>
<td>40%</td>
<td>38%</td>
<td>9%</td>
<td>13%</td>
<td>55%</td>
</tr>
<tr>
<td>Land covered by forest vegetation, ths ha</td>
<td>294,941</td>
<td>276,625</td>
<td>88,546</td>
<td>69,425</td>
<td>37,857</td>
<td>22,637</td>
<td>2,955</td>
<td>1,701</td>
<td>4,413</td>
</tr>
<tr>
<td>Total wood reserves, mln m³</td>
<td>20,619</td>
<td>33,163</td>
<td>10,425</td>
<td>8,106</td>
<td>5,706</td>
<td>3,976</td>
<td>494</td>
<td>278</td>
<td>731</td>
</tr>
<tr>
<td>Wood harvesting, mln m³ (2017)</td>
<td>16.4</td>
<td>75.8</td>
<td>52.7</td>
<td>15.5</td>
<td>29.6</td>
<td>21.5</td>
<td>0.6</td>
<td>0.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Annual allowable cut, mln m³</td>
<td>91.5</td>
<td>267.5</td>
<td>119.7</td>
<td>98.6</td>
<td>70.4</td>
<td>56.3</td>
<td>7.0</td>
<td>0.7</td>
<td>9.0</td>
</tr>
<tr>
<td>Harvest / AAC ratio</td>
<td>18%</td>
<td>28%</td>
<td>44%</td>
<td>16%</td>
<td>42%</td>
<td>38%</td>
<td>9%</td>
<td>34%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Sources: EY, Food and Agriculture Organization of the United Nations (FAO), authors’ calculations

In Focus: Sustainable Forest Management

Sustainable Forest Management (SFM) is defined by FAO as managing forests sustainably for increasing their benefits, including timber and food, to meet society’s needs in a way that conserves and maintains forest ecosystems for the benefit of present and future generations. SFM is a multidimensional and multipurpose concept that can be understood as the process of planning and implementing practices for the stewardship and use of forests to meet specific environmental, economic, social, and cultural objectives. It concerns the administrative, economic, legal, social, technical, and scientific aspects of managing natural and planted forests.

Forests have multiple interdependent functions. A forest may be assigned a primary management function (e.g., production, biodiversity conservation, soil and water protection, etc.), or a combination of functions. Often, choices must be made in prioritizing certain forest functions, which can involve balancing competing interests among stakeholders. SFM is a tool for negotiating such tradeoffs and interests in varying ecological and socioeconomic conditions through participatory approaches and effective management systems. In recent decades, as the scope of SFM has broadened to equally cover social, cultural and environmental forest values, the complexity of implementing SFM has increased due to the multiple objectives and the difficulty of valuing and obtaining remuneration for many of the social, cultural and environmental benefits of forests (collectively referred to as forest ecosystem services).

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Another important dimension of SFM is the scale at which it is applied — global, national, sub-national, landscape, forest management unit (FMU) or forest stand. SFM should be addressed at all of these levels. At the global and national scales, the goal of SFM is to contribute to the management, conservation and sustainable development of all types of forests and to ensure their multiple complementary functions. The global environmental services provided by forests, such as climate-change mitigation and biodiversity conservation, should be addressed at the international level because all nations have an interest in their maintenance.¹⁴

### Sustainable forest management (SFM) in Russia

In 2018, 7 million hectares of Russian forests damaged due to forest fires, unfavorable climate conditions, pests outbreaks; etc. and only 0.9 million hectares were reforested. 80% of this reforestation was undertaken by forest lessees¹⁵. Many Russian regions are facing declining forest resources and in 2018 a significant reduction in timber stocks was observed in 2018 in Irkutsk, Sverdlovsk, Moscow, Tver, Smolensk, Vologda, Kirov and Novgorod regions, Primorsky, Khabarovsk and Krasnoyarsk regions. Khanty-Mansiysk Autonomous Okrug - Ugra¹⁶. Reforestation activities are criticized by experts due to the minimum use of mixed and valuable species, the low rate of thinning and low quality of care¹⁷. As of January 01, 2019 only some 242 million ha were under lease agreements, which is only 21% of the total forest fund¹⁸. During the period 2016 to 2019, Forest Fees of RUB 2.6 billion (US$ 35 million) were not paid by the lessees. Illegal logging remains an acute problem in Russia and has resulted in further losses of RUB 7 billion in 2018 alone¹⁹. Data on the state of region’s forests is sparse. 85% of forest inventory data are more than 10 years old. This means that there is no reliable information about the state of the forest fund on an area of 974 million hectares²⁰. Forest management under these conditions is challenging and the forest resource is being systematically degraded. Even though there are significant under used forest resources available in Russia generally but Tver specifically it is difficult with this level of data to make informed decisions about the sustainable size of the forestry sector. Russia complex forest strategy adopted in 2017 aims at sustainable forest management, innovative and effective development of use, protection, protection and reproduction of forests, ensuring the growth of the forest sector of the economy, social and environmental security of the country, unconditional implementation of international obligations of the Russian Federation in terms of forests. This requires a sustainable financial model when sufficient funds are generated to manage forests sustainably while the competitiveness of Russian wood processing businesses is not undermined. As of 2018, the stumpage value remains low compared to other countries. For a certain period of time this creates a space for competitiveness for a forest business. Frequently low stumpage rates lead to wastage and poor utilization, which actually makes the industry less competitive than their neighbors say in Sweden or Eastern Europe. On the other hand inflation rate could increase harvesting and transport costs²¹. Heavy investments are needed in forest road infrastructure, which needs policy and possibly state investment.

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¹⁵ Russian Audit Chamber, 2018 link - https://ach.gov.ru/checks/9612
¹⁶ [https://ach.gov.ru/upload/iblock/32/i32ecac2cee85712845e5ec6b5914f7.pdf](https://ach.gov.ru/upload/iblock/32/i32ecac2cee85712845e5ec6b5914f7.pdf) page 31
¹⁷ N. Shmatkov, Sustainable forest management, 2020 N3 (20) 2020 page 8
¹⁸ [https://ach.gov.ru/upload/iblock/32/i32ecac2cee85712845e5ec6b5914f7.pdf](https://ach.gov.ru/upload/iblock/32/i32ecac2cee85712845e5ec6b5914f7.pdf) page 2
¹⁹ [https://ach.gov.ru/upload/iblock/32/i32ecac2cee85712845e5ec6b5914f7.pdf](https://ach.gov.ru/upload/iblock/32/i32ecac2cee85712845e5ec6b5914f7.pdf) page 3
²⁰ Russian Audit Chamber, 2018 link - https://ach.gov.ru/checks/9612
²¹ [https://lesprominform.ru/media/events/ligna_presentation_29.5.pdf](https://lesprominform.ru/media/events/ligna_presentation_29.5.pdf)
Primary production in the forestry sector is correlated with overall economic growth. Global production of industrial roundwood, defined as all wood in the rough intended for industrial use, has grown steadily in recent years, albeit slightly slower than overall real GDP growth. Between 2013 and 2018, global GDP expanded at an average rate of 3.6 percent per year in real terms, while industrial roundwood production expanded from 1.84 billion m³ in 2013 to 2.03 billion m³ in 2018, equal to an average annual growth rate of 2.0 percent. The five countries with the greatest forest cover accounted for approximately half of all global production of industrial roundwood (see Table 1.2).

In 2009, the Russian Government introduced high tariffs on exports of unprocessed wood in an attempt to incentivize value-added processing. Since then, annual export volumes of industrial roundwood have decreased by more than 55 percent. During that same period, sawnwood exports have doubled, suggesting that lumber processing capacity has begun to catch up with roundwood supply. However, exports of value-added products have not risen as sharply, due to a combination of fewer investments in capacity upgrades, displacement of imports (especially in wood-based panels), as well as weaker export capacity among firms with lower production volumes.

### Table 1.2: Top 5 Global Producers of Industrial Roundwood, 2018

<table>
<thead>
<tr>
<th>Country</th>
<th>Production (mln m³)</th>
<th>Global share</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>368.2</td>
<td>18.1%</td>
</tr>
<tr>
<td>Russia</td>
<td>219.6</td>
<td>10.8%</td>
</tr>
<tr>
<td>China</td>
<td>180.2</td>
<td>8.9%</td>
</tr>
<tr>
<td>Brazil</td>
<td>158.1</td>
<td>7.8%</td>
</tr>
<tr>
<td>Canada</td>
<td>150.7</td>
<td>7.4%</td>
</tr>
<tr>
<td>World</td>
<td>2,033</td>
<td></td>
</tr>
</tbody>
</table>

Source: FAOSTAT

### Table 1.3: Industrial Roundwood Production & Apparent Consumption by Region/Country, 2016-2018

<table>
<thead>
<tr>
<th>Region/Country</th>
<th>Apparent Consumption 2016 (ths m³)</th>
<th>Apparent Consumption 2017 (ths m³)</th>
<th>Production 2018 (ths m³)</th>
<th>Import Quantity 2018 (ths m³)</th>
<th>Export Quantity 2018 (ths m³)</th>
<th>Apparent Consumption 2018 (ths m³)</th>
<th>Net Export (Import Value 2018 (US$ mln))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>583,516</td>
<td>585,730</td>
<td>649,901</td>
<td>56,043</td>
<td>67,656</td>
<td>638,288</td>
<td>995</td>
</tr>
<tr>
<td>Russia</td>
<td>178,148</td>
<td>178,184</td>
<td>219,569</td>
<td>19,197</td>
<td>200,377</td>
<td>516,013</td>
<td>13,739</td>
</tr>
<tr>
<td>Asia</td>
<td>483,866</td>
<td>485,358</td>
<td>442,184</td>
<td>77,968</td>
<td>4,139</td>
<td>516,013</td>
<td>2,661</td>
</tr>
<tr>
<td>North America</td>
<td>488,494</td>
<td>496,237</td>
<td>518,903</td>
<td>5,694</td>
<td>19,039</td>
<td>505,558</td>
<td>2,223</td>
</tr>
<tr>
<td>Cent. &amp; S. America</td>
<td>236,992</td>
<td>247,490</td>
<td>260,816</td>
<td>290</td>
<td>4,691</td>
<td>256,415</td>
<td>538</td>
</tr>
<tr>
<td>Africa</td>
<td>67,990</td>
<td>67,660</td>
<td>78,676</td>
<td>657</td>
<td>7,550</td>
<td>71,782</td>
<td>2,223</td>
</tr>
<tr>
<td>Oceania</td>
<td>38,867</td>
<td>45,735</td>
<td>77,027</td>
<td>22</td>
<td>32,388</td>
<td>44,661</td>
<td>4,456</td>
</tr>
<tr>
<td>World</td>
<td>1909,725</td>
<td>1928,210</td>
<td>2027,507</td>
<td>140,674</td>
<td>135,463</td>
<td>2032,717</td>
<td></td>
</tr>
</tbody>
</table>

Source: FAOSTAT

1.2.2 Sawnwood

Global production of sawnwood (lumber) totaled 492 million m³ in 2018, with sawn softwood accounting for 72 percent of that amount. During the 2013-2018 period, sawn softwood production increased by an annual average rate of 3.4 percent, while sawn hardwood grew at 2.6 percent. Import demand for both sawn softwood and hardwood is strongest in Asia (see Table 1.4, below), especially

23 Novoselov (2019).
China. In 2018, Chinese imports of sawn softwood totaled 24.9 million m$^3$, a slight decline from the prior year due to softening of growth in real estate development.\(^{24}\)

**Russia is the world’s fourth largest producer of sawn softwood behind the US, Canada, and China.** The country produced 39.5 million m$^3$ in 2018, an increase of 4.4 percent over the prior year. Russia is an important source of sawn softwood for China, accounting for 58 percent market share of the country’s imports (Canada is second with 17 percent).\(^{25}\) Overall, export volume of Russian sawn softwood set a new record in 2018 with 29.8 million m$^3$ exported, an increase of 6.2 percent over 2017.\(^{26}\) It should be noted that Russia is also exporting a greater share of its production that in the past, with this figure rising from 66.6 percent in 2013 to 75.3 percent in 2018. Russia’s production of sawn hardwood is less significant: it accounts for 2 percent of global production in this segment, and export earnings in 2018 were just US$ 304 million, compared to US$ 4.2 billion for sawn softwood.

**Table 1.4: Sawnwood Production & Apparent Consumption by Region/Country, 2016-2018**

<table>
<thead>
<tr>
<th>Region/Country</th>
<th>Apparent Consumption 2018 (ths m$^3$)</th>
<th>Apparent Consumption 2017 (ths m$^3$)</th>
<th>Production 2018 (ths m$^3$)</th>
<th>Import Quantity 2018 (ths m$^3$)</th>
<th>Export Quantity 2018 (ths m$^3$)</th>
<th>Apparent Consumption 2018 (ths m$^3$)</th>
<th>Net Export (Import) Value 2018 (US$ mln)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Softwood (coniferous)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>103,552</td>
<td>103,552</td>
<td>154,127</td>
<td>39,551</td>
<td>90,125</td>
<td>103,552</td>
<td>8,291</td>
</tr>
<tr>
<td>Russia</td>
<td>8,872</td>
<td>9,842</td>
<td>39,492</td>
<td>42</td>
<td>29,754</td>
<td>9,780</td>
<td>4,202</td>
</tr>
<tr>
<td>Asia</td>
<td>107,534</td>
<td>107,534</td>
<td>60,229</td>
<td>47,780</td>
<td>474</td>
<td>107,534</td>
<td>(10,643)</td>
</tr>
<tr>
<td>North America</td>
<td>98,781</td>
<td>98,781</td>
<td>104,586</td>
<td>26,586</td>
<td>32,490</td>
<td>98,781</td>
<td>2,129</td>
</tr>
<tr>
<td>Cent. &amp; S. America</td>
<td>19,550</td>
<td>19,550</td>
<td>23,403</td>
<td>2,454</td>
<td>6,307</td>
<td>19,550</td>
<td>864</td>
</tr>
<tr>
<td>Africa</td>
<td>10,280</td>
<td>10,280</td>
<td>3,118</td>
<td>7,436</td>
<td>274</td>
<td>10,280</td>
<td>(1,720)</td>
</tr>
<tr>
<td>Oceania</td>
<td>7,176</td>
<td>7,176</td>
<td>8,417</td>
<td>914</td>
<td>2,154</td>
<td>7,176</td>
<td>338</td>
</tr>
<tr>
<td>World</td>
<td>346,873</td>
<td>346,873</td>
<td>353,979</td>
<td>124,719</td>
<td>131,825</td>
<td>346,873</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hardwood (non-coniferous)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>12,388</td>
<td>12,388</td>
<td>16,121</td>
<td>5,089</td>
<td>8,822</td>
<td>12,388</td>
<td>364</td>
</tr>
<tr>
<td>Russia</td>
<td>1,011</td>
<td>1,093</td>
<td>3,209</td>
<td>6</td>
<td>1,910</td>
<td>1,305</td>
<td>299</td>
</tr>
<tr>
<td>Asia</td>
<td>90,658</td>
<td>90,658</td>
<td>81,289</td>
<td>17,758</td>
<td>8,389</td>
<td>90,658</td>
<td>(4,428)</td>
</tr>
<tr>
<td>North America</td>
<td>21,032</td>
<td>21,032</td>
<td>24,284</td>
<td>1,863</td>
<td>5,115</td>
<td>21,032</td>
<td>2,113</td>
</tr>
<tr>
<td>Cent. &amp; S. America</td>
<td>7,665</td>
<td>7,665</td>
<td>8,112</td>
<td>567</td>
<td>1,014</td>
<td>7,665</td>
<td>224</td>
</tr>
<tr>
<td>Africa</td>
<td>6,550</td>
<td>6,550</td>
<td>7,709</td>
<td>1,367</td>
<td>2,526</td>
<td>6,550</td>
<td>897</td>
</tr>
<tr>
<td>Oceania</td>
<td>1,048</td>
<td>1,048</td>
<td>1,050</td>
<td>95</td>
<td>96</td>
<td>1,048</td>
<td>(44)</td>
</tr>
<tr>
<td>World</td>
<td>139,341</td>
<td>139,341</td>
<td>138,565</td>
<td>26,739</td>
<td>25,962</td>
<td>139,341</td>
<td></td>
</tr>
</tbody>
</table>

**Source: FAOSTAT**

Despite its considerable output, Russia’s sawmilling industry is still somewhat fragmented. Nationally, the industry is characterized by a few large players and many smaller, regional sawmills with annual capacities of less than 100,000 m$^3$. While the quality of their timber inputs is often high, smaller mills often rely on outdated machinery and thus are unable to produce higher-value types of lumber, such as planed, machine stress-rated (MSR) or modified/treated products. Moreover, these firms also reportedly face challenges in achieving desired service levels (e.g., timeliness of delivery, ease of payment) and therefore struggle to compete with larger players. While larger firms are able to access export markets, many small and medium-sized mills cater mainly to local demand. When


\(^{26}\) Novoselov (2019).
they do export their product, they typically lack a local presence in export markets in the form of sale offices, terminals, or landed stock and instead rely on third-party distributors.27

1.2.3 Conventional Wood-Based Panels

Particle board, fiberboard, plywood, oriented strand board (OSB), and veneer sheets are all types of conventional wood-based panels. In contrast to more sophisticated engineered wood products (EWPs; see below) conventional wood-based panels are products made primarily from finer, often lower-quality wood elements (veneers, strands, particles, and fibers) bound together by resin and other additives.

1.2.3.1 Particleboard

Global particleboard production grew by a 2.9 percent CAGR between 2013 and 2018, reaching 96 million m³. Demand from the construction and furniture industries in Asia and Europe have been key drivers of this market; it is generally used in lower-quality products such as inexpensive flooring and flat-pack furniture.

Table 1.5: Conventional Wood-Based Panel Production & Apparent Consumption by Region/Country, 2016-2018

<table>
<thead>
<tr>
<th>Region/Country</th>
<th>Apparent Consumption 2016 (ths m³)</th>
<th>Apparent Consumption 2017 (ths m³)</th>
<th>Production 2018 (ths m³)</th>
<th>Import Quantity 2018 (ths m³)</th>
<th>Export Quantity 2018 (ths m³)</th>
<th>Apparent Consumption 2018 (ths m³)</th>
<th>Net Export (Import Value 2018 (US$ mln))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>76,211</td>
<td>81,079</td>
<td>89,892</td>
<td>37,964</td>
<td>43,266</td>
<td>84,591</td>
<td>2,814</td>
</tr>
<tr>
<td>Russia</td>
<td>10,449</td>
<td>11,454</td>
<td>17,334</td>
<td>1,217</td>
<td>5,940</td>
<td>12,611</td>
<td>1,654</td>
</tr>
<tr>
<td>Asia</td>
<td>243,431</td>
<td>237,509</td>
<td>245,364</td>
<td>24,838</td>
<td>30,841</td>
<td>239,361</td>
<td>2,495</td>
</tr>
<tr>
<td>North America</td>
<td>54,279</td>
<td>56,607</td>
<td>48,072</td>
<td>19,474</td>
<td>10,652</td>
<td>56,894</td>
<td>(3,638)</td>
</tr>
<tr>
<td>Cent. &amp; S. America</td>
<td>16,010</td>
<td>16,535</td>
<td>18,851</td>
<td>3,749</td>
<td>5,933</td>
<td>16,647</td>
<td>507</td>
</tr>
<tr>
<td>Africa</td>
<td>4,750</td>
<td>4,716</td>
<td>2,689</td>
<td>2,609</td>
<td>419</td>
<td>4,878</td>
<td>(1,056)</td>
</tr>
<tr>
<td>Oceania</td>
<td>2,980</td>
<td>3,111</td>
<td>3,081</td>
<td>1,167</td>
<td>893</td>
<td>3,355</td>
<td>(242)</td>
</tr>
<tr>
<td>World</td>
<td>397,661</td>
<td>399,557</td>
<td>407,949</td>
<td>89,801</td>
<td>92,024</td>
<td>405,726</td>
<td></td>
</tr>
</tbody>
</table>

Source: FAOSTAT

Russia has a long history of particleboard production. Output increased by 13 percent in 2018 to 8.4 million m³, partially attributable to the completion of Swiss Krono’s new particleboard line, and production increases at the Kronospan and Tomlesdrev plants. As more capacity comes online in the years ahead, Russia’s annual output could exceed 1.7 million m³.28 In 2018, Russia exported 21 percent of total output and was among the world’s top five particleboard exporters, selling mostly to

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other Commonwealth of Independent States (CIS) members. The depreciation of the ruble in recent years has also led a growth in exports to other markets, including China, Chile, and Colombia.

1.2.3.2 Fiberboard

Global production of medium-density fiberboard (MDF) and high-density fiberboard (HDF) increased at an annual average rate of 2.4 percent between 2013 and 2018. More durable but more costly to produce than particleboard, MDF and HDF are more commonly used to make laminated flooring, doors, and higher quality furniture.

Between 2013 and 2018, Russia’s production of MDF and HDF expanded by an annual average of 23.2 percent, reaching 3.1 million m$^3$. This was due to significant investment in additional capacity, including by the Turkish company Kastamonu in the Alabuga Special Economic Zone (SEZ) in the Republic of Tatarstan, and the Austrian firm Egger, which invested €200 million in an MDF/HDF plant in Gagarin, Smolensk Region (see Figure 1.3). More plants are expected to be commissioned by 2021, including projects by domestic players Roskitinvest CJSC, Russky Laminat, and Czech-based Kronospan. When complete, these projects are expected to increase Russia’s total fiberboard production capacity by 1.2 million m$^3$ per year.

Figure 1.3: Egger MDF/HDF Production Plant in Gagarin, Smolensk Region

In 2018, Russia exported a combined total of 1.1 million m$^3$ of MDF and HDF. This was equal to 34 percent of total output. The country has been a net exporter of fiberboard since 2016, with Uzbekistan, Kazakhstan, and Belarus being top importers. More recently, China and Europe have begun to import greater volumes of Russian-made MDF and HDF.

29 The CIS is a regional intergovernmental organization consisting of post-Soviet republics: Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, and Uzbekistan.
30 FAOSTAT (2020).
31 ibid.
1.2.3.3 Plywood

Global production of plywood reached 163 million m$^3$ in 2018, with total export value rising by 6.7 percent year-on-year in US dollar terms. Generally speaking, demand has grown in past years due to its use in both construction and furniture production. Asia accounts for 58 percent of global apparent consumption, but, in contrast to many other wood products, the region is a net exporter to the world, with China and Indonesia occupying the top two spots. Russia is third globally, and the leading producer and exporter of birch plywood, which is considered a premium product on account of being both highly durable and aesthetically appealing.

Russia has recently seen a surge in new plywood capacity. In 2018 alone, Belozerskles, Sveza Novator, CFMK, and Novatorksoye Woodworking Plants all announced the completion of major investment projects into plywood capacity. In 2019, UPM Chudovo began to sell plywood made using its newly commissioned line following a €50 million investment into its factory located in Novgorod Region. Meanwhile, Sveza Group is planning to develop projects in Vologda and Tyumen Regions, while Segezha Group expects to complete a project in Kostroma Region.

1.2.3.4 Oriented strand board

OSB is manufactured from lower-quality wood and is often used as a lower-cost substitute for plywood. (Both are used for structural purposes, while particle board and fiberboard are non-structural.) End-use is slightly different, however: while 40 percent of plywood is used for industrial purposes in North America, 57 percent of OSB was used in residential construction in 2018. International trade of OSB is mainly driven by high demand in North American and European markets.

In recent years, Russian production of OSB has increased dramatically. Between 2013 and 2018, production rose by 68 percent, largely to meet rising domestic demand from the construction industry (see Figure 1.4). The country’s OSB production capacity was expected to increase in 2019 due to the launch of two large plants: one owned by Kronospan in Ufa, Republic of Bashkortostan, and Talion Arbor, in Tver Region. A dozen OSB projects are expected to be built by 2021. This additional capacity would enable Russian producers to fully satisfy domestic demand.

1.2.4 Engineered Wood Products

EWPs are used primarily for structural and occasionally for aesthetic reasons, generally in residential and commercial building construction. These are higher-end products that can provide a superior level of structural support than even concrete or steel, which are more frequently used than wood in industrial projects. Aesthetic and environmental considerations have made these products increasingly attractive; in the US, an estimated one-quarter of non-residential buildings is

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32 UPM Plywood “UPM Chudovo plywood mill 2018” (2018): https://www.youtube.com/watch?v=w6iZIHx1P1Q.
34 UNECE/FAO (2019).
now wood-framed (see Section 3). The manufacturing process for EWPs is largely similar to that of conventional wood-based panels but requires higher-quality inputs and greater control of temperature, humidity, and other factors during production. These products are engineered to optimize the natural characteristics of the wood used during the lamination process. With cross-laminated timber (CLT), for instance, the strongest lamellas (layers) are used in the beam or panel’s core, those with high-quality exteriors are used on the surfaces.

1.2.4.1 Laminated veneer lumber

Laminated veneer lumber (LVL), a type of structural composite lumber, is frequently used in residential construction projects. These products are stronger, straighter, and more uniform than the input lumber, and less likely to warp, twist, bow, or shrink. LVL is highly popular in North America and, increasingly, in Europe, Japan, and Australia. North America accounts for roughly 80 percent of global LVL demand and was forecast to consume a total of 2.2 million m³ in 2019. North American LVL producers’ gross profit margins have consistently exceeded 20 percent due to demand increasingly outstripping supply.

LVL and other EWPs are not as frequently used in construction projects in Russia. This is due to their generally higher prices and a lack of familiarity of firms with their use. However, this is gradually changing: the country is home to two LVL production facilities: LVL-Yugra in Khanty-Mansiysk Autonomous District (39,000 m³ capacity) and Talion Terra in Tver Region (200,000 m³ capacity). Approximately 90 percent of production is exported, mainly to the US, Europe, and Australia.

Figure 1.5: Chauveau Soccer Stadium, Québec

Source: ABCP Architecture

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36 Other, less common, types of structural composite lumber include oriented-strand lumber (OSL), laminated-strand lumber (LSL) and parallel-strand lumber (PSL). PSL is made from veneers that are cut into long strands and oriented parallel to its length before compression and gluing. LSL is also made from strands rather than veneer, although the strands are shorter and aligned with less precision than PSL; it is like thicker version of OSB. OSL also resembles OSB in appearance (they are both fabricated from the similar wood species and contain flaked wood strands), however, unlike OSB, the OSL strands are arranged parallel to the longitudinal axis.


1.2.4.2 Glued laminated timber (glulam)

Similar to LVL, glulam is made from board lamellas glued in the same direction of wood grain. However, unlike LVL, glulam lamellas are finger-jointed lengthwise before being glued together. The result is an elongated beam, similar to a solid wooden beam but with a far greater load-bearing capacity and fewer defects than the input lumber, as knots are cut out in advance. Glulam beams can also be engineered to be curved for use in column-free spans of roof or bridge trusses. Pictured above is Chauveau Soccer Stadium in Québec, Canada, built in 2009 for CA$ 20 million (approximately US$ 14.7 million), which features an arched glulam roof spanning 73 meters.

Global production and consumption of glulam is estimated to be 7-8 million m³. Austria, the world’s leading producer, accounts for about 1.5 million m³ annually. Other major producers are Japan and Germany; North American companies produced a total of 467,700 m³ in 2018.

Glulam is more popular, relatively speaking, as a construction material for wooden structures in Russia and is used in about one-third of wooden residential buildings. Domestic producers satisfy most of the demand. There are approximately 20 glulam manufacturers in Russia; many of the larger players also offer prefabricated housing using the material. The largest players are Sokolsky DOK (Segezha Group, Vologda Region), KMDK Sojuz Center (Kaluga Region), Luzales (Komi Republic), DOK (Segezha Group, Vologda Region), Vyshnevolotsky Lespromkhoz also produces glulam.

1.2.4.3 Cross-laminated timber

Along with glulam, CLT is another increasingly popular substitute for steel and concrete. These products have a strength-to-weight ratio that is approximately 20 percent higher than steel and 4 to 5 times higher than that of non-reinforced concrete. CLT panels are made from crosswise glued lamellae; the product is similar in principle as veneer plywood, as the crosswise structure affords a high degree of dimensional stability: each layer of wood prevents movement of the adjacent layer at right angles to it, which occurs with single boards due to changes in wood moisture. CLT is frequently used in ceiling and wall elements in construction. It is growing in popularity among builders due to its durability, fire resistance, and environmental friendliness.

Global CLT production capacity was estimated to be 2.5 million m³ in 2019. Production capacity is expected to increase to 4.5 million m³ by 2022 as recently launched investment projects are completed. Currently the product is only imported to Russia, mainly by German and Austrian firms. However, Segezha Group is constructing the country’s first CLT plant in Vologda Region with a 35,000 m³ capacity.

1.2.4.4 Nail- and dowel-laminated timber

The other mass-timber products, nail- and dowel-laminated timber (NLT and DLT, respectively) have been around for quite some time: NLT, where boards are nailed together, has been around for over 150 years. DLT, which uses hardwood dowels hammered in crosswise, has been used in construction in countries like Switzerland for hundreds of years, but only started to be commercialized in the 1990s. DLT, which is stronger than NLT and comparable with CLT, also allows for the integration of acoustic strips along the bottom surface of a panel (see Figure 1.6). Despite rising

40 UNECE/FAO (2019).
interest, these products are still not widely produced: the world’s largest DLT manufacturer, in Switzerland, produces just 15,000 m$^3$ a year.$^{43}$

However, demand for these products is growing among some design and construction firms due to their ‘all-natural’ production. Because NLT and DLT (unlike glulam and CLT) do not use glue as an adhesive, they can be used in the realization of urea-formaldehyde (UF)-free designs. (UF, also known as urea-methanol, is often used during the gluing process in the manufacture of wood-based panels. It can gradually evaporate from products—a process known as ‘off-gassing’—creating potential health risks.)

1.2.5 Note on Excluded Segments

Finally, it should be noted that, in the interest of brevity, certain portions of the authors’ analysis of forest sector segments present in Tver have not been included in the final version of this report. The pulp and paper, wood energy, secondary-processed wood-product industries are not discussed here, as these segments were assessed to be relatively unattractive for a variety of reasons, including structural decline (pulp and paper); increasing commoditization (wood energy); and lack of sufficient resources in Tver to fuel greater levels of competitiveness (BJC and furniture production). Forest sector services (e.g., eco-tourism and ecosystem services) are beyond the scope of this report.

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Case Study: Segezha Group

Larger Russian wood producers with strong financial resources appear to be positioning themselves to address the rising global demand for EWPs. Segezha Group, which produces a wide variety of wood and paper products has begun construction in Sokol, Vologda region, of what will be the first CLT plant in the Russian Federation. The group is investing almost US$ 50 million in the plant, which will have an annual capacity of 250,000 m². The plant is expected to be complete by Fall 2020.44

Segezha Group is one of Russia’s largest forest sector companies, harvesting wood from 7.4 million ha of leased woodland, maintaining production facilities and offices in six Russian regions and 11 countries, and employing over 13,000 people. The company is nearly fully owned by AFK Sistema, one of Russia’s largest conglomerates, and thus does not release its audited financials. It does, however, publish annual reports with some financial highlights, which are revealing insofar as they offer a snapshot of one of Russia’s most advanced players in the forest sector. In 2018, the company had RUB 58 billion (US$ 922 million) in revenues, segmented by paper products (57 percent of revenues), processed wood products (26 percent), secondary-processed wood products (12 percent), and glulam products (3 percent).45

The share of Segezha Group’s revenues denominated in foreign currencies rose between 2016 and 2018, reaching 72.2 percent in the final year. The company’s international reach has also afforded it access to lower-cost financing: of its RUB 38.5 billion (US$ 613 million) in net debt as of 2018, just 37 percent was ruble denominated. The company notes that the exchange-rate risk from foreign currency-denominated debt is naturally hedged by its large share of foreign currency revenues but does not mention that its (likely) lower cost of capital affords it a significant competitive advantage over domestic-oriented producers. The company’s sizable balance sheet also means that it is also able to borrow larger amounts and for longer: 79 percent of its debt is classified as long-term. This is vital to Segezha Group’s ability to finance CapEx projects, which amounted to RUB 30.1 billion ($479 million) between 2016 and 2018.46

During this reporting period, Segezha Group reported annual operating margins of approximately 20 percent. These were markedly higher than the industry median 13 percent, but lower than those of some other players. Ilim Group, a producer of pulp and paper products with a presence in five Russian regions and approximately 17,000 employees, reported average EBITDA margins of 34 percent between 2014 and 2018.47 The company, founded in 2007 as a joint venture between Russian mill owners and the multinational paper producer International Paper, reported revenues of RUB 73 billion (US$ 1.16 billion) in 2018, with an EBITDA margin of 32 percent and CapEx investment of RUB 35.6 billion (US$ 567 million).48 However, it is important to note that the production and exports of Ilim Group are oriented around Chinese demand, while Segezha Group competes more in European markets.

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46 ibid.
2 Sector Mapping of Tver Region

Key Findings

- Tver Region has the largest forest area among the regions that make up the Central Federal District; as much as 55 of its territory is covered by forests.
- Data from the Forest Stewardship Council, an international body that certifies adherence to sustainable forest management practices, shows that a total of 60 percent of Tver’s commercial forests are under, or have recently been under, FSC certification.
- Revenues of Tver’s forest sector companies totaled RUB 20.7 billion in 2018, when adjusted to include MLT, the holding company of Talion Terra and Talion Arbor.
- Tver Region’s forest exports amounted to US$ 46 million in 2019, equal to 13 percent of the region’s total exports.

2.1 Overview of Forest Sector in Tver Region

Tver Region is located in Russia’s Central Federal District (CFD). It is 150 km from Moscow and 480 km from St. Petersburg; major road and rail lines connecting the cities pass through the region and its capital, the city of Tver (see Appendix II, Figure 8.8).

Tver’s processing sector plays a large role in its overall economy. Firms in this space are engaged in the production of specialized machinery (since the Soviet era, the region has been a producer of railway cars), agricultural/food processing, and wood processing (see Figure 2.1). The forest sector (as defined in Section 1) accounts for approximately 5 percent of total output; here, it spans the government’s ‘processing’ and ‘forestry’ classifications.

2.1.1 Forest Resources

Tver has the largest forest area among the regions that make up the CFD, with as much as 55 percent of its area covered by forests. The region has a total of 4,874 ha of forestland and the CFD’s second largest growing stock (731 million m$^3$). Commercial forests are 60 percent of Tver Region’s forestland, the remainder are protected

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49 The FAO defines growing stock as the volume of all living trees in a given area of forest or wooded land that have more than a 10 cm diameter at breast height.
forests. The northern part of the region is covered in boreal forests which account for 8 percent of total forestland; the remainder are mixed forests (see Figure 2.2). Tver region could be regarded as ecological donor to the neighboring Moscow region and St. Petersburg by providing clean air, watershed and soil protection services, recreational services.

The region’s forests comprise a combination of softwood and hardwood species. Softwoods, which have historically been more commercially valuable due to higher demand and ease of processing, account for 43 percent of the total forest area, with the balance being hardwoods. These percentages are rough averages: there is a lower share of softwoods in leased commercial areas due to higher historical harvesting.

As shown in Table 2.1, the most prevalent species in Tver Region are birch and spruce. Birch accounts for 36 percent of the region’s forest area; aspen and alder, the other two most common soft broadleaves woods, each account for about 10 percent. Of these, the most common species are silver birch, downy birch, European aspen, and gray alder. Spruce and pine, two conifers, are also present in abundance, accounting for 24 percent and 19 percent, respectively, of total forest. The most common species are Scots pine and Norway spruce. Also should be noted that Tver forest are also characterized as mature forest stands.

2.1.2. Forest Management

With the introduction of the 2009 new Forest Code, the forest management functions were decentralized to all the regions. In 2018 Tver developed and approved a regional Forest

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51 Russia’s domestic classification of tree species classifies by both wood type (“soft” or “hard”) and foliage type (“coniferous” or “broad-leaved”). All conifers are softwoods, but broad-leaved may be either hardwood (oak, ash, maple, etc.) or “soft-leaved” (birch, aspen, alder, etc.). For the sake of simplicity, the commonly used terminology of “softwood” and “hardwood” in this report is equivalent to “coniferous” and “broad-leaved,” respectively.
Management Plan, covering the period of 2019-2028. This Plan and other existing strategies set the objectives and indicators to maintain the ecological, social and economic benefits of the Tver forests.

Tver's annual harvest is roughly 4.5 million m³, about 50 percent of its AAC—considerably above CFR’s average of 38 percent. Tver forest authorities have the plan to increase the harvesting of its forest stands, even though reforestation efforts are not sufficient. To note that all planned reforestation activities the region is fulfilling diligently and is regarded as the best performer in the levels of reforestation in the Central Federal Okrug. The main obstacles to increase the reforestation efforts is lack of financing and climatic/soil conditions (prevailance of swamps in the area).

Increase in harvesting levels helps to increase the generation of financial resources for both the regional, local and federal budgets. However by comparing the total amounts of spent budget resources and revenues earned shows an unbalanced and unsustainable financial model.

Tver forest authorities recognize the importance of forest fire management and illegal logging remains an acute problem. The region is paying more attention to the prevention and monitoring of forest fires, which help to detect the forest fires quickly and contain its spread. It is also planned to apply new innovative solutions for forest fire monitoring. However, illegal logging poses severe budget losses and damage to the forest resources in Tver. Per the official data, in 2017 the losses from forest fires were 120 000 Rubles while damage to the budget from illegal logging resulted in 93 million. Rubles.

These lost financial resources could be used to finance a whole range of forest management activities, for example:

- 11,439.02 ha of new planted forests;
- 17,544.45 ha of forests for natural regeneration;
- Produce 33,4 million seedlings;
• Create 2,461.94 km of new forest fires roads.

Data shows that up to 2.65 million ha (60 percent) of Tver’s commercial forests are leased. Collectively, private forest managers hold approximately 500 standalone contracts; virtually all of these specify that they have been made for the purpose of harvesting wood.

By volume, the majority of wood production in Tver occurs under Forest Stewardship Council (FSC) certification. Data from the FSC, an international body that certifies a company’s adherence to SFM practices shows that a total of 1.59 million ha of commercial forests (60 percent) are under or have recently been under FSC certification (see Table 2.2, below). (See Sections 1 and 3 for further detail on SFM and certification schemes.) The FSC’s data also provides some insights regarding the region’s individual companies active in FSC-certified forest management. Modern Lumber Technology (MLT), the holding company that owns the Talion Terra and Talion Arbor plants, is also the largest manager of FSC-certified forest in Tver with 710,062 ha under management, reported logging of 982,611 m³ in 2018, 69 percent of its AAC. Of this amount, 35 percent was softwood (pine and spruce) and 65 percent was hardwood (birch, aspen, alder).\textsuperscript{52,53} It is important to note that the high share of hardwood harvested in Tver suggests feedstock challenges. Anecdotally, this is due to a combination of infrastructure challenges and historical overexploitation of softwood stocks.

More recent climatic developments have posed difficulties for producers. The recent winter of 2019-20 was abnormally warm, resulting in stoppages of logging activities which rely on low temperature conditions. This resulted in the drawdown of timber inventories and created disruptions for some of the region’s wood processors. Work resumed in April and May 2020, however the emergence of the COVID-19 pandemic posed further workforce difficulties.

Climate change impacts is recognized as the risk factor in the existing Forest plan of the region. It sets a complex of adaptation measures:

• To study the adaptation functions of oak and expand its use in reforestation;
• Find ways to increase the use of dead and damaged stands for wood processing;
• Focus on the cultivation of mixed-age plantations;
• Expand the specially protected natural areas;
• Identify and control the invasive tree species;
• Increase the efficiency of fire safety measures in forests, including forest fire prevention; monitoring of fire hazards in forests and forest fires;
• Prevent and control pest outbreaks.

Table 2.2: Largest Managers of FSC-Certified Forest Land in Tver Region, 2020

<table>
<thead>
<tr>
<th>Company</th>
<th>FSC certified forest (ths ha)</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLT LLC</td>
<td>710.1</td>
<td>44.7%</td>
</tr>
<tr>
<td>LesServis LLC</td>
<td>229.9</td>
<td>14.5%</td>
</tr>
<tr>
<td>Vishnevolskij Lespromhoz AO</td>
<td>184.9</td>
<td>11.6%</td>
</tr>
<tr>
<td>Zapadnodvinskaya LK LLC</td>
<td>169.1</td>
<td>10.6%</td>
</tr>
<tr>
<td>Lesokombinat LLC</td>
<td>105.2</td>
<td>6.6%</td>
</tr>
<tr>
<td>Laguna LLC</td>
<td>91.3</td>
<td>5.7%</td>
</tr>
<tr>
<td>Tverintrles LLC</td>
<td>70.8</td>
<td>4.5%</td>
</tr>
<tr>
<td>Shostka LLC</td>
<td>17.7</td>
<td>1.1%</td>
</tr>
<tr>
<td>DIO LLC (Suspended)</td>
<td>11.0</td>
<td>0.7%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,590.0</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Source: FSC

\textsuperscript{52} Data compiled from various MLT/Ultralam documents available online.
2.2 Sector Composition

2.2.1 Tver Forest Sector Overview

As of 2018, Tver’s forest sector consisted of 322 active companies and 985 individual entrepreneurs. The actual number of registered businesses in the sector is higher; however, for the purpose of this research, inactive companies having neither revenues nor profits or losses in 2018 were excluded. As some operating facilities may ultimately be registered elsewhere, an adjustment for some large businesses was made to consider those businesses as being based in Tver.

Tver’s 322 forest-sector companies are active in upstream, midstream, and downstream segments of value chains. According to official statistics from the Ministry of Economic Development of Tver Region (MEDTR) and other sources, the region’s forest sector accounted for RUB 12.0-14.7 billion in revenues in 2018. However, these statistics only take into account companies registered in the region. MLT is registered in St. Petersburg; its revenues are therefore attributed to that city’s economic activities and not those of Tver. Table 2.3 (above) and Figure 2.3 present an adjusted view of the region’s forest sector with MLT accounting for one wood-panel manufacturer. These adjustments estimate the size of the region’s forest sector revenues at RUB 20.7 billion. Thus, while the lumber industry accounts for the largest number of businesses, wood-based panel manufacturers produce more than half of adjusted revenues of the sector. (This is largely because of MLT’s 2018 revenues of RUB 8.7 billion. In aggregate, the region’s eight other panel producers had just RUB 2 billion in revenues.)

2.2.2 Leading Forest Sector Companies In Tver Region

As shown by Figure 2.3 and Table 2.4, MLT accounts for a 42 percent of Tver Region’s forest sector revenues. By segment, the lumber industry is the largest employer.

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54 The selected profile included companies registered in the Tver region with the main activity code OKVED2 of 02.10, 02.20, 16.10, 16.21, 16.22, 16.23.1, 16.24, 16.29.1, 31.0
55 “Register for MSMEs for the OKVED2 codes 02 and 16”, MSP Corporation, (May 15, 2020)
56 Official registers may often contain formal entries for in fact inactive companies.
57 The data is collected from the commercial database Integrum.
58 The selected profile included companies registered in the Tver region with the main activity code OKVED2 of 02.10, 02.20, 16.10, 16.21, 16.22, 16.23.1, 16.24, 16.29.1, 31.0
providing jobs to approximately 4,040 of the region’s citizens. Furniture production, while not a money-maker, is second (2,400 employees), followed by logging (2,110 employees).

Table 2.4 Ten Largest Forest Sector Companies in Tver Region by Revenue

<table>
<thead>
<tr>
<th>Company</th>
<th>Industry</th>
<th>Employees</th>
<th>Share of Total</th>
<th>2018 Revenues (RUB mln)</th>
<th>Share of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLT LLC (Talion Terra, Talion Arbor, UltraDom)</td>
<td>EWP</td>
<td>600*</td>
<td>9.8%</td>
<td>8,706</td>
<td>42.1%</td>
</tr>
<tr>
<td>Sofia LLC</td>
<td>BjC (Doors)</td>
<td>456</td>
<td>7.4%</td>
<td>1,325</td>
<td>6.4%</td>
</tr>
<tr>
<td>Nelidovskiy DOK AO</td>
<td>EWP</td>
<td>766</td>
<td>12.5%</td>
<td>958</td>
<td>4.6%</td>
</tr>
<tr>
<td>LPX Siyanie LLC</td>
<td>Logging</td>
<td>220</td>
<td>3.6%</td>
<td>691</td>
<td>3.3%</td>
</tr>
<tr>
<td>Vyshnevolotskii Lespromkhoz AO</td>
<td>Lumber</td>
<td>389</td>
<td>6.3%</td>
<td>684</td>
<td>3.3%</td>
</tr>
<tr>
<td>Vyshnevolotskii MDOK OAO</td>
<td>EWP</td>
<td>412</td>
<td>6.7%</td>
<td>606</td>
<td>2.9%</td>
</tr>
<tr>
<td>LesServis LLC</td>
<td>Logging</td>
<td>16</td>
<td>0.3%</td>
<td>502</td>
<td>2.4%</td>
</tr>
<tr>
<td>Maksatikhinskiy Lespromyshlenny Kombinat Coop</td>
<td>EWP</td>
<td>N/A</td>
<td>-</td>
<td>406</td>
<td>2.0%</td>
</tr>
<tr>
<td>Lesokombinat LLC</td>
<td>Logging</td>
<td>100</td>
<td>1.6%</td>
<td>323</td>
<td>1.6%</td>
</tr>
<tr>
<td>Rzhevmebel LLC</td>
<td>Furniture</td>
<td>178</td>
<td>2.9%</td>
<td>291</td>
<td>1.4%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>14,495</strong></td>
<td></td>
</tr>
</tbody>
</table>

Sources: Integrum, authors’ calculations

* Estimate

- **MLT.** Also known as STOD, the acronym of it Russian-language name, MLT is the flagship of Tver Region’s forest sector and one of its largest employers. As noted above, the holding company’s subsidiaries include Talion Terra, a plant with annual production capacity of 150,000 m³ LVL and 60,000 t fuel pellets, and Talion Arbor, a 500,000 m³ capacity OSB line. Both manufacture products under the ‘Ultralam’ brand name, which are exported to over 25 countries around the world.

MLT’s LVL product line is segmented by function: ‘Ultralam R’ for supporting structural elements, ‘Ultralam X’ for greater side loading, and ‘Ultralam I’ suitable for bearing lighter loads. These products are typically made from spruce and pine (softwoods); the company’s Rbirch LVL offering is made with birch, a hardwood, thus making it stronger than its peers.

Another MLT subsidiary, UltraDom, has been producing prefabricated wooden houses using LVL framing since 2015. UltraDom has an annual capacity of 40,000 m², or 250 prefabricated houses. (See Figure 2.4 for examples of UltraDom designs.)

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59 Nelidovskiy Derevoobrabatyvayushchiy Kombinat
• **Sofia.** Sofia opened in 1993 as a producer of doors and window frames. In 2005, the company’s plant was upgraded with modern European equipment for door manufacture and in 2007 Sofia started exporting to the EU. Over the last decade, the company has been developing proprietary designs for door mechanisms and is shifting away from pure manufacturing to the design and installation of more complex interior solutions which incorporate doors, partition walls, and flooring materials (see Figure 2.5).

• **Nelidovsky DOK.** The company began its life as a sawmill in 1907. Currently, it produces mainly birch plywood, fiberboard, and molded pieces for use in furniture. As part of its full-cycle processing, Nelidovsky DOK also produces energy and heat using wood residues. The company’s panel production is certified under FSC and California Air Resources Board (CARB) standards. (CARB regulates formaldehyde emissions in wood panels.) The company is in the process of modernizing its plywood production line, expanding lamination and coating of panels, and moving into the production of biofuel and wooden housing.

• **LPH Siyanie.** Established in 2000, LPH Siyanie is active in silviculture and forest management, logging, and sawmilling. The company’s harvest exceeds 320,000 m³ annually. LPH Siyanie’s mill produces sawn wood as well as chips for pulp and paper. The company reports that it intends to expand its logging activities, modernize its drying kilns, develop transport infrastructure, and expand into production of wood pellets.

• **Vyshnevolotsky Lespromkhoz.** The company was established as a wood production site in 1953 and has expanded from primary wood production into the manufacture of lumber, glulam, and wooden housing sets under the “Grand Forest” trademark. Its annual logging amounts to around 200,000 m³; harvested forest is directed to the company’s mill. As a harvester, the company provides a full set of silviculture and forest management services on operated sites; its production is FSC-certified. The company claims to have been the first in Russia to purchase John Deere forestry equipment, in 2010.

• **Vyshnevolotsky MDOK.** Established as a sawmill in 1875, in 1973 the company began producing composite boards. Currently, the plant produces particleboard, fiberboard, and their derivatives, including laminated boards, wall panels, and furniture. The company plant has a machine shop for welding and repair.

• **LesService.** Established in 2009, LesService is a logging company that also offers silviculture and forest management services. LesService is a subsidiary of New Transport Company (NTC), a holding established in 2017 to manage activities of a range of forest-sector companies, primarily in Tver. The holding company is actively involved in the development of forest sector capabilities in the region, contributing to infrastructure, human capital, and logistics development. NTC plans
to expand into production of a range of new products, including fuel wood and Pini-Kay briquettes, plywood, high quality lumber, and EWPs such as glulam and LVL.

- **Maksatikhinsky Lesopromyshlenny Kombinat.** The company is in the course of reorganization of what was previously forestry cooperative called Leskhos, established in 2002. Employing an estimated 600 personnel, the company is active in forest management and logging, sawmilling (30,000 m³ annual lumber output) and plywood production (over 30,000 m³ yearly). A portion of the company’s harvested roundwood (mainly pulpwood) is sold directly, with some exported.

- **Lesokombinat.** Established in 2009, Lesokombinat is mainly active upstream as a forest manager and logger. Most of its harvested roundwood is sold without being processed. However, Lesokombinat does have some proprietary sawmilling capacity; it produces planks and beams of different profiles. Production is certified under FSC. The company plans to invest in processing capacity, as well as in wood-pellet and OSB production.

- **Rzhevmebel (Rzhevdoors).** Since 1998, Rzhevmebel has specialized in the production of sawn lumber, as well as in the manufacture of furniture, doors and sets of wooden houses under the Canadian brand MiTek. A large facility spanning 17 ha allows for a full set of production premises including storage facilities for input timber and drying kilns. The company has modern equipment for laminating various lumber profiles with decorative materials and films. Rzhevmebel has established relationships with such domestic retail chains as Leroy Merlin, K-Rauta, and others.

### 2.3 Export Activities

The Russian Export Center (REC), a state-owned export support institution, estimated that in 2019, the total value of Tver Region’s forest exports amounted to US$ 46 million—equal to 13 percent of the region’s total exports of US$ 351 million. (The region accounted for approximately 0.3 percent of Russia’s total forest sector exports.) Data also shows that the region’s exports have declined in the year’s following government’s introduction of restrictions on the export of industrial roundwood.

By revenue, Tver Region’s most exported forest sector product is sawnwood (US$ 19.2 million in 2019), followed by plywood (US$ 7.8 million); and industrial roundwood (US$ 5.0 million); and other wood-based panels (US$ 2.6 million). As shown in Figure 2.6, most exports are destined for Baltic countries or Finland. However, US and German buyers account for 6 percent and 5 percent of demand for Tver Region’s exports, respectively. China, meanwhile, does not buy much from Tver: Chinese imports of industrial roundwood and sawnwood are more frequently originate from Russia’s forest-rich Eastern regions.

![Figure 2.8: Top Destination of Forest Product Exports from Tver Region, 2019](Source: Russian Export Center)
Sustainability in the Forest Sector

Key Findings

- Forests’ central role in carbon sequestration has meant that supply-chain and end-use sustainability have become increasingly important for both producers and consumers of wood products.
- Forest and chain-of-custody certification schemes seek to address issues of production sustainability.
- Building certification schemes address end-use sustainability of wood products and other construction materials. These are increasingly incorporating measurements of ‘embodied carbon’—that is, emissions from the manufacturing and transport of construction materials and the process of a building’s construction.

The looming threat posed by anthropogenic climate change is having a tremendous impact on the evolution of demand tendencies for forest products. It has become clear that companies in and adjacent to the forest sector can play a key role in the promotion of economic, environmental, and social sustainability—whether as stewards of forests able to sequester larger volumes of carbon dioxide (CO₂), or as producers of biodegradable materials, or as pioneers in environmentally friendly building design. Encouragingly, we are seeing this potential being gradually realized.

3.1 Supply-Chain Sustainability

3.1.1 Forest Certification Schemes

National and international licensing and trading schemes are also vital in ensuring that timber is sourced from sustainably managed forests where trees are replanted as they are felled. Globally, there are over 50 certification programs that address different types of forest certification, but the two main international bodies for forest certification are the FSC and the Programme for the Endorsement of Forest Certification (PEFC). Both organizations seek to promote SFM through independent third-party certification of adherence to principles of sustainability. However, in contrast to the Forest Stewardship Council, PEFC is “not a standards agency but a mutual recognition scheme… [focusing not only] on the ethical aspects of SFM but also the processing of timber, resulting in a larger emphasis on the supply chain than FSC.”

The existence of these overlapping (and occasionally competing) standards introduces some inefficiencies into the process of certification for forest owners and managers. Globally, Russia ranks first in FSC certification (47.7 million ha, equal to almost a quarter of all FSC-certified forests on the planet) and third behind Canada and the US in PEFC certification (26.4 million ha).

The two main certification standards above are generally aligned with the EU Timber Regulation (EUTR), the US Lacey Act and some other similar national regulations. The EUTR

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took effect in 2013 aiming to prevent sales of illegal wood products in the EU market and comprises a few obligations applied to operators of the trade in a wide range of wood products. Under the EUTR any market participant placing wood products on the EU market must ensure that the timber has been legally harvested and, where applicable, legally exported from the country of origin. The US Lacey Act and other national regulations have comparable objectives and mechanisms with regard to regulating trade in wood products. Such declared conformity of the certification standards with national regulations allows the parties involved in due diligence in respective markets to use those certificates as a key element of risk assessment and mitigation. The certificates, however, do not imply automatic exemption from the due diligence required by the regulating bodies (the EUTR, Lacey Act or other).  

Another important development relating to sustainability in recent years has been the rise of chain-of-custody (CoC) certifications. These enable the tracking of wood and wood-based products along value chains. Both the FSC and the PEFC offer CoC certification to companies; as of April 2019, the former had a total of 35,772 CoC certifications, while the latter reported a total of 11,466 in December 2018. According to the FSC, 79 percent of new CoC certification in recent years was attributable to Asia. In 2018, the International Organization for Standardization (ISO) published a CoC standard (ISO 38200:2018) for wood and wood-based products, enabling the tracking of wood from sustainably managed forests, as well as verified, specified or recycled origins.

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**Valuing Ecosystem Services of Russia’s Forests**

The forests of the European part of Russia absorb as much CO2 as the forests of Finland, Germany, Poland and other European countries; the absorption in the forests of Siberia are comparable to the absorption in the forests of Canada, and the estimates of absorption in the forests of the North Caucasus region even exceed the absorption in forests of the same climatic zone in the USA. Russia’s forests (excluding reserve forests) provided absorption of more than 638 million tons of CO2 equivalent in 2017, which can be roughly valued at 30 trillion rubles, or over US$ 500 billion. While recognizing the global public good of Russia’s forests for its carbon sequestration, an important caveat needs to be acknowledged: the sequestration value of Russia’s forests is the value of the global public good while the economic return to Russia is only a fraction of it unless the rest of the world is willing to pay for carbon sequestration services. Other ecosystem services provided by Russian forests include climate control, water regulation, soil protection, assimilation, bioproduction, bioresource, biodiversity protection, and recreational services. Other renewable resources make up a smaller share of Russia’s total natural capital, and indeed they are underestimated in this analysis due to missing data on resources such as water and fisheries, they are an important asset with their own management challenges and policy applications. Recent forest fires in Russia are a case in point.  

*Adapted from “How Wealthy is Russia?” (World Bank, 2019)*

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66 ibid.  
The FAO’s Sustainable Wood for a Sustainable World (SW4SW) initiative, launched in 2018, provides a model for international policy coordination in supply-chain sustainability. Through coordination with influential partner organizations, including the World Bank, the Center for International Forestry Research (CIFOR), the International Tropical Timber Organization (ITTO), and the World Wildlife Fund (WWF), SW4SW aims to enhance the sustainability of wood value chains by addressing challenges related to “land use, tenure, forest management, business and investment models, industrial processing efficiency, and social and environmental standards.”

3.2 End-Use Sustainability in Construction

Advocates of mass-timber construction, which employs a combination of EWPs and other wood-based panels, believe that it can be used to reduce emissions from one of the world’s most polluting industries: construction. In 2018, the world’s existing buildings and the global construction sector accounted for 36 percent of final energy use and 39 percent of carbon dioxide (CO2) emissions. The manufacture of building materials and products such as steel, cement, and glass alone accounted for 11 percent of emissions. Increases in the sector’s final energy demand—up 7 percent from 2010—have been driven by a combination of built floor-area expansion and population growth. Despite progress towards energy efficiency, improvements have not been sufficient to outpace demand growth.

Policymakers and stakeholders concerned about sustainability in the construction sector are beginning to pay an increasing amount of attention to buildings’ ‘embodied carbon’. This is a measure of the carbon emissions from the manufacturing and transport of construction materials and the process of a building’s construction. In some cases, depending on the materials employed, embodied carbon can account for as much as half of a building's total carbon footprint over its lifetime. However, in contrast to operational carbon, embodied carbon cannot be reduced once a building's construction is complete. As a result, policymakers concerned about climate change are seeking to encourage architects and construction firms to design buildings that employ lower-carbon materials through regulations and certification schemes (see Table 3.1, below).

<table>
<thead>
<tr>
<th>Certification</th>
<th>Location</th>
<th>Embodied Carbon Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Research Establishment Environmental Assessment Method (BREEAM)</td>
<td>Global</td>
<td>Performance of a life cycle assessment (LCA) can provide up to 20 credits, includes recognition for use of environmental product declarations (EPDs)</td>
</tr>
<tr>
<td>Excellence in Design for Greater Efficiencies (EDGE)</td>
<td>Global, emerging markets</td>
<td>Tracks and awards certifications to projects that show reductions in embodied energy – an International Finance Corporation (IFC) initiative</td>
</tr>
<tr>
<td>Positive Energy and Carbon Reduction (ExC-)</td>
<td>France</td>
<td>Includes method to track and report embodied carbon performance</td>
</tr>
<tr>
<td>Futurebuilt</td>
<td>Norway</td>
<td>Includes method to reduce embodied carbon by 50%, with third-party verification</td>
</tr>
<tr>
<td>Green Star—Green Building Council Australia</td>
<td>Australia</td>
<td>Gives credits for the use of LCA, EPDs, and low-carbon materials choices</td>
</tr>
</tbody>
</table>

LEED v4—US Green Building Council  
Global  
Awards credits for LCA, EPD procurement, and reuse of existing buildings and materials

Living Building Challenge (LBC) version 3.1—International Living Future Institute (ILFI)  
Global  
Rewards embodied carbon benchmarking and reduction in the LBC Materials Petal

LBC version 4.0—ILFI  
Global  
Rewards embodied carbon benchmarking and reduction in the LBC Energy Petal

Zero Carbon—ILFI  
Global  
Projects must reduce embodied carbon by at least 10% and purchase offsets for the remaining embodied carbon

Source: Urban Land Institute

A number of strategies can be employed to lower buildings’ embodied carbon. These include the overall reduction of materials used in construction (by employing minimalist design, exposed ceilings, or buffed cement floors), and the use of more sustainable materials, such as ‘green’ concrete, recycled steel, or mass-timber products (EWPs). In addition to its ability to lower embodied carbon, architects and builders have been enthusiastic about the use of mass timber because of its performance with respect to time and cost of construction, fire protection, and seismic resistance. Moreover, proponents of ‘biophilic design’ argue that the incorporation of wood and other natural elements into building design have a positive impact on the well-being of building occupants.

Mass-timber construction is a relatively recent phenomenon, having truly gained steam only over the past decade. It has been partly enabled by the emergence of new design tools and advances in prefabrication and modular construction technologies. As a result, building codes allowing for the use of wood in structures up to 18 stories high have only recently been introduced in the US and Canada. Norway has also begun to embrace mass timber: March 2019 saw the completion of the Mjøstårnet Tower, in Brumunddal (see Figure 3.1). Eighteen stories (85.4 m) high and framed by a combination of glulam and CLT, the building is the world’s tallest timber building.

It should be noted that use of mass timber is not without its critics. In an open letter aimed at dissuading the US state of California from encouraging mass-timber construction, the Sierra Club, the Natural Resources Defense Council, Greenpeace, and 45 other environmental groups and companies

Figure 3.1: Mjøstårnet Tower

Source: Voll Arkitekter

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argued in 2018 that “the carbon benefit of such substitution is exaggerated.”

Key Findings

- For companies to maintain their competitiveness in global value chains, they should orient their strategy to emerging global trends, which, sooner or later, will also be observable in national and sub-national markets.
- For our strategic segmentation, we propose considering construction-sector consumers of processed wood products as being divided into ‘standard’ buyers, motivated mainly by cost considerations, and ‘discerning’ buyers, driven main by adherence to design specifications.
- For wood products supplied to the construction sector, end use matters most, meaning that wood products must perform up to a certain standard. It is therefore useful to segment wood products as being ‘structural’ or ‘non-structural’.

This section offers the reader a global-level strategic assessment and analysis of market segments for processed wood products. The first three sections of this report provided high-level perspectives of global, national, and regional trends in the forest sector. In this section, we will now shift gears to view this information through a strategic lens. This will then be followed by an examination of the purchasing criteria of ‘advanced buyers’—companies, mostly in the downstream parts of the value chain that set the scope for evolution and innovation in the industry. Through this approach, we identify potential directions of further development for forest-sector enterprises in the Tver Region as well as the support the sector will require from policymakers and other stakeholders.

The decision to focus the remainder of this report exclusively on processed wood products for use in construction is deliberate. It is the result of the assessment that this market presents the greatest potential opportunity for export-oriented firms in Tver Region seeking a sustainable competitive advantage due to the ongoing large-scale shift in the demands of advanced buyers and the consequent differentiation of the product landscape due to increased use of wooden materials in both residential and commercial structures.

We readily acknowledge that further development of wood processing industries is one of many potential strategies for promoting economic growth and employment in Tver Region’s forest sector. Further, there are, and will continue to be, many end markets for wood products produced in Tver Region. Nevertheless, Tver Region’s demonstrated progress in the development of wood-processing industries and the outsize role of the construction sector in terms of wood-product demand suggest that these segments are deserving of considerable attention.

3.3 Strategic Segmentation

The segmentation is ‘strategic’ in that it focuses on the intersections of the needs of buyers of wood products (demand side) and the solutions offered by producers (supply side). It diverges from more conventional approaches to segmentation which a given industry by product categories (e.g., lumber, EWP, etc.) in order to examine provide a more conceptual view of product categories and their use. In so doing, it aims to shed light on industry growth prospects and the ability of successful players to earn consistent profits.

Ultimately, the long-term attractiveness of segments is determined by global—not national or regional—conditions. These conditions include the evolution of substitutes, rivals, suppliers, buyers,
minimum efficient size of production, and so on. While the reality of present conditions in Russia and Tver Region may diverge from what is happening on a global level, market-distorting policies cannot be assumed to be economically sustainable in the long run and therefore should not form the basis of competitive strategy. Thus, for national and regional industries to maintain their competitiveness in global value chains, they should orient their strategy to emerging global trends, which, sooner or later, will also be observable in national and sub-national markets.

For processed wood products used in construction, we propose the following segmentation matrix:

**Figure 3.2: Segmentation Matrix – Processed Wood Products in Construction**

<table>
<thead>
<tr>
<th>Buyers (Demand Side)</th>
<th>Products (Supply Side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard (Cost-driven)</td>
<td>Non-structural A1</td>
</tr>
<tr>
<td>Discerning (Design-driven)</td>
<td>Structural B1</td>
</tr>
</tbody>
</table>

*Source: Authors’ analysis*

### 3.3.1 Buyer Segmentation

We propose considering construction-sector consumers of processed wood products as being divided into ‘standard’ and ‘discerning’ buyers. The purchasing decisions of the former are mainly motivated by cost considerations, while those of the latter are driven by special elements of a structure’s design.

- **Standard buyers.** Standard buyers seek to maximize profit by choosing the least expensive product that satisfies a functional demand. For instance, large residential construction-sector incumbents, delivering a commodified product like single-family wooden housing, will seek to do so at the lowest cost possible while maintaining formal and informal standards—mandated building codes and designs that satisfying the preferences of middle-income homebuyers, for instance. Accordingly, these firms will not necessarily always seek to buy the cheapest product available: more likely, there will be certain elements of construction where they will seek to control costs with generic products, and others that demand premium products.

- **Discerning buyers.** Design-driven construction firms, meanwhile, are less likely to be competing on volume, focusing instead on building structures in that either showcase innovation in a given sphere of design or cater to specific client value-driven demands in terms of aesthetics, materials employed (e.g., UF-free panels and beams), or some other consideration. Of course, cost will also be a consideration for these buyers, but they are more likely to use higher-quality, higher-priced materials because they seek to deliver a higher-margin premium product.

### 3.3.2 Product Segmentation

For wood products supplied to the construction sector, end use matters most, meaning that wood products must perform up to a certain standard. It is therefore useful to consider wood products as being ‘structural’ or ‘non-structural’, especially given the higher levels of substitutability within—but not between—these two segments. However, before proceeding with a segmentation, it is important to note that while some types of wood products are almost never (or almost always) used for load-bearing functions, the structural properties of wood products can vary considerably within
product types due to a number of factors, often originating from differences in feedstock timber or processing techniques. Accordingly, many wood products can be manufactured as either structural or non-structural.

Structural performance requirements for a given product type is reflected in a range of national and global standards. In the European Union, for instance, standards for wood used in construction are set by the European Committee for Standardization (CEN), which brings together the national standardization bodies of 34 European countries, including the UK. (CEN, it should be noted, is a separate body from the EU.) For an LVL beam, plank or panel that is intended to have structural applications, the CEN specifies that it must meet not only standards set forth by European Standard (EN) 14279, which establishes certain performance standards for LVL as a general-use product, but also those established by EN 14374, which specifies the standards it must meet as a structural material.80

- **Structural wood products.** As explained above, structural products are ultimately defined by their adherence to certain standards. However, they can be understood to include structural-graded MSR lumber, structural wood-based panels (plywood and OSB), and SCL (mainly LVL), and EWPs (glulam, CLT, NLT, and DLT).

- **Non-structural wood products.** These include any of the products above if they have not been certified for structural applications, as well as non-structural wood-based panels such as particle board, fiberboard (MDF/HDF), and veneer sheets.

In Russia, wood products are graded under the “state standard” (GOST) and related systems. These are maintained by Euro-Asian Council for Standardization, Metrology and Certification (EASC), which governs standards for CIS countries; within Russia, Rosstandart oversees product certification. Wood processors will often obtain both GOST and international certifications for their products.

### 3.4 Segment Analysis

Here, each of the strategic segments identified above is considered from the perspectives of competition intensity and firm profitability. Segment attractiveness will vary based on firms’ perceived strengths and growth opportunities: for instance, large lumber producers currently competing in the A1 segment may seek to transition into A2 through investment in advanced processing and treatment capabilities; similar firms struggling with feedstock challenges may instead find segment B1 to be more attractive. Firms currently competing in B1 are likely to find B2 to a logical direction for expansion, given that similar processes and technologies are used to produce both wood-based panels and EWPs.

In order to illustrate the segments’ representation in wood processing, brief profiles of large international companies in the sector were analyzed. For the selected set of companies (representative large processors by volume of wood products) the following general trends can be outlined.

- **The largest sawmills are situated in the areas profound with forest reserves,** which helps keeping the bulky upstream logistics optimal. The major areas of location include the USA, Canada, Northern and Central Europe.

• **The reviewed companies focus on full cycle sustainable production.** Apart from the reviewed segments they all produce a range of other secondary processing wood products / byproducts and offer innovative solutions in energy and biotechnology, which provides for effective no waste processing of the feedstock.

• **All of the reviewed companies seem to stem from the conventional A1 and eventually B1 segments.** Feedstock for the higher quality segments of A2 and B2 appears to be sorted out and moved along the value chain within the groups.

• **The segment focuses evidence strong competition in the conventional segments of A1 and B1 which affects the margins.** More favorable competitive environment is observed in A2 and more so in B2.

### Table 3.2: Profiles of Large International Wood Processors

<table>
<thead>
<tr>
<th>Company</th>
<th>Site</th>
<th>Location of production facilities</th>
<th>Segment focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Fraser Timber Co Ltd</td>
<td><a href="http://www.westfraser.com">http://www.westfraser.com</a></td>
<td>Canada, USA</td>
<td>A1 A2 B1 B2</td>
</tr>
<tr>
<td>Canfor</td>
<td><a href="http://www.canfor.com/">http://www.canfor.com/</a></td>
<td>Canada, USA</td>
<td>A1 A2 B1</td>
</tr>
<tr>
<td>Georgia Pacific</td>
<td><a href="http://www.gp.com">http://www.gp.com</a></td>
<td>USA</td>
<td>A1 A2 B1</td>
</tr>
<tr>
<td>Schweighofer</td>
<td><a href="http://www.schweighofer.at">http://www.schweighofer.at</a></td>
<td>Germany, Romania</td>
<td>A1 B1</td>
</tr>
<tr>
<td>Arauco</td>
<td><a href="http://www.arauco.cl">http://www.arauco.cl</a></td>
<td>Chile, Argentina, Uruguay</td>
<td>A1 A2 B1</td>
</tr>
</tbody>
</table>

*Source: Author’s compilation*

### 3.4.1 Segment A1: Standard (Cost-Driven) Buyers of Non-Structural Wood Products

Wooden boards and panels produced for this segment are manufactured to meet the basic standards for the markets in which they are sold. Generally, they are not subject to additional grading for structural applications. As such, they tend to require lower quality inputs and be highly substitutable for each other; the construction manager of a cost-conscious homebuilder will likely not care as much whether she is using lumber or fiberboard for a project’s non-load-bearing elements; she will care what the materials cost versus one another.

**Because these products are more or less low-value commodities, competition among firms in this segment is fierce.** A firm with access to rudimentary pressing technology and sufficient volumes of even low-quality wood can compete in this space. While suppliers in this segment do not tend to have a great deal of market power due to their limited ability to market low-quality wood, buyers tend to be large players. (The economics of the homebuilding industry greatly favor large-scale players.81) Likewise, successful wood processors in this segment face slow growth and thin margins and therefore must strive for scale.

### 3.4.2 Segment A2: Discerning (Design-Driven) Buyers of Non-Structural Wood Products

In this segment, products must fit not only a basic (product) standard, but also another specified by the buyer. While these products are not being purchased for reasons of structural integrity, they must perform up to another set of criteria pre-specified specified by the buyer. These criteria may be related to aesthetics (e.g., wood type or treatment) or sustainability certification, or some combination of these or other factors.

These additional demands cause the economics of this segment to diverge from those of Segment A1. To compete, wood processors will need to meet buyers’ additional needs—for example, having the know-how or specialized equipment for milling a given type of wood, or having secured that wood from the manager of a certified forest. The height of the barriers to entry in this segment are proportional to the sophistication of buyers’ demands: some products will be relatively commodified, while others (e.g., specially-treated wood) will command higher margins. While the power of buyers in this segment is lower, the power of suppliers is considerably higher as here, inputs matter considerably more.

3.4.3 Segment B1: Standard (Cost-Driven) Buyers of Structural Wood Products

The production of structural wood products—even from lower-quality timber—requires a moderate level of technical competence. To meet structural grading standards, a processor needs not only the technology to produce a given product (such as the presses to produce OSB) but also the know-how to ensure that the product is consistently manufactured in such a way that it will pass rigorous structural tests. As some of these products can be produced with lower-quality inputs (including hardwood), competition within the B1 segment can be attractive for firms constrained by input quality. Indeed, this appears to be the strategy adopted by firms in Tver Region.

However, the competitive forces acting on this segment are in some ways similar to those faced by processors in A1. Increasing competition can be seen at the lower end of the product spectrum (plywood, OSB, structural lumber) due to higher product substitutability and relatively lower capital costs. Once again, buyers tend to be large homebuilders with significant pricing power. However, products purchased in lower volumes for specific structural purposes (MSR lumber and LVL, for instance) do not seem to face these pressures to the same degree.

3.4.4 Segment B2: Discerning (Design-Driven) Buyers of Structural Wood Products

Design-driven buyers of structural wood products often place the greatest demand on manufacturers in terms of product performance. This is especially the case when it comes to mass-timber projects, as glulam and CLT are typically custom-made to buyer specifications for a given project.62 Given the rarity of their use and difficulty to manufacture, NLT and DLT projects present even more extreme cases.

Manufacturers of higher-end EWPs invariably need a certain level of sophistication. However, the level of capital investment required to produce these products varies (NLT, for instance, does not necessarily require special machinery; it can be produced via skilled carpentry). Higher barriers to entry—created either by human or financial capital investment needs—mean lower levels of competition for players in this space. Products are often purpose-built; this lower substitutability means much higher margins for producers. Moreover, buyers tend to be smaller firms with limited pricing power. Some suppliers (for instance, those of specialized machinery) may be able to exert a certain degree of pricing power.

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4 Sector Development: Opportunities & Challenges

Key findings

- Advanced buyers of processed wood demand products that are derived from sustainably sourced wood; produced using advanced processing and/or treatment technologies to ensure superior performance; and fully suited to the exact structural and aesthetic specifications of a given project, often as the result of tailored manufacturing.
- Broadly speaking, Tver Region is well connected to many of the global and national-level value chain inputs necessary for success in forest sector activities. However, the forest sector in Tver Region suffers from many suboptimal links between activities.
- Upstream, the warm winter of 2019-2020 laid bare some of the challenge related to logging in more remote areas. Unable to harvest from marshy areas usually accessible by winter roads, producers faced shortages in feedstock.
- Tver firms have a strong presence in midstream value-chain segments. Based on official data and interviews with industry participants, a majority of the region’s lumber processing companies have evolved from upstream production into higher value-add activities. Many of these companies remain vertically integrated, managing forest land under lease contracts and engaging in road development to gain access to harvesting areas.
- The region suffers from suboptimal links to sales channels and distribution, particularly with regard to export. Most wood processors sell directly to domestic clients and in many cases rely on intermediaries to address export markets.
- The development of the forest sector is a federal priority. Along with the evolution of the Forest Code, the 2018 introduction of the Strategy for the Development of the Forest Industry Until 2030 signaled the Russian Government’s desire to improve the overall performance of the country’s forest sector.

This section focuses on the potential of Tver companies to transition into, or develop further within, the more commercially attractive A2 and B2 strategic segments. It begins by considering the purchasing criteria of advanced buyers in these segments, as these firms provide an indication of the direction of market development. These insights in turn inform a value chain analysis, whereby Tver firms are benchmarked against their global peers. Where major weak points are identified in either Tver’s value-chain activities or in the region’s broader business support ecosystem (analyzed in Section 5.3), potential interventions are proposed in Section 6.

4.1 Advanced Buyers’ Purchasing Criteria in Promising Segments

Advanced buyers are firms that can be identified as shaping long-term trends within a sector. Typically located in the downstream parts of the value chain, these pioneering companies set the scope for evolution and innovation more broadly: successful upstream producers are likely to be those who understand these buyers’ criteria for the purchase of goods and services and adjust their competitive strategy accordingly. With respect to processed wood products, advanced buyers are generally design-driven construction firms—the A2 and B2 segments described in Section 4. For producers located in European Russia, these prospective buyers are frequently Central and Northern
European construction companies, ranging from smaller specialist players to larger firms. Regardless of their size, these buyers demand products that are 1) derived from sustainably sourced wood; 2) produced using advanced processing and/or treatment technologies to ensure superior performance; and 3) fully suited to the exact structural and aesthetic specifications of a given project, often as the result of tailored manufacturing. These factors are examined in depth below.

### 4.1.1 Sustainability of Inputs & Production Procedures

Adherence to standards of sustainability has become fairly widespread in the construction industry in Europe and North America. While the incorporation into building design of such concepts as embodied carbon is a relatively recent phenomenon, green-building certification schemes are well established in these markets. Institutional real-estate investors pay attention to a given building’s heating and cooling costs, and therefore have a strong incentive to adhere to green building standards based around operational carbon emissions.

In wooden structures, buyers are have also demonstrated interest in FSC/PEFC and CoC certifications. They are also increasingly attentive to the use of recycled content, local sourcing of construction materials, and potential health issues associated with the materials’ production. For instance, a company’s or a specific project’s standards may call for only UF-free wood products. While it should be noted that Russia has made considerable strides in sustainability certification (see Section 3), manufacturing processes among smaller producers of wood-based panels and other construction materials are still in the process of converging to international best practices.

### 4.1.2 Advanced Processing & Treatment Technologies

#### 4.1.2.1 Input & process control

Input and process control is vital in the manufacture of higher-value wood products. In the manufacture of lower-end wood-based panels, a number of technological processes can be employed to improve the overall quality and structural integrity of the final product. Ultimately, this means that a wider variety of wood inputs (mulch, chips, strands, etc.) can be used, including the lower-quality outputs from other upstream processes such as cutting, grinding, drying, transportation, and storage. Accordingly, inputs do not need to be homogeneous in quality, but a firm must have the technological capacity and know-how to ensure consistency in output quality. This is true to an even greater degree for EWP$s such as CLT which derive their structural integrity from their manufacturing process. Input quality control can be accomplished either through pre-manufacture treatment (discussed below) or via enhanced input sorting and classification.

By sorting timber for products such as glulam and LVL, producers can select the most attractive input materials for these products. Wood not selected may be further sorted along the product-value hierarchy: cross-laminated products (CLT and plywood), lower-value wood panels, lumber, and veneers. This sorting cycle must also take into account the intrinsic properties of different species of wood. In addition to intra-firm maximization of efficiency in input use, cooperation among neighboring wood processors via inter-firm trading may also help to address issues of quality and allow for mutually beneficial value maximization from a given input pool. However, the creation of such horizontal links may require investments in technology or transportation logistics, as well as real-time maintenance of input inventories. To achieve the latter, firms will need work with forestry

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It should be noted that while some Russian construction firms might be accurately classified as advanced buyers, their number is relatively few.
companies to implement systems for grading the quality and aesthetics of wood at delivery to the mill gate.

**Besides the sensitivity of EWPs to quality of inputs, it is important to maintain standards along the production line.** To ensure the quality of cutting and assembly, firms need to invest in top-quality machinery. MLT, for instance, imports equipment from Estonia (Hekotek), Canada (Vitech Engineering), the US (COE Manufacturing Company and Corvallis Tool Company), Japan (Hashimoto Denki Co) and Germany (Grezenbach and Dieffenbacher). Doing so requires significant capital investment.

4.1.2.2  *Post-production treatment*

**Treatment technologies are used to enhance or modify both wood inputs and manufactured products.** They can be classified as mechanical (pressing, bending, bonding, rolling, profiling), chemical (exposure to, or steeping in, chemical agents), or thermal (subjecting materials to certain—usually extreme—temperatures). Treatments may be done individually or in combination; some also employ a controlled pressure environment (e.g., vacuum) in the process zone. Some of the equipment traditionally used in wood processing such pressing, profiling, or steeping lines can also be used in the treatment process. The end effect of these processes is the enhancement or modification of input materials or products in areas of shape, structural stability, density, hardness, color, texture, or resistance to fire, water, humidity or other hazards. (It should be noted that the best types of treatment for a given product may depend on the input material. For instance, a higher tar content in softwoods often hinders steeping; this process is therefore more appropriate for hardwoods.)

4.1.3  *Structural & Aesthetic Suitability*

Because advanced buyers have such exacting standards, they tend to establish deep, long-term relations with their suppliers, on whom they depend for product quality and availability. These buyers will often have personnel dedicated to procurement and established supplier vetting processes, as well as informal checklists. For a processor or wood-product manufacturer to win the confidence of these highly attractive clients, management must be ready to not only demonstrate staff professionalism and technical competence, but also engage actively in marketing and customer communications and participation in industry organizations and events such as trade shows.

Perhaps most crucial to advanced buyers is the ability of suppliers—especially EWP manufacturers—to fulfill custom orders on a timely basis. Higher-value EWPs are often manufactured to a particular client’s project specifications. This may simply mean accommodation of specific packaging requests, delivery conditions, or payment terms. In more extreme cases—that is, larger or more complex orders—this customization demands of the manufacturer not only a mastery of manufacturing and treatment techniques but also a flexibility of production schedules and a command of input inventories. Typically, these orders will have longer lead times, and will be programmed by buyers to align with favorable construction periods. Supplier execution is therefore critical.

Custom orders pose a challenge for manufacturers, as a lack of economies of scale can be harmful to a company’s growth prospects. To address this, technologies and processes used in customization should be to some degree replicable. A processor or manufacturer attempting to be all things to all clients is bound to disappoint; specialization within product types is likely necessary.
4.2 Value Chain in Promising Segments

4.2.1 Global Value Chain – A2 & B2 Strategic Segments

In the modern global economy, industrial activities extend beyond regional and national boundaries, becoming part of larger processes within international value chains. While some firms may benefit in the short or even medium term from market-distorting domestic policies, in the long run successful players are most likely to be those who orient themselves to where their respective industry is headed. Successful regions are most likely to be those which support local companies in making this transition.

To understand how Tver Region’s wood processors and wood-product manufacturers can better meet the needs of advanced buyers present in domestic and international markets, this section offers and analysis of global value chains for the A2 and B2 strategic segments (design-driven buyers of non-structural and structural wood products, respectively) identified in Section 4. Broadly speaking, Tver Region is well connected to many of the global and national-level value chain inputs necessary for success in forest sector activities. However, as illustrated below, the forest sector in Tver Region suffers from many suboptimal links between activities. While the challenges of coordination hinder the growth of the region’s forest sector business, they also present opportunities for investment and job creation at relatively low cost.

The reader will note that the two value chains are highly similar and overlap significantly, with the B2 segment involving most of the elements present in the A2 value chain but also a greater degree of complexity. There may well be important differences between the production of A2 products (particularly treated lumber) not present in the scheme; the identification of linkages between activities (and the need for their strengthening) are based on the authors’ assessments and may certainly be debated.
Figure 4.1: Legend for Value Chain Activities & Linkages

Value chain & support activities

Factor allocation benchmark

Value chain & support linkages

Examples

Source: Authors’ analysis
Figure 4.2: Value Chain for Non-Structural Wood Products Sold to Discerning (Design-Driven) Buyers (A2 Segment)

Source: Authors’ analysis
Figure 4.3: Value Chain for Structural Wood Products Sold to Discerning (Design-Driven) Buyers (B2 Segment)

Source: Authors’ analysis
4.2.2 Benchmarking of Tver Region Value Chain in Strategic Segments

4.2.2.1 Challenges of regional forest management and possible solutions

Tver oblast can increase its productive base by sustainable harvesting of untapped forest resources and increasing reforestation activities. 2.65 million ha of leased forest produces around 4.5 million m³ of roundwood per year, but this constitutes only 50% of the AAC. So if the region were to achieve 100% of the AAC then an additional 4.5 million m³ would be available. This would mean harvesting on average 3.4 m³/ha/year. Depending on growth rates and on how the AAC calculations are undertaken going above the AAC may not be a good option at this point. It is also assumed that the full AAC is not harvested because of the species mix and the lessees are leaving the soft broadleaves. With current quality of standing forest stock, Tver region should encourage investment in industry that could use the as yet under-utilized soft broadleaf timber. Much of the broadleaved species left in the forest could be used for wood energy and the pulp and paper industry.

Improved forest management and processes (more inventory, management and production data being made available online) could provide additional efficiency gains for the forest authorities. This relates to increase in efficiency of protection of forests from fires and of fighting illegal logging. When managing the leased forests, better monitoring and control is needed with regards to harvesting and reforestation activities. In some cases when forest areas are leased the lessee would rather only harvest timber it can use itself than sell the currently unmarketable soft broadleaved species. But if there’s demand for these species for products such as wood pellets for heating, for chipboard and MDF, pulp and paper etc. then it would make sense for the tenants to harvest and sell this volume too.

Tver could also take an overview of its silviculture system. It is observed that in Russia large clearfells are undertaken, and the forest is then just left to regenerate naturally. This is why the species composition is changing over time (as the lessees, leave the less valuable soft broadleaved species, which then regenerate profusely after the conifers have been removed). This could be offset by replanting with softwoods, but this will be relatively costly as they will have to clear the site of all the logging trash and then replant with nursery raised seedlings. It should be in the lessees’ own interest to ensure that the forests are managed to ensure that the next rotation has the desired species mix. It is perhaps more likely that the companies will consider immediate pay back of their processing investment, rather than returns in forestry operations some 50 years hence. In Scandinavia which has similar forest types and conditions, different silvicultural systems are followed which include selective thinning, and regeneration fellings, to maintain the forest, species and age class structures. Tver region could pilot improved silvicultural models that would help avoid the change in species, and the even aged forests.

The impact of climate change this is likely to become more important. It poses new risks both for the forestry authorities and for private sector players, but could also create new opportunities. As well as impacting on forest harvesting, climate change could well be having an impact both on the suitability of the species in these areas and the management approach. It is likely that the forest boundaries between mixed broad leaf forests, temperate, and boreal forests are moving northwards. In which case the sector should sector should be planning for different species mix going forward. With a significant share of its forests with the protective status, Tver oblast could benefit from the new climate projects.
A problem with the forest lease system is that it frequently ties up the forests in the hands of a few big lessees, with the objective being to encourage the development of processing capacity. What tends to happen however, is that big players can obtain the leases and then only harvest the better quality timber and species for their own production. This frequently then precludes the smaller MSMEs from getting adequate access to raw materials, even if they could consume the broad leaved species. In an ideal world the region would manage the forests so that all the forest species could be marketed to a number of different processors through competitive bidding. Looking at different methods of timber sale, could be something that needs to be considered in the longer term by federal authorities in dialogue with regions and private sector. By reducing fees and the royalties, authorities often seek to encourage the development of processing capacity. However this has the tendency to reduce the value of the raw material, which can lead to poor utilization and recovery, and excessive waste (e.g. leaving unharvested broadleaves). These subsidies are frequently not transparent and can lead to non-level playing fields.

If the unallocated 40% of the AAC area is in inaccessible areas, it would make sense for Tver to invest in forest roads, so that this forest could be opened up for production and the industry could expand. Particularly when climate change is considered, as long hard winters with the ground frozen solid, will be increasingly rare. Significant environmental damage will be done if lessees attempt to harvest timber in wet and boggy conditions without proper forest roads. Very often the investments required in forest roads is significant, and particularly if the raw materials are of low value, the payback period can be lengthy, often requiring more than one forest rotation to pay for this investment. Presumably the 49 year leases, assume that during this period the forest will be harvested just once over this cycle. This means that it is extremely unlikely that the lessees would be interested in investing in building anything other than cheap skidding trails to get access to the resource. This will have environmental impact and affect the overall sustainability of forest management in these leased areas. Similarly, lessees seldom work together (basically with their competitors), to develop an overall forest road masterplan. It is important to fit the forest road network within the existing regional and state roads. It is also advisable for the region to prepare a forest roads masterplan with a feasibility study including cost-benefit analysis.

4.2.2.2 Upstream activities

The upstream segment of the value chain describes the activities classified in Section 1 as primary production. Activities include primary silviculture, forest management, logging, and initial processing of wood in the rough to produce logs or other standardized segments of logs ready for transportation. (At this stage, forest byproducts and forest residues—branches, bark, mulch, tar-rich tree stumps, low quality wood, etc.—also undergo initial processing.)84 Globally, these upstream activities are fairly homogenous, but variations arise in levels of integration with downstream players as well as the presence of state-affiliated actors in silviculture and forest management. Ownership regimes also vary. In countries with more market-oriented traditions, private-sector players frequently own the land; in nations like Russia with a more mixed or state-led economy, state-affiliated entities are more frequently present and private players often operate sites via long-term lease agreements.85

• In Russia, forestland is predominantly state-owned and made available for exploitation to private-sector players via long-term lease agreements (up to 49 years).
• Leases are awarded through government-run online public auctions according to Forest Code statutes. This process generally favors larger-scale players.
• Participating in auctions can also require significant financial and administrative resources: for instance, companies often engage the services of forestry experts to understand wood stock inventories/composition and quality, as official figures do not always reflect reality.
• The legal framework for transfer of leases requires further development.

Similar public-private divisions exist between jurisdictions regarding the ownership of companies that transport harvested logs and byproducts to mills for further processing. Generally speaking, specialized transport companies perform a majority of this work; in markets with greater levels of private ownership (and therefore vertical integration), harvesters may own transport fleets when it is economical to do so. However, the growing trend is for companies to outsource these activities in order to avoid the large CapEx associated with ownership and maintenance of own truck fleets. Harvesting companies must also contend with the challenges of road infrastructure in the markets in which they operate. As a result, these companies often find themselves engaged in roadbuilding in order to access more remote forests. At northern latitudes, winter harvests present a challenge as some areas many be are accessible only at lower temperatures, requiring the construction of seasonal roads. (This is the case in Tver Region.)

Tver Region’s upstream industries are relatively professionalized. FSC and PEFC forest-management certification is generally accessible and is widely used by the region’s commercial forest managers. However, while SFM practices have been introduced, the region still suffers from legacy issues, namely an overharvesting of softwoods in the past: in the most accessible areas for harvesting, the softwood-to-hardwood ratio is as poor as 1:4 or 1:5. The hardwood present is often overripe and of insufficient quality for high-quality lumber or even wood-based panels; it is used mainly for fuel wood and pulpwood. As a result, the region’s producers incur significant costs in extracting softwood and higher-quality hardwood from difficult-to-access areas.

The warm winter of 2019-2020 laid bare some of the challenge related to logging in more remote areas. Unable to harvest from marshy areas usually accessible by winter roads, producers faced shortages in feedstock. Looking ahead, producers seem faced with the choice of whether to invest in logging infrastructure and technology to hedge against warmer winters, or to focus on new technologies that will allow them to process lower-quality hardwood into wood-based panels. A shorter-term solution might be to invest in less-expensive OSB production capacity, as that would allow for the processing of overripe hardwood into a moderately attractive product. There may also be a role for regional government to play in the development of better road infrastructure.

4.2.2.3 Midstream & downstream activities

Following extraction, raw material is stored at the mill gate; it then undergoes processing (cutting, planing, grinding) at sawmills. The lumber produced is then dried ahead of transport or further treatment or processing depending on intended end use. Further processing can imply increasing levels of technical complexity not only within the production itself, but with respect to other segments of the value chain (e.g., machinery manufacturers, chemical producers, product certification agencies, and so on) in line with the level of value added. Downstream links to distributors or middlemen (traders) and end buyers are also complex.
Many crucial process inputs such as machinery and high-quality wood glues are not produced in Tver Region. However, wood-processing industry players are generally able to import these without much difficulty. Global R&D for the selected segments is well distributed and information, technologies and processes are broadly available. And while many public-sector supporting activities originate at the federal level, it has been (at least in part) devolved or localized to the region from an execution standpoint.

- **Lumber processing.** Based on official data and interviews with industry participants, a majority of the region’s lumber processing companies have evolved from upstream production into higher value-add activities. Many of these companies remain vertically integrated, managing forest land under lease contracts and engaging in road development to gain access to harvesting areas. More of these producers can be classified as operating in the more traditional A1 strategic segment; some have a presence in B1. There are over 150 lumber producers in the region.

- **Drying.** Drying of lumber and other wood products is one of the most important stages of processing with a strong impact on product quality. Some MSMEs in the forest sector outsource drying, which requires large kilns to control temperature, humidity, and other parameters, but many small companies do have their own kilns. Larger businesses tend to invest in owned facilities for drying.

- **Wood-based panel/EWP production.** There are ten producers of wood-based panels or EWPs in Tver Region. As discussed above, MLT’s subsidiaries produce LVL and OSB, and Vyshnev Dolotsky Lespromkhoz produces glulam. The rest mainly manufacture lower-end plywood, particleboard, and fiberboard. Unlike its peers, MLT orients itself largely towards export, requiring it to put significant attention into sustainability and product quality certifications.

Interviews with industry participants reveal that professional operators are cognizant of long-term macro trends in the forest sector. Most A1 producers report their intention to move into the B1 segment and lower-value products of the B2 segment. Industry participants also noted strong price variations among structurally oriented wood products based on their grade. The difference is especially pronounced in export markets. This is encouraging; it indicates that higher quality translates to higher margins and thus a potentially attractive return on investment in capacity enhancement and other technologies in key segments, which tend to be capital intensive.

The region suffers from suboptimal links to sales channels and distribution, particularly with regard to export. Most wood processors sell directly to domestic clients and often rely on intermediaries to address export markets. MLT is again a leader in the space; it has established two subsidiaries, Timberhof GmbH in Germany to distribute LVL, OSB and wood pellets and MLT Wood in Sweden to sell LVL products. To develop stronger export capacities, firms will need to invest not only in sales and marketing departments with customer relationship management (CRM) systems, but also more broadly in general management and corporate governance competencies.

### 4.3 Business Support Ecosystem

A wide range of federal, regional, and local governmental, non-profit, and educational bodies and institutions are involved in supporting and regulating Tver Region’s forest sector. Their interaction with private-sector actors is complex. In this section, the forest sector ecosystem in Russian and Tver Region is analyzed with respect to future growth prospects for firms competing in
the selected A2 and B2 segments. This serves to highlight some potential areas for the improvement of national and regional support structures.

The analytical framework employed here was developed by Michael Porter of Harvard Business School. As illustrated by the schematic in Figure 5.4, it explores the interrelation what Porter identifies as the five main determinants of a local sector’s global competitiveness: 1) factor conditions (natural resources, labor, capital, and infrastructure); 2) demand conditions; 3) firm strategy, structure and rivalry; 4) related and supporting industries; and 5) the intermediating role of government in the first four areas. 86

4.3.1 Factor Conditions

- **Natural endowments.** Tver Region’s vast forestland and its advantageous geographical positioning along the route between Moscow and Saint Petersburg are key assets. The region also has sufficient access to other natural resources such as freshwater. However, as noted above, the region’s limited softwood stock and the below-average quality of its abundant hardwood wood stock each present a challenge. The region will need to optimize its reforestation policy in line with its ultimate forest sector development strategy.

- **Capital.** Access to finance remains a challenge. Lack of information and difficulty in obtaining state support as well as perceived difficulties in obtaining bank loans constraint access to finance for MSMEs in the forestry sector in Tver Region. Forest sector MSMEs indicate that it is nearly impossible to benefit from government support programs or too difficult to meet their requirements, and that there is insufficient awareness of available support programs. Generally forest sector companies do not spend significant resources in seeking external financing due to high interest rates, instability of the ruble exchange rate, lack of sufficient collateral (small forest plots are not an attractive asset for potential investors and financial institutions), and aversion of credit risks and lack of confidence in financial institutions. (See Appendix I for discussion of issues related to MSME access to finance.)

- **Human capital.** Tver Region has sufficient workforce for the basic needs of the forest sector; firms struggle to attract more technically skilled staff. A greater number of specialists are required for both the operation of advanced machinery at facilities producing EWP and for specialized roles involving client support and export promotion. Currently, staff shortages do not seem to be a critical issue; however, the regional policies should consider sourcing an increased intake of qualified staff in the future. For MSMEs in the forest sector, a shortage of skilled labor, as well as the working conditions and labor management are indicated to be a barrier to strategic development. In Tver Region, just less than 4 percent of professionals employed in the industry have had advanced training. Up to 33 percent of forest sector

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employees are employed in jobs with harmful and hazardous working conditions. Factors such as roster-based work and low pay limits the sector’s attractiveness to young professionals and skilled personnel. This in turn affects firm outlook and willingness to seek expensive debt capital.\textsuperscript{87}

- **Infrastructure.** As discussed above, more investment in logging roads is needed to allow harvesters to access more remote softwood. Roads are also often associated with single processing facilities: their limited common use is a shortcoming. Global experience suggests that a combination of concessions for private road construction coupled with a permit or fee-based approach to providing greater access to public roads has the greatest potential to address this obstacle. Some countries, such as Liberia, have successfully used fiscal credits as an instrument for road construction and maintenance.\textsuperscript{88} This requires close coordination between public officials and concessionaires to synchronize and prioritize road investment plans. Additional issues that should be addressed through concessions include third party access rights to the concession infrastructure and the terms for concessionaire access to public infrastructure. Access to other types of infrastructure (e.g., power and water utilities) does not seem to be significant challenge given the region’s proximity to large population centers.

4.3.2 **Demand Conditions**

Russia’s domestic market for the A2 and B2 segments is small but growing. EWPs as well as specially treated lumber are getting wider recognition domestically. Medium-term forecasts show steady growth in demand for lumber and potentially higher growth rates for treated and MSR lumber and advanced EWPs.\textsuperscript{89} Demand for wood based panels (fiberboard and particleboard, OSB, and plywood) is relatively stable.

Analysts estimate that approximately 120 million m$^2$ is needed per year to meet demand and replace ageing housing stock in the Russian Federation. In recent years, however, an average of 80 million m$^2$ of new housing has been commissioned annually.\textsuperscript{90} And yet, despite the country’s massive forest resources, the share of wooden structures in new residential construction is considerably lower in Russia than in other countries with similar climates. Wood is the primary material in just 10 percent of new housing construction, compared to up to 40 percent in northern European countries. Wood is more commonly used in smaller, prefabricated housing in rural areas; Russia is home to 14 large factories producing prefabricated wooden houses.\textsuperscript{91}

One major obstacle for the further development of wooden construction in Russia is building codes. Currently, wooden structures cannot exceed two stories. In response to this challenge, legislation is currently being prepared to allow for the building of taller wooden structures. In 2018, the Russian Government created incentives to grant individuals access to mortgages at subsidized rates when purchasing prefabricated wooden houses from manufacturers. (It should be noted, however, that only purchases up to RUB 3.5 million—approximately US$ 51,000—are eligible for this

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\textsuperscript{88} Infrastructure Policy Notes: Leveraging Investments By Natural Resource Concessionaires, World Bank

\textsuperscript{89} Prutov and Malkov (2019).

\textsuperscript{90} UNECE/FAO (2019).

rate.) The government has allocated a total of RUB 198 million (US$ 2.9 million) to support domestic demand for wooden house construction.

In 2018, a total of 11.2 million m² in wooden residential buildings was constructed in Russia. Of this amount, prefabricated wooden housing accounted for between 3.5 and 4 million m², according to industry experts. The total value of this market was estimated at RUB 293 billion (US$ 4.3 billion). Assuming that state support measures are strengthened, construction regulations allow for multi-story wooden buildings, and the country’s overall economic environment is stable, Russia’s wooden housing market is forecast to grow at an average of 14.1 million m² over the next decade. This would drive considerable domestic demand for glulam, LVL, and (as they become more widely used) other EWPs used in mass-timber construction.

4.3.3 Firm Strategy, Structure & Rivalry

Russia’s introduction of export tariffs and quotas on industrial roundwood served to strengthen competition among domestic wood processors. Roundwood previously directed for export was redirected for processing thereby increasing already stiff competition among producers of commodity wood products. This has led to gradual consolidation or strategy shifts among surviving firms. Firms seeking to produce higher-quality lumber have invested in new sawmilling, drying, and treatment technologies.

With exception of MLT and potentially Vyshnevolotsky Lespromkhoz, the region’s producers of EWPs compete in mature or declining industries. While some of these firms may be able to uniquely benefit from Tver Region’s need to process its lower-quality hardwood stock; in the longer term this segment may stagnate or even decline due to overcapacity and limited market growth prospects.

4.3.4 Related & Supporting Industries

- **Manufacturing and chemicals.** Currently, most advanced machinery for higher-level wood processing is imported. This creates certain risks for the sector (e.g., foreign exchange risk, speed of maintenance). Chemical additives (an important part of high-quality lumber, woodpanel, and EWP production) are also imported. Other substances are domestically produced, however.

- **R&D and innovation.** Innovative and potentially disruptive technologies in forestry include applications of information and communications technology (ICT) as well as bio- and nanotechnology. ICT is critical for the sector’s further development, as geographical information systems (GIS) are currently used in stocktaking and monitoring of forest reserves and are being increasingly applied in such areas as transportation, industrial logistics, and firefighting. Biotechnologies, meanwhile, are increasingly used in processing to create wood materials, biofuels, forest chemicals, fodder and wood energy. Despite state-led research initiatives, private-sector investment in R&D remains low and human capital development in this area remains a challenge.

- **Education and vocational training.** There are several higher educational institutions in Russia that offer degrees in forestry; this list includes Tver State University. A number of the region’s technical colleges also offer education in forestry and wood processing. These include: Kaykova College, Ostashkovsky College, West Dvina College, Vyshnevolotsk

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College, and Udomel College. The region has also created an online resource called “Forest Academy” which offers materials educators teaching courses on forest ecology and related subjects.

- **Industry associations.** There are at least two forest sector professional associations with a presence in Tver: the Tver Regional Association of Forest Industrialists and Exporters and “Russian Forest” (National Association of Timber Manufacturers). The former includes 18 major regional companies—MLT, Neldovsky DOK, Vyshnevolotsky DOK, Vyshnevolotsky LPH among them—and seeks to develop partnerships, represent sector interests at regional and federal levels, and support a favorable investment climate. “Russian Forest” states as its mission the facilitation of sector dialogue with state entities and the formation of other partnerships.

4.3.5 Government

4.3.5.1 *Policy environment*

The development of the forest sector is a federal priority. Along with the evolution of the Forest Code, the 2018 introduction of the Strategy for the Development of the Forest Industry Until 2030 signaled the Russian Government’s desire to improve the overall performance of the country’s forest sector. Highlight from the Strategy are presented below:

- **Supportive legal & regulatory framework.** Key to the development and greater internationalization of Russia’s forest sector will be an alignment of domestic standards and certification regimes with international ones. Harmonization is needed at three levels: global (i.e., convergence with World Trade Organization (WTO) rules and ISO standards), bilateral (related to the development of trade and other international linkages), and domestic (related to inter-regional and cross-governmental agreements). On a regional level, the government has expressed its intent to tailor legislation and administration to better address local needs, in light of Russia’s large territory and diversity of natural conditions, logistical capacities, forests types, and local economic development realities.

- **Sustainable forest management practices.** Historically, forest management in Russia has relied on inaccurate or outdated data in such areas as forest topology, age, and species mix, leading to suboptimal harvesting decisions. Newer, more advanced methods of stocktaking and monitoring of forest reserves are built on forestry models that require more exact and more frequently measured information. This will require further investment in technology by both private- and public-sector actors. Forest management practices must also evolve alongside processing activities. Currently, reforestation policy is oriented around the replenishment of softwood timber stocks, but innovation and investment in processing of hardwoods and older stock may dictate the future adoption of a more flexible approach.

- **Feedstock availability and capacity development.** As mentioned previously, the Russian Government has made a concerted effort to shift the country’s forest sector away from exports of unprocessed or minimally processed industrial roundwood and towards higher value-added processing activities. It has done this not only by limiting exports of industrial roundwood, but also working to ensure feedstock for current and future regional processing capacity and calling for the enhancement of industry infrastructure, including access roads for logging. The government has also sought to encourage the development of regional value-chain linkages in upstream and downstream segments of the forest sector. While further analysis and greater regional coordination are necessary to determine strategies for business ecosystem development, some potentially key products have been flagged for consideration. Among
these is birch plywood, which is attractive to foreign buyers and makes use of readily available hardwood. (Harvested at proper age, hardwood can be used for production of many types of EWP). However, a large amount of hardwood that is currently harvested is overripe and may be suitable only as an input for lower-value lumber or wood-based panels.

**Figure 4.5: Top-Ranked Government Support Mechanisms**

<table>
<thead>
<tr>
<th>Support Mechanism</th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax benefits for projects in the forest sector</td>
<td>77%</td>
<td>72%</td>
</tr>
<tr>
<td>Restrictions on exports of roundwood and other raw materials</td>
<td>77%</td>
<td>76%</td>
</tr>
<tr>
<td>Financing of construction of forest roads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial support of projects in the forest sector</td>
<td>59%</td>
<td>61%</td>
</tr>
<tr>
<td>Special Investment Contracts, incentives for projects in advanced development zones and other designated…</td>
<td>41%</td>
<td></td>
</tr>
</tbody>
</table>

*Sources: EY & Association of Specialists of the Pulp and Paper Industry (ASPPI)*

- **Facilitation of access to capital.** Access to capital is often cited by forest sector companies as a major barrier to competitiveness. For these firms, bank financing is often either not accessible or suitable for CapEx projects with long payback periods. Thus, in order to address this financing gap, the government has proposed the introduction of risk-sharing investment schemes that include state participation. If successful, these would allow for much-needed modernization of existing facilities and addition of processing capacity for higher-value products. At present, state support comes in both financial forms (tax incentives, subsidies, custom duties, etc.) and non-financial forms (administrative policies, support of surrounding industries, information services, export support and promotion, etc.). Tax incentives and export restrictions are consistently the most popular form of state support among business leaders (See Figure 5.5).

### 4.3.5.2 Regulatory environment

Several different ministries and agencies are involved in the support and regulation of Russia’s forest sector at national and sub-national levels. The Ministry of Natural Resources & Ecology is responsible for introducing legislation and setting state policies for usage of forests, maintaining property rights, and regulating relationships among various agents in the forest sector. Under the Ministry, the Federal Agency for Forestry (Rosleskhoz) is responsible for control and supervision of the sector and provides state services to various stakeholder and engages in the management of the state property. Along with its regional branches and local forestry offices, Rosselkhoz administers specialist government agencies that cover a broad spectrum of forest-sector support activities. These are:

- **Avialesokhrana** – aircraft-aided firefighting
- **Roslesinforg** – forest stocktaking and planning; data processing
- **Rosleszashita** – forest monitoring and protection; reforestation
- **Roslesresurs** – management and control of forest resource flows
• Legal Information Center – legal support
• R&D institutions
• Specialized educational institutions

In Tver Region as elsewhere, the industry’s regional branch acts as the main administrative body. It performs a range of coordinating and executive functions in areas where responsibility has been devolved from the federal level and further provides hands-on management of the region’s forest resources. The Regional Forest Protection & Firefighting Center (Tverles) operates in coordination with Rosleskhoz.

The Ministry of Industry and Trade also plays a role in the forest sector in its regulation of producers of wood, pulp and paper products and furniture manufacturers. The ministry is responsible for general management of forest-related industrial activity and coordinates a range of large-scale and specialized initiatives and support programs. Other organizations that collaborate with the ministry include the Industry Development Fund, Russian Export Center, and SME Corporation; some of these have a strong presence at the regional as well as national level. In Tver, most regional support organizations for both larger industrial firms as well as specialized support for MSMEs are located in the My Business center, which is backed by the region’s government-backed “venture fund”. The mission of My Business is to “make government support accessible and understandable for both existing entrepreneurs and people who are just planning to do business.”

The post-Soviet history of Russia’s forest sector in many ways mirrors that of other sections of the economy. Previously, insufficient development or enforcement of forest management policies resulted in over-harvesting of more commercially attractive softwoods, leaving stocks in many regions below their natural balance. In more easily accessible forests, hardwood species are dominant are often significantly overripe due to insufficient harvesting policies. In many Russian regions, harvesting is less than 50 percent of AAC, often due to the fact that wood reserves are not physically accessible by producers. This, in turn, puts excessive stress on more accessible forests.

Russia’s forest sector has strong export potential and at present already accounts for 9.5 percent of the country’s non-energy exports. In an effort to reduce Russia’s overall dependence on commodity exports, the government aims to discourage industrial roundwood exports and instead support processing activities and exports of higher value-added wood products. However, it is worth noting that export restrictions, combined with the negative global demand shock resulting from the COVID-19 pandemic, have meant that many of the country’s large producers now find themselves under considerable financial pressure. This may drive consolidation among processors, especially those located the Russian Far East with a strong dependence on Chinese demand.

Russia has made significant strides in forest certification, and has implemented both FSC and PEFC schemes, with FSC being more widespread. The Federal Technical Regulation and Metrology Agency (Rosstandart) coordinates localization of these standards, while the Federal Accreditation Service (Rosaccreditation) oversees accreditation of companies certifying FSC or PEFC adherence. Both FSC and PEFC have offices in Russia; the latter also works closely with WWF Russia. One of the drivers for the export oriented production to become certified is the impact of the

EU Timber Regulation and US Lacey Act\textsuperscript{95}. Under the EU-funded, Regional program ENPI FLEG II, a survey in 2014 of Russian businesses readiness to EU Timber regulation, had shown that EU companies holding FSC CoC certificates pay more attention to timber legality and introduce additional requirements for their Russian suppliers. 32\% of Russian FSC certified respondents reported on additional requirements set by their EU counterparts compared to 5\% of not certified companies. 29\% of FSC certified Russian companies which participated in the survey reported that EU operators introduced additional field legality checks, and only compared to 14\% of not certified respondent which are facing same requirements\textsuperscript{96}.

\textsuperscript{95} The US Lacey Act and the EU Timber Regulation put the onus on traders of timber in their markets (i.e. within the US and EU) to ensure that the wood being traded has been produced in compliance with relevant legislation in the exporting countries (i.e. in this case the Russian Federation).

Figure 4.6 Head Office of Outdoor Retailer MEC, British Columbia, Canada

Source: Ed White Photographics
5 Enhancing Forest Sector Competitiveness

Key Findings

- To enhance the competitiveness of its forest sector enterprises, we suggest that Tver adopt a strategic approach to sector development by focusing on the strengthening of its wood processing industry.
- We propose a set of six high-priority objectives and associated short- and long-term policy initiatives to achieve them.
- The Government of Tver Region and MEDTR should supplement the analysis contained within this report with further conversations with local forest-sector stakeholders.

The final section of this report suggests actions that the Government of Tver Region may take to strengthen the overall competitiveness of the region’s forest sector. While there may be several metrics that will be important to policymakers (e.g., employment, budget contributions via taxes), the primary objective of these suggestions is to enable Tver’s forest-sector enterprises to earn continuous, sustainable profits. To be consistently profitable, most firms will need to compete not only more effectively in the domestic Russian market in the shorter term, but also orient themselves towards development of export capabilities in the long run.

The current development plan for the forest sector in Tver Region is largely operationally oriented. It focuses on the effective use of forest land; reforestation and forest protection; and forest fire prevention. The region also periodically introduces measures to help local companies better access finance. However, other Russian regions appear to be making more concerted efforts to develop their respective forest sectors: Vologda Region, Khabarovsk Krai, and the Komi Republic have all announced strategic development plans in recent years. To better compete with these regions, we suggest Tver adopt a more strategic approach by focusing on the strengthening of its wood processing industry.

5.1 Desired Outcomes

Based on our research, we propose a set of six high-priority objectives for policies designed to support the development of Tver’s wood processing industries. The first three are related to value-chain interventions to address binding constraints to growth and the formulation of a concrete strategy for the development of an internationally competitive wood-processing industry in Tver. The next three objectives concern the enhancement of the region’s business support ecosystem; these include strategies to enhance the effectiveness of public spending on infrastructure and human capital development, measures to support MSMEs, and policy coordination with federal stakeholders.

