Russian forests and climate change

Executive summary

The key aim of this report is to show how the forest sector can help the Russian Federation to meet its Paris Agreement targets and, at the same time, how the sector can contribute to improve the economy. This is linked to building an innovative strategy of sustainable forest management, addressing conservation as well as productivity, emphasizing the country's aims of low carbon society, boosting the investment sector on forest products and introducing technical innovation measures of the bioeconomy, as represented by new and emerging wood-based products.

We provide a systematic analysis of the Russian Federation's forest resources; their potential for carbon sequestration and contribution to the Paris Agreement targets; the impacts of climate change; and the risks associated with biotic and abiotic disturbances. We also present three regional case studies with varying degrees of opportunities and solutions for protecting forest resources and enhancing ecosystem services both for carbon sequestration and for wood-based products, using the framework of Climate Smart Forestry (CSF). We also look at the climate change mitigation potential and opportunities arising from forest bioeconomy and the transformation of Russia towards a low carbon society including various innovative solutions for new wood-based products and industrial sectors.

This report synthesizes the current scientific understanding on Russian forests and climate change, and identified the opportunities as well as challenges with respect to adaptation, mitigation and bioeconomy. The key findings and recommendations for the next steps can be summarized as follows:

- Currently, Russian forests represent a large carbon sink, but there are also large areas in the Northern and Eastern parts of Russia, which act as a carbon source. These areas are typically located either on permafrost or in disturbed forests. However, the several years of large wildfire disturbances with subsequently increased tree mortality may lead to substantial decrease of the Russian forest carbon sink.
- Future natural disturbance impacts are critical: attention should be paid to preventing of disturbances and enhancing forest restoration/reforestation. Climate change impacts will put the current forest sector severely at risk. The potential to reach the Paris Agreement targets through a significant contribution of the bioeconomy cannot be achieved without active forest management with a strong focus on natural disturbance prevention and enhancing forest resilience.
- Investments in sustainable and climate-smart forest management are needed and should be aimed at long-term goals rather than short-term lease contracts, as well as to improved infrastructure especially in the accessible forests. Without active, climate-smart forest management, the potential of bioeconomy can-

not be achieved. In other words, investing in bioeconomy would enable funding for improved forest management and infrastructure, which could further lead also to protecting biodiversity and ecosystem services.

- Another important focus is forest restoration since there most likely will be large-scale natural disturbances also in the future. If the aim is to sustain and even enhance the forest sector contribution to climate change mitigation, active support for large scale forest restoration would be needed.

- Regional differences should be taken into account when developing action plans for implementation.

- A holistic view is needed for effective climate change mitigation and adaptation as well as biodiversity protection. Climate-smart forestry is proposed to connect mitigation with adaption measures, enhance the resilience of Russian forest resources and ecosystem services, and meet the needs of society.

- Successful development of bioeconomy markets linked with circular economy can create a new economic foundation instead linear economy based on fossil materials.

- Implementation of the research results in practice would be the next challenge, and successful utilization of forest resources in the future would strongly depend on the evolution of forest governance. The potential benefits from concepts such as Climate Smart Forestry requires major changes in policies and management responsibilities. The following topics are suggested for further consideration and for implementation:

  – Improving forest policy by taking into account forest-based circular bioeconomy development and effective climate change mitigation and adaptation

  – Developing national strategy, and national and regional action plans for forest-based circular bioeconomy development

  – Improving national forest inventory and forest monitoring taking into account integration of modern ground-based measurement methods and remote sensing capabilities

  – Developing forest management on abandoned agricultural lands for preventing disturbances, and for improved wood production and carbon sequestration

  – Considering the possibilities for emerging sectors of bioeconomy such as using wood in construction, textiles, and biofuels production, with respect to economic development and deep decarbonization targets

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