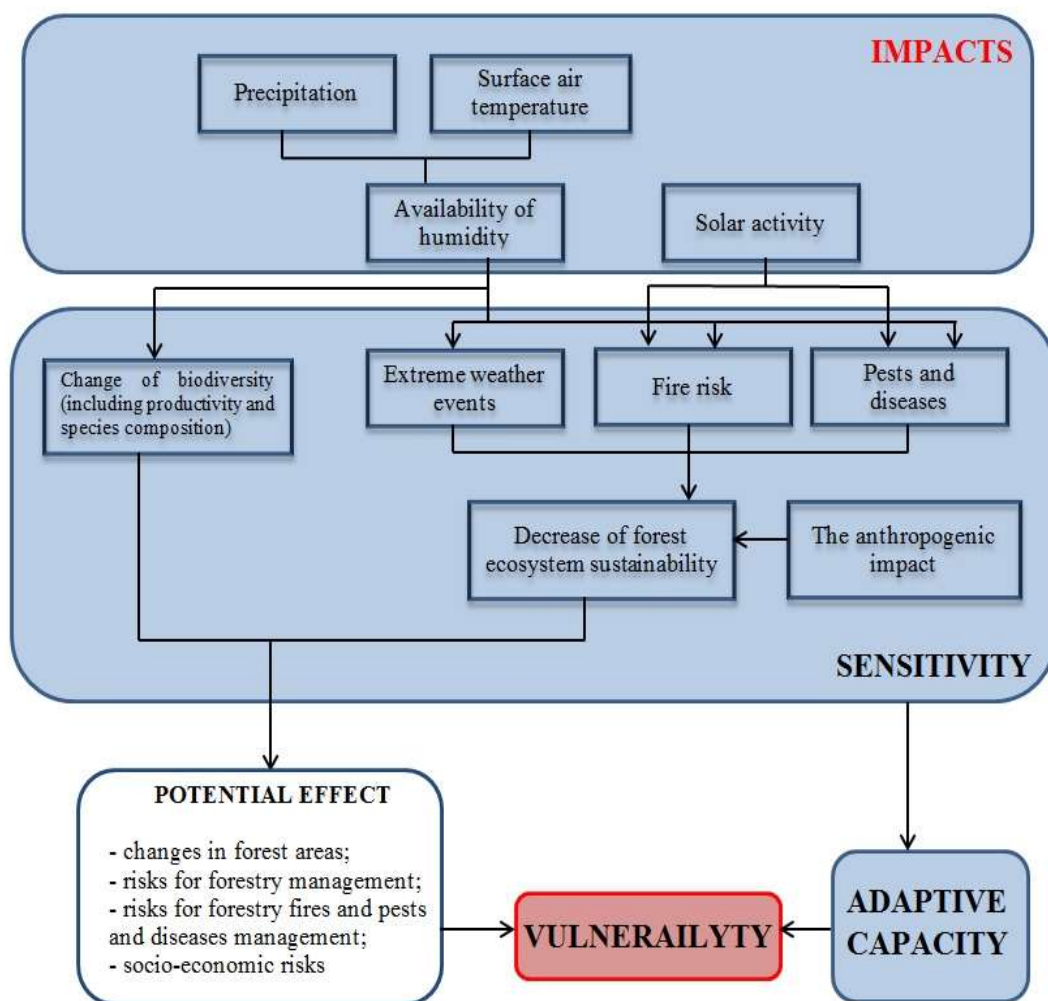




Scenarios and economic consequences of climate change in terms of forest management on Russian territory BEAC region

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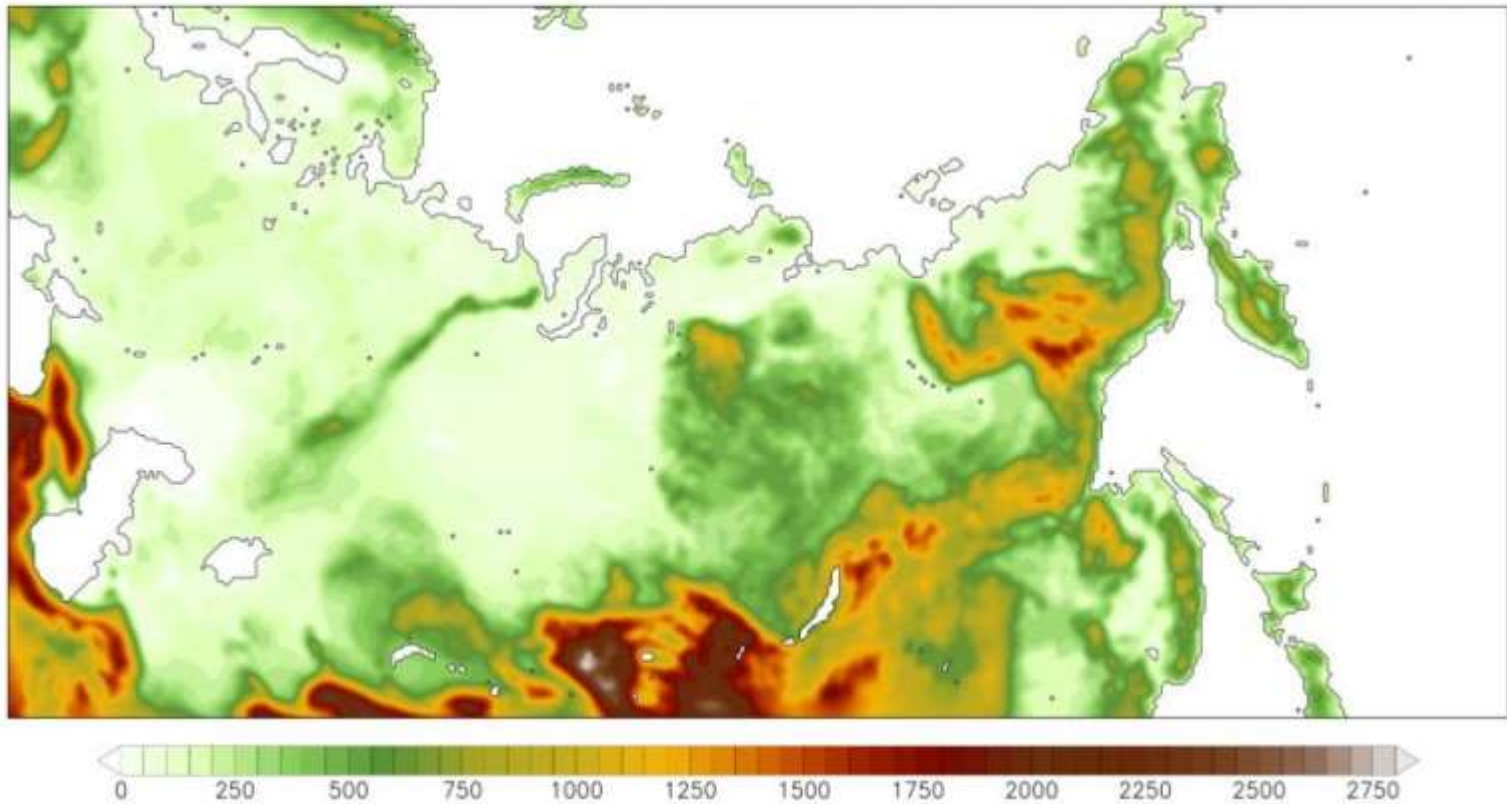
The impact of the expected climate change on the forest sector, taking into account the vulnerability to possible climate risks



Key vulnerabilities:

- increasing the probability of the incidence of forest fires;
- increasing the probability of pests and diseases damage;
- Increasing the probability of extreme weather events;
- increasing the risk of changes in the species composition of forests.

Regional climate model (Voeikov Main Geophysical Observatory)





Forest zoning



The end of the XX century (2090-2099)



Middle taiga



South taiga and more
southern zones