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Wood-Processing Industry Development

1 **Improved quality and availability of wood stock.** Forest sector companies in Tver require coordination to optimize the value they collectively derive from the region’s scarce softwood and overabundant hardwood resources. In the longer term, the region needs a sustainable, transparent reforestation policy that integrates planned public and private infrastructure.

2 **Increased innovation in wood processing technologies.** In order to produce higher-quality, exportable products, companies in Tver need to pursue product differentiation strategies that align with their respective strengths. They also need the ability to develop and retain skilled workers, as well as support to attract the capital investment necessary to engage in more sophisticated processing and wood-product manufacturing.

3 **Expanded firm marketing and export capacity.** Firms in Tver need logistical and financial support in order to better access export markets and capture greater margins from these activities.

Enhancement of Business Support Ecosystem

4 **Greater impact of public investment.** To enhance the effectiveness of the region’s budget devoted to economic development in the forest sector, MEDTR should conduct a constraints analysis to determine areas of greatest need. Additionally, the government should explore ways to integrate education and skills training with the needs of employers through such activities as apprenticeships and commercialization of public research.

5 **Stronger support for MSME sector participation.** To boost MSME participation in the forest sector, Tver should work to enhance their access to finance and business advice and connect them with larger players who can provide them with both demand and access to necessary infrastructure (e.g., drying kilns).

6 **Enhanced national policy environment.** The region should seek to increase its engagement with its counterparts on the federal level regarding the implementation of the Strategy for the Development of the Forest Sector Until 2030 as well as the ongoing reforms to the country’s Forest Code. More crucially, it should lobby the Ministry of Construction, Housing and Utilities for amendments to national building codes to reflect developments in wood-based designs and construction techniques, including multi-story mass-timber structures.

The actions proposed below vary in terms of scope and timing. For each objective, however, specific measures are divided into those than can be enacted in the short term (ST; within the next year or two) and those that require longer-term planning and implementation (LT).\(^{101}\) Ideally, these measures should be undertaken in parallel.

In deciding which specific policy actions to take, the Government of Tver Region and MEDTR should supplement the analysis contained within this report with further conversations with local forest-sector stakeholders. There are two reasons for doing so. The first is that the authors’ access to these firms was limited due to the restrictions surrounding the COVID-19 pandemic. As a result, firms profiled in this report are larger enterprises, while MSMEs in this sector have not received the same level of attention due to data-gathering issues. Representatives of these firms, which are often found in the upstream segments of forest-sector value chains, may provide a different perspective to that offered by the authors of this report. The second—perhaps more important—

\(^{101}\) Though Tver’s forest sector has been negatively impacted by COVID-19 and the ensuing economic downturn, it should be understood that these proposals are oriented towards longer-term development, rather than near-term recovery.
reason for engagement is that measures undertaken to support the growth of the forest sector in Tver Region are more likely to be successful if they are developed in concert with, and clearly communicated to, all concerned parties.

5.2 Wood-Processing Industry Development

5.2.1 Objective One: Improved Quality And Availability Of Wood Stock

The scarcity of high-quality softwood inputs is one of the largest barriers to growth for Tver wood-processing firms. To address the challenge posed by the relatively higher abundance of lower-quality hardwood, MEDTR, in conjunction with the Ministry of Environment and Rosleskhoz, can work to enhance stock-taking and information-sharing practices among silviculture forest management companies. Additionally, cost-sharing measures can be enacted to ease infrastructure bottlenecks. In the longer term, a master forestry plan incorporating current and planned public and private road and other transport infrastructure should be developed and made available for comment.

- **ST: Information-sharing and inter-firm trading.** Working with the Ministry of Environment and Rosleskhoz, MEDTR can create a publicly accessible online portal with a range of inventory information, showing the age and species types of trees in commercial managed forests and types and grades of wood located at landing sites, both firms in Tver and in neighboring regions. To allow firms to ease supply constraints, Tver can facilitate the creation of inter-firm trading schemes by connecting firms and providing information on price and other relevant factors.

**International Experience: Arizona, United States**

In November 2014, Arizona Department of Transportation launched the two-year Healthy Forest Initiative pilot program in an effort to aid forest recovery efforts, improve commerce and reduce the risk of future wildfires. The initiative eases weight restrictions on several highways in the White Mountains region of northeastern Arizona. Under the agreement, the gross weight limit for carriers moving forestry products between landing sites and processing facilities was increased from 80,000 lbs (~36,300 kg) to 90,800 lbs (~41,200 kg). Timber haulers wishing to use the program file an application for a 30-day permit costing US$ 75 per vehicle. This permit allows them an unlimited number of loads on designated roads. In the first six months of the program, nearly 800 loads were hauled, illustrating the significant uptake by industry.102

- **ST: Transport reforms and infrastructure cost-sharing.** To improve access of harvesting companies to higher quality softwood, Tver should consider allowing greater use of certain public roads by hauling vehicles. To address the wear and tear on roads, a levy can be imposed on vehicles for these privileges (see box above). To address underinvestment in road infrastructure by private companies, the region should consider providing companies with credits against forest lease payments in cases of infrastructure investment, reflecting the enhanced value of the leasehold sites due to greater accessibility. The region may also consider revising existing Public Private Partnership and/or concession agreements to address the specific needs of the industry.

• LT: Open-source reforestation plan. In order for wood processors and manufacturers of wood-based panels and EWPs to undertake capital investment, they must be confident in future feedstock quality and availability. At the moment, uncertainty of input supply leads firms to focus on vertical integration instead of processing specialization. To address this, MEDTR could create a publicly accessible website on which the region’s master forestry plan is not only published but open to stakeholder discussion. In developing this plan, current and planned public and private road and other transport infrastructure should be taken into account.

5.2.2 Objective Two: Increased Innovation In Wood Processing

Undoubtedly, growth strategies pursued by wood-processing firms will reflect their present position. Lumber producers that have already achieved some degree of scale may seek to compete in the A2 segment, for instance by producing MSR or specially treated lumber. Firms facing severe input wood-quality constraints may choose to maximize the value of hardwood inputs by producing plywood or OSB (B1). Firms with better connections to the construction industry may find B2 more attractive. However, to succeed in any of these strategic segments, firms need to focus on quality of both wood and other process inputs, manufacturing processes, and levels of customer service.

• ST: Branding and promotion of the region as an innovation center. At both the national and international level, MEDTR can promote Tver’s developing specialization in wood processing and frame the region as a center for innovation in the forest sector. MEDTR may also decide to work with other regional ministries to collect and structure the latest global scientific and technical innovations in the forest sector. Public-sector R&D activities may create new opportunities for private-sector players as well (see box below).

International Experience: Advanced BioCarbon 3D, British Columbia, Canada

Opportunities for innovation are not only at the end of the supply chain. In British Columbia, Canada, the company Advanced BioCarbon 3D (ABC3D) is increasing the utilization of biomass from harvested sites. ABC3D uses biomass that is not considered traditionally to be of commercial value and is usually left in the forest (e.g. branches and small hardwood trees). The company processes the biomass into wood chips, and then extracts resin from the wood. The biomass remaining after the resin extraction is processed into a bioplastic polymer. The resin and polymer are then recombined using proprietary technology to create a strong, lightweight bioplastic that can then be used in 3D printers. In a 3D printer, the bioplastic is heated and extruded through a nozzle, depositing layer after layer of bioplastic until it forms a complete three-dimensional object.103

• ST: Knowledge-sharing platform. MEDTR can launch a knowledge-sharing platform where domestic and international forest- and construction-sector experts from academia and the public and private sectors can share market intelligence and showcase new developments in

such relevant areas as lumber processing and treatment, EWP development and manufacture, and mass-timber and modular building design.

- **LT: Product differentiation.** Firms need to examine areas of potential product differentiation—for example, the production of treated lumber to better addresses the climactic conditions of a target market, or the offer of more aesthetically appealing products. This is doubly true for firms competing in B2, where volume is likely to be less of a priority. The regional government may monitor and support such differentiation initiatives that initially naturally come from the private sector companies. To enable government-backed business support organizations (BSOs) may be engaged to provide data and consulting services. The region’s My Business center or similar entities may also be able to offer concessional loans to firms investing in new machinery.

- **LT: Investment promotion.** In the long-term, sector growth requires the attraction of significant capital investment. Large investments have the potential to be impactful not only in terms of corporate growth, but also regional employment. Accordingly, MEDTR may want to compile a list of priority private-sector investment projects that it views as beneficial to industry development and support company conversations with large domestic or foreign strategic investors. MEDTR may want to organize both inbound and outbound trade missions to showcase the wood-processing industry in Tver and connect local forest sector enterprises with international investors and industry players. (According to FDI Markets, Russia’s forest sector has attracted a total of US$ 9.3 billion in foreign direct investment (FDI) over the past decade, but Tver does not appear to have been the destination for any of it.)

### 5.2.3 Objective Three: Expanded Firm Marketing & Export Capacity

**To access international customers, firms need to increase their familiarity with export procedures and requirements.** They also need access to key resources: distribution networks, specialized infrastructure, skilled personnel, market information, and trade finance. Robust export support is crucial for Tver Region’s lumber processors and EWP producers to achieve competitiveness in the A2 and B2 segments, respectively.

- **ST: Agent network creation.** While export support typically falls under the auspices of REC (occasionally supported local export support centers), there exist many other formal and informal networks that facilitate exports. In the short term, it is likely that Tver’s small and mid-size companies seeking to engage in export activities will need to continue to rely on distribution agents, which generally offer the same sort of services that export promotion agencies often provide to larger firms. MEDTR can provide some transparency to these arrangements by compiling a list of agents with whom companies have worked or are working and by gathering price information and other types of market intelligence from firms' interactions with these individuals or firms. Opportunities to enhance efficiency are likely to emerge out of this continuous process.

- **ST: Shared infrastructure.** MEDTR can find fiscal or other incentives to encourage larger firms to share infrastructure. This includes hard infrastructure (e.g., sales offices, access terminals or landed stock) and soft infrastructure (e.g., skilled personnel, CRM systems).

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Revenue-sharing arrangements between larger and smaller players are another possible avenue of cooperation.

- **LT: Full-scale export capacity development.** Working with REC, MEDTR can provide a full-scale range of services to firms seeking to expand into new markets: trade intelligence, policy guidance, advocacy, export promotion, exporter development, and financial support. Participation in international trade shows is also an important way to build connections and expose local players to emerging global trends and best practices. Follow up is also important: after the conclusion of these events, the ministry can facilitate conversations between local companies and international partners. This requires dedicated, highly trained staff.

- **LT: Financial support for export schemes.** Enhanced access to trade finance is also a key issue in export facilitation. The Government of Tver Region should partner with leading Russian and international commercial banks to develop and support access to such trade finance products as loans, guarantees, letters of credit, export factoring, export credits, and insurance.

### 5.3 Enhancement of Business Support Ecosystem

#### 5.3.1 Objective Four: Greater Impact of Public Investment

The Government of Tver Region has identified the enhancement of the impact of public infrastructure spending as a key priority. The region should first conduct a thorough economic analysis to understand where the region’s budget is likely to have the greatest impact in the forest sector. At the same time, there are clear areas of investment opportunity that can be acted upon immediately, particularly as concerns education relevant to the forest sector.

- **ST: Economic constraints analysis.** To improve the effectiveness of the portion of the region’s budget devoted to economic development, a full-scale constraints analysis should be conducted incorporating quantitative and qualitative inputs gathered from stakeholders. Using this information, Tver’s policymakers can better prioritize investments in both hard infrastructure and human capital.

- **ST: Commercial skills capacity.** To capture the attention of advanced buyers, Tver’s wood-product producers need to invest resources in elevating their sales and marketing activities. To consistently service these buyers and build strong working relationships, firms also need to enhance their management skills and communication abilities. MEDTR can facilitate the development of this capacity by organizing workshops with experts in these fields.

- **LT: Technical and vocational skills development.** In the longer term, greater investment in technical education and skills training is necessary to address the rising demand for qualified technical and commercial staff in the forest sector. Tver would need to perform a detailed analysis of the long-term demand and supply of specialists for the regional forestry sector to identify gaps and redundancies in the required skills. Based on the results of the analysis the region may decide to enhance the existing learning system among the local institutions of special and higher education\(^{105}\) by supporting modern educational programs and developing

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\(^{105}\) The analysis of Tver regional vocational education system done by the World Bank in 2008-2009 revealed that this system requires serious modernization to improve its efficiency/results and funding mechanisms, consolidate the system’s resources and create conditions and infrastructure for the cooperation with the private sector. The analysis was the basis for the draft long-term target program.
the lifelong learning system in the forestry sector in cooperation with major employers. It would be necessary to support better interaction of the local educational organizations with the key regional forestry companies that may provide co-financing for the educational programs to train current and potential employees. MEDTR may also want to work with the Ministry of Science and Higher Education of Tver Region to use the summarized knowledge of the latest global scientific and technical innovations in the forest sector for integration into the curricula of the regional educational institutions.

5.3.2 Objective Five: Stronger Support For MSME Sector Participation

Many of the recommendations discussed in this report are designed to benefit larger firms. MSMEs active in the forest sector are expected to benefit from these measures as well but will likely require additional specialized support in light of their limited resources and highly specific needs. As these firms account for about a third of the region’s forest sector revenues, strengthening their growth capacity is vital to sector development.

- **ST: Access to finance.** MSMEs play a key role in forest sector industries, especially in upstream segments and in wood processing. Greater support is needed to strengthen their links to other value chain activities, particularly in the area of access to finance—namely, the timely provision of credit at attractive rates. While many government-sponsored schemes offering loans at subsidized rates exist, MSMEs have difficulty accessing them due to burdensome documentation requirements and lengthy approval processes. The region’s SME Credit Facilitation Fund and its partners may want to consider working with specialized lenders MSME to develop specialized lending products to ease these bottlenecks.

**International Experience: Be Green Trade, Bolivia**

In Bolivia, Be Green Trade (BGT) is a business incubator that supports MSMEs and startup entrepreneurs, primarily in the wood production and processing subsectors. Along with providing BDS facilitation, BGT helps its clients with brand registration and patenting for wood processing products and processes, helping to play an intermediary role between the companies and the complicated network of government agencies responsible for registration and patenting. BGT has set up ecosystem networks that support technology transfer and adoption in the value-added processing subsector, such as holding events like Startup Weekends, Startup Food Innovation, and others.¹⁰⁶

- **ST: Tailored business advice.** In addition to financial support, many owners and managers of MSMEs require affordable business advisory services. MEDTR should consider engaging consultants from either high-performing BSOs or the private sector to aid local MSMEs in the development of their business plans. As part of this process, MSMEs could be regularly asked about the ‘pain points’ experienced by their business, thereby giving MEDTR real-time data that could be presented to policymakers for further action.

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¹⁰⁶ Macqueen, D and Bolin, A (eds.) Forest business incubation: Towards sustainable forest and farm producer organization (FFPO) businesses that ensure climate resilient landscapes, FAO, Rome and IIED, London (2018).
• **LT: Inter-industry linkages.** Where possible MEDTR should strive to foster connections between MSMEs and larger players in the sector. For instance, the government may wish to provide credit support to smaller firms seeking to rent access to necessary infrastructure (*e.g.*, higher quality drying kilns) owned by larger players.

• **LT: Digital ecosystem.** Entities supporting MSMEs in Tver should strive to improve the quality of data available to companies regarding financing instruments, as well as the online accessibility of these financial products. Owners of small business additionally require greater financial literacy; this enhanced via e-learning programs.

### 5.3.3 Objective Six: Enhanced National Policy Environment

In closing, we also discuss some issues that Tver Region policymakers may want to discuss further with their federal-level counterparts. The suggestions listed below concern matters that are formally beyond the control of regional authorities, but nevertheless considerably influence the sector and thus must be taken into consideration.

• **ST: Building code enhancements.** In concert with private companies, industry associations, and other forest-sector stakeholders—both in Tver and in other Russian regions—the Government of Tver Region should lobby the Ministry of Construction, Housing and Utilities for amendments to national building codes to reflect developments in wood-based designs and construction techniques, including multi-story mass-timber structures. This could significantly boost demand for wood products (see box above).

• **ST: Leasehold reform.** Commercial forests are long-lived assets: an average reforestation cycle in Russia is often over 50 years.⁹⁷ Accordingly, firms managing forestland under long-term leases should be incentivized to manage them to longer-term, sustainable objectives. To do so, the federal government will need to reform the lease auction process to make it more inclusive for smaller players, and enhance the ability of firms to monetize these assets by facilitating the transferrability of associated rights and the use of existing leaseholds as collateral in financing arrangements.

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**International Experience: Finland**

Annual forest sector output in Finland is approximately €7.5 billion, equal to over 4 percent of the country’s GDP. The sector directly employs about 65,000 people. Wood is promoted for use in construction, including in multifamily residences: it accounts for about 40 percent of all building materials, and nearly 80 percent of detached houses have a wooden frame. Using wood for energy also increases Finland’s self-sufficiency in energy production promotes good silvicultural practices. Different residues and side streams (black liquor, sawdust, bark and woodchips) are widely used for the production of heat and electricity. Sawdust and woodchips are also used for the production of transport biofuels or other bio liquids.⁹⁸

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Incorporating sustainability in finance. To allow for forest managers to better monetize the ecosystem services that trees provide, the regional and federal government stakeholder should voice their support for green finance initiatives and environmental, social, and governance (ESG)-oriented investments. Directing socially oriented capital at companies engaged in such practices as SFM certification helps lower their cost of capital and further incentivizes these activities. It should be noted that the green finance agenda has been slowly gaining momentum in Russia: recently, the Moscow Exchange established a dedicated Sustainable Development segment that includes green and social bonds.\textsuperscript{109}

6 Appendix I: MSME Access to Finance in Tver Region

Russia’s federal and regional governments and the Central Bank of Russia (CBR) have established a range of programs to support MSMEs during the COVID-19 pandemic. For instance, the CBR expanded its dedicated lending facility, which provides loans to MSMEs at an interest rate of 8.5 percent for up to 3 years. The federal government, meanwhile, launched a zero-interest loan program to support MSMEs in the sectors most affected by the pandemic, with the goal of helping them to avoid layoffs and continue making salary payments. (At the end of April, this program was expanded to include large corporates.) The government also announced a separate program of subsidized loans at a 2 percent interest rate to companies and non-profit organizations active in hard-hit sectors; these loans can be converted to grants for entities that preserve employment. In April, the State Duma approved a law allowing individuals and companies to defer loan payments for up to six months.

Generally speaking, there is also a shortage of information on MSMEs, which complicates analysis of their access to finance. In light of the lack of reliable statistics, estimates of MSME economic activity must rely on analysis of imperfect data, sample studies, and interviews with subject-matter experts.

<table>
<thead>
<tr>
<th>Outstanding and overdue loans (RUB million, as of April 1, 2020)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional credit organizations</td>
</tr>
<tr>
<td>With branches in Tver region</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>MSMEs</td>
</tr>
<tr>
<td>Individual entrepreneurs (IEs)</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>MSMEs, overdue</td>
</tr>
<tr>
<td>IEs, overdue</td>
</tr>
<tr>
<td>Total overdue</td>
</tr>
</tbody>
</table>

Source: Central Bank of the Russian Federation

6.1 Supply of Finance for MSMEs in Tver Region

Banks are the main source of MSME finance. However, the relative volume of lending to MSMEs is small; banks are mostly interested in lower-risk activities such as transaction processing. Even so, this area remains a challenge for smaller businesses: many MSMEs open accounts in multiple banks to minimize risks related to sudden account blockage or disconnection from online banking. Regional entrepreneurs cite this as a frequent headache, as account recovery requires about a week and considerable paperwork. MSMEs also noted difficulties in obtaining bank guarantees to participate in state procurement tenders as a barrier to growth.

MSMEs and individual entrepreneurs together account for 22 percent of total lending in Tver region—higher than the national average. This segment also accounts for almost 95 percent of regional banks’ total loan portfolio; however, the role of these banks in overall lending is negligible. Most of the region’s legal entities borrow from national banks, some of which have dedicated

110 (https://www.cbr.ru/statistics/bank_sector/sors/)
programs focused on MSME lending (e.g., Sberbank and Rosselkhozbank). Owners of MSMEs in the region note that it is difficult to obtain loans, and further report that they often prefer to use consumer loans to finance their business needs.

Experts suggest that a surplus of state-backed preferential financing schemes is hindering the development of financial services products for small businesses. The number of financial institutions authorized to offer preferential financing is limited; this makes it difficult for smaller credit institutions to compete, especially at the regional level.

Financial performance of MSMEs is expected to deteriorate due to the COVID-19 pandemic. Overdue loans in this segment are expected to increase considerably, while the volume of loans provided to MSMEs in 2020 is forecast to fall by up to 30 percent compared to 2019.111

| Table 6.2: Lending in Tver Region to Legal Entities and Individual Entrepreneurs |
|------------------|------------------|
| Monthly Loan Origination (RUB million, data as of April 2020) |
| Regional credit organizations | 51 | 0.16% |
| Credit organizations of other regions with branches in Tver Region | 8,461 | 26% |
| Credit organizations of other regions with no branches in Tver Region | 24,073 | 74% |
| Total | 32,585 | 100% |

Source: Central Bank of the Russian Federation112

6.2 State Support of MSME Finance in Tver Region: Regional Level

7.2.1 Regional MSME Support Organizations in Tver Region

Tver has a range of support institutions dedicated to supporting MSMEs. Mostly are functionally oriented and are concerned with industries identified as a priority at the federal level; this prioritization allows for access to certain types of finance from the federal budget.

Tver Region’s Business Incubator is focused on supporting early-stage MSMEs. For 36 months, selected businesses are offered discounted office rent as well as consulting services. In 2019, a total of 172 companies used the Incubator’s services, and 17 became residents. At year-end, 62 percent of its office facilities were rented: in its 2019 annual report, the Incubator’s management expressed a desire to increase businesses’ uptake of its services.113

The SME Credit Facilitation Fund of Tver Region offers guarantees and microloans to MSMEs. The average amount of support provided by the fund is RUB 2.5 million per project. MSME representatives said that the establishment of the fund has been beneficial for the region’s business climate, especially within the city of Tver. Awareness in remote areas of the fund’s programs and the availability of its instruments to support MSMEs are yet to be assessed. The fund’s capacity is somewhat limited by a lack of capital, human resources and diverse financing instruments, as well as challenges around assessing market and customer needs and managing client relationships. The fund has no regional development strategy.

The Regional Fund for the Promotion of Venture Investments in Small and Medium Enterprises in the Scientific and Technical Sphere is another potential source of financing for MSMEs. The fund is tasked with implementing programs under the Federal Corporation for the Development of SMEs (SME Corporation), including scaling up MSMEs to the level of suppliers for larger companies. The fund focuses on providing advice and informational support regarding existing venture capital funds and available state support measures. Established in 2009, the fund also functions as a platform for collecting information from entrepreneurs on new projects. According to its most recently available report dated October 2015, the fund had considered 1,000 applications and issued just 3 loans.115 More recently, the fund was appointed as the coordinating entity for regional management of all MSME support infrastructure. In October 2019, the fund established the “My Business” service center pursuant to this task. To date, My Business has provided support to 2,089 MSMEs and 4,713 individual entrepreneurs.116 According to the fund’s annual report, support is largely in the form of preferential lending under the auspices of federal programs without reference to specific regional needs or development plans.

6.2.2 Regional Initiatives Tver Region

Tver Region has approved strategic initiatives to support MSMEs at the regional level. These include:

- **Economic Development and Innovation-Driven Economy of Tver Region for 2018-2023.** With total funding of about RUB 2.6 billion (18 percent of which comes from the federal budget), the program aims to improve the region’s investment climate. Among its specific targets is to increase MSME revenues to RUB 436 billion by 2023. The program lacks strategies and objectives to develop MSMEs in specific sectors.117

- **State Support of Entrepreneurship & Innovation in Tver Region.** This subprogram of “Economic Development and Innovative Economy of the Tver Region 2018-2023” is focused on achieving several targets in three areas:
  - Financial assistance to MSMEs and supporting entities
  - Promotion of youth entrepreneurship
  - Development of science and innovation in Tver Region

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114 “Key Performance Indicators” SME Credit Facilitation Fund of Tver Region (2020): http://fondtver.ru/
116 Ibid.
It also does not feature any sector-specific strategies. In 2019, RUB 440 million, or 80 percent, of the subprogram was financed from the federal budget.\textsuperscript{118}

\textbf{Table 6.4: Program Budget Expenditures: State Support of Entrepreneurship & Innovation in Tver Region, 2019\textsuperscript{119}}

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Volume (RUB mln)</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing SME access to finance (including preferential finance) under the national project “SME Entrepreneurship and Individual Entrepreneurial Initiative Support”</td>
<td>379.1</td>
<td>69.2</td>
</tr>
<tr>
<td>“Acceleration of SMEs” under the national project “SME Entrepreneurship and Individual Entrepreneurial Initiative Support”</td>
<td>136.2</td>
<td>24.9</td>
</tr>
<tr>
<td>Provision of property and educational support to SMEs</td>
<td>15.0</td>
<td>2.7</td>
</tr>
<tr>
<td>“Promotion of Entrepreneurship” under the national project “SME Entrepreneurship and Individual Entrepreneurial Initiative Support”</td>
<td>10.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Promotion of youth entrepreneurship</td>
<td>5.7</td>
<td>1.1</td>
</tr>
<tr>
<td>Science and innovation promotion and development in Tver region</td>
<td>1.7</td>
<td>0.3</td>
</tr>
<tr>
<td><strong>Total subprogram</strong></td>
<td><strong>547.7</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

\textit{Source: SME Credit Facilitation Fund of Tver Region}

- **Effective Development of the Economy, Investment & Business Environment of Tver Region For 2020-2025.** Tver has allocated nearly RUB 7.3 billion to improve the regional investment climate and encourage entrepreneurship. MSME-related initiatives comprise nearly 20 percent of the program’s total budget (see below). Financial products currently on offer under the access to finance initiative are not focused on either the forest or IT sectors.\textsuperscript{120}

\textbf{Table 6.5: Finance Allocated Under Programs for Direct SME Related Initiatives, 2020-2025}

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Volume (RUB mln)</th>
<th>Share of total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing preferential SMEs access to production facilities and premises</td>
<td>515.4</td>
<td>35.7</td>
</tr>
<tr>
<td>Short-term loans provided by the SME Credit Facilitation Fund</td>
<td>329.3</td>
<td>22.8</td>
</tr>
<tr>
<td>&quot;My business” center promotion and development</td>
<td>235.4</td>
<td>16.3</td>
</tr>
<tr>
<td>Export support center promotion</td>
<td>153</td>
<td>10.6</td>
</tr>
<tr>
<td>Providing guarantees by the SME Credit Facilitation Fund</td>
<td>86</td>
<td>5.9</td>
</tr>
<tr>
<td>Providing support to SMEs in mono cities</td>
<td>71.8</td>
<td>5.0</td>
</tr>
<tr>
<td>Programs to engage in entrepreneurial activity and promote business set up</td>
<td>54.8</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Total subprogram</strong></td>
<td><strong>1,445.7</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

\textit{Source: Government of Tver Region}

\section*{6.3 State Support of MSME Finance in Tver Region: Federal Level}

\textbf{The SME Corporation along with its subsidiary, the Russian Bank for Small and Medium Business Support (SME Bank), are providing financial support to MSMEs at the federal level. These institutions design, develop and administer programs of small business support. This includes the coordination of regional MSME support via allocation of funding. This allocation is expected to become more transparent: by December 2020, a register of MSME recipients of state support will be made publicly available.}

\textsuperscript{118} Implementation report, “Economic development and innovative economy of the Tver region” for 2018-2023 “Government of Tver Region (2019); https://минэконом.тверскаяобласть.рф/деятельност-игов/gosprogrammy/?special=y

\textsuperscript{119} Ibid.

\textsuperscript{120} “Effective Development of the Economy, Investment and Business Environment of Tver Region 2020-2025”. Government of Tver region (January 24, 2020)
Policymakers at both the federal and regional levels have taken steps to enhance MSME access to finance in recent years, with subsidized lending being the main mechanism of support. In 2019, over RUB 9 billion from the federal budget was allocated to Tver Region for preferential lending programs. MSMEs can access this funding (generally offered at an 8.5 percent interest rate) via 70 credit organizations. However, there remains ample room for the scaling back of some of these programs in favor of more market-oriented financing schemes. Especially at the regional level, policymakers require a better understanding of how to transition towards market-based instruments and platforms in the financing of MSMEs.

6.4 Forest Sector MSME Access to Finance in Tver Region

Forest sector companies in Tver Region suffer from low levels of Investment. This is especially true of MSMEs, which struggle to access external financing. Most forest sector MSMEs finance investment and working capital needs via either internal or informal sources (e.g., borrowing from family members, friends, etc.). However, some do have experience in acquiring equipment through leasing and using consumer loans to address working capital gaps. Some companies interviewed indicated interest in bank loans to renovate or expand their production facilities, though those in upstream segments noted their frequent inability to use leased forest plots as collateral.

It should also be noted that a lack of knowledge among banking and other financial professionals of the nuances of the forest sector also hinders these companies’ access to finance. This is in part due to the scarcity of reliable information regarding sector and company-specific performance, the operation of forest sector lease arrangements, and the informal nature of the smallest forest enterprises. For banks and leasing companies to service forest sector MSMEs more effectively, their specialists require education as to the challenges faced by forest sector companies and an understanding of which financial products may be suitable for these firms.

6.4.1 Supply of Finance

Nationally, loans to the forest sector enterprises account for 1.4 percent of bank’s lending activities. In Tver, the share is considerably higher—3.7 percent. Interviewed business owners reported that they generally borrow from federal banks: Sberbank, Rosselkhozbank, VTB, Otkritie Bank, Alfa Bank, and Uralsib Bank.

<table>
<thead>
<tr>
<th>Outstanding loans (RUB million, as of April 1, 2020)</th>
<th>Tver</th>
<th>Russia</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest management and harvesting</td>
<td>342</td>
<td>44,506</td>
<td>0.77%</td>
</tr>
<tr>
<td>Wood processing and wood product manufacture</td>
<td>207</td>
<td>204,563</td>
<td>0.10%</td>
</tr>
<tr>
<td>Pulp and paper production, publishing and printing</td>
<td>3,408</td>
<td>246,594</td>
<td>1.38%</td>
</tr>
<tr>
<td>Manufacture of machinery and equipment for agriculture and forestry</td>
<td>0</td>
<td>12,661</td>
<td>0.00%</td>
</tr>
<tr>
<td>Total, forest sector</td>
<td>3,957</td>
<td>508,324</td>
<td>0.78%</td>
</tr>
<tr>
<td>Total, all sectors</td>
<td>108,144</td>
<td>35,397,081</td>
<td>0.31%</td>
</tr>
</tbody>
</table>

Source: CBR

Generally, banks do not offer financial products tailored to the needs of forest sector firms. However, banks are often ready to consider loan applications from forest sector MSMEs on general terms established for this segment more broadly. Banking sector loans to forest sector MSMEs are
characterized by high overdue levels (see Table 7.7), reflecting the uncertain nature of cash flows faced by these companies.

**Relatively speaking, banks are more reluctant to lend to forest sector MSMEs.** From the bank’s point of view, the key barriers to lending to forest sector MSMEs are high seasonality of cash flows, lack of transparency (i.e., high levels of informality), insufficient quality and size of collateral, poor financial performance, significant seasonal and climate risks, and due diligence and monitoring challenges arising from remote production locations.

**Table 6.7: Outstanding & Overdue Loans to Russian Forest Sector MSMEs (RUB million)**

<table>
<thead>
<tr>
<th></th>
<th>April 01, 2018</th>
<th>April 01, 2019</th>
<th>April 01, 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total outstanding loans</td>
<td>39,344</td>
<td>47,255</td>
<td>72,956</td>
</tr>
<tr>
<td>Overdue loans</td>
<td>10,540</td>
<td>10,923</td>
<td>25,710</td>
</tr>
<tr>
<td>Percentage overdue</td>
<td>26.7%</td>
<td>23.1%</td>
<td>35.2%</td>
</tr>
</tbody>
</table>

*Source: CBR*

Wood processing companies account for the largest share of bank loans to forest sector MSMEs. For banks, these companies present a more attractive profile, as they are characterized by relatively more stable cash flows and higher margins. Forest management and harvesting companies account for just 10 percent of lending, reflecting the uncertainty faced by these companies, as well as their lack of collateral.

**Table 6.8: Loan Issuance to Russian Forest Sector MSMEs (RUB million, May 2019-May 2020)**

<table>
<thead>
<tr>
<th></th>
<th>Loans to MSMEs</th>
<th>Loans to IEs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest management and harvesting</td>
<td>6,112</td>
<td>1,286</td>
<td>7,398</td>
</tr>
<tr>
<td>Wood processing</td>
<td>27,290</td>
<td>2,847</td>
<td>30,137</td>
</tr>
<tr>
<td>Paper production</td>
<td>17,435</td>
<td>539</td>
<td>17,974</td>
</tr>
<tr>
<td>Furniture manufacture</td>
<td>9,108</td>
<td>4,052</td>
<td>13,160</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59,945</strong></td>
<td><strong>8,724</strong></td>
<td><strong>68,669</strong></td>
</tr>
</tbody>
</table>

*Source: CBR*

Leasing arrangements present a potential alternative to bank lending for companies undertaking capital investment. However, leasing arrangements for forest sector companies are somewhat rare. The main barriers to the development of leasing arrangement in the forest sector include many of the same challenges cited by banks, as well as difficulty in repossession of leased assets from remote harvesting sites. One exception to this dynamic are leasing companies associated with foreign manufacturers, which are relatively active.

6.4.2 **Support for Tver Forest Sector MSME Access to Finance**

Forest sector MSMEs account for about 3 percent of loans made by the SME Credit Facilitation Fund of Tver Region. As of May 2020, the Fund had 10 active projects in the sector. The fund lends directly by providing microloans (usually to individual entrepreneurs, who are often repeat borrowers), and via partner banks. In the latter case, the fund provides a guarantee.
Table 6.9: Loans and Guarantees Issued to Forest Sector MSMEs, 2011-2019 (RUB million)

<table>
<thead>
<tr>
<th></th>
<th>Individual Entrepreneurs</th>
<th>Limited Liability Companies</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of loans</td>
<td>12</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Total value of loans</td>
<td>22.9</td>
<td>31</td>
<td>53.9</td>
</tr>
<tr>
<td>Number of guarantees</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Amount of guarantee</td>
<td>15.5</td>
<td>31.6</td>
<td>47.1</td>
</tr>
<tr>
<td>Volume of loans guaranteed</td>
<td>30.9</td>
<td>64.8</td>
<td>95.7</td>
</tr>
<tr>
<td>Average share of loan guaranteed</td>
<td>50.2%</td>
<td>48.8%</td>
<td>49.2%</td>
</tr>
</tbody>
</table>

Source: SME Credit Facilitation Fund of Tver Region

The volume of support to the forest sector by SME Bank, as well as by its partner banks, is quite modest. There is no available public information on SME Bank forest sector loan portfolio, but based on interviews with the bank’s representatives and its annual report for 2019, the forest sector is not a priority for the bank.

Leasing arrangements for MSMEs is provided through state-supported regional leasing companies. Regional leasing companies have been established in Tatarstan, Bashkortostan, Yakutia, and Yaroslavl Region with the support of SME Corporation and these regions’ budgets. These companies are not limited to any geographical area in their activity, and offer leasing of equipment at 6 percent interest per annum for domestic equipment and 8 percent for imported equipment. In 2019, the portfolio of these companies totaled RUB 6 billion. 121

Support for priority investment projects is focused on large forest processing holding companies. In May 2019, the minimum volume of capital investment in a national-priority investment project for modernization of wood processing facilities was raised from RUB 500 million to RUB 2 billion. New projects should cost at least RUB 3 billion—earlier the threshold was RUB 750 million.122 Forest sector MSMEs are likely to be disadvantaged by market distortions created these priority investment projects, which grant implementing companies the right (often uncontestable) to long-term lease of large forest plots—at heavily discounted rates until investment payback.

121 Federation of Leasing (2020): https://fedleasing.ru/
Figure 7.1: Proportion & Distribution of Global Forest Area by Climatic Domain, 2020

Source: FAO

Figure 7.2: Forest Cover of the Russian Federation, 2010

Sources: Marian\textsuperscript{123}, USGS\textsuperscript{124}, European Space Agency (ESA)\textsuperscript{125}

\begin{itemize}
\item Tropical 45\%
\item Boreal 27\%
\item Temperate 16\%
\item Subtropical 11\%
\end{itemize}

124 USGS LCI (2010).
Figure 7.3: Sawnwood Production Clusters in Russia

Source: Novoselov

Figure 7.4: Current & Planned Particleboard Plants in Russia

Source: Novoselov
Figure 7.5: Current & Planned Fiberboard Plants in Russia, Belarus & Ukraine

Source: Novoselov

Figure 7.6: Plywood Plants in Russia

Source: Novoselov
Figure 7.7: Current & Planned OSB Plants in Russia

Source: Novoselov

Figure 7.8: Physical & Political Map of Tver Region & Surroundings

Source: Google Earth
Figure 7.9: Major Larger Forest Enterprises of Tver Region

Source: LesPromInform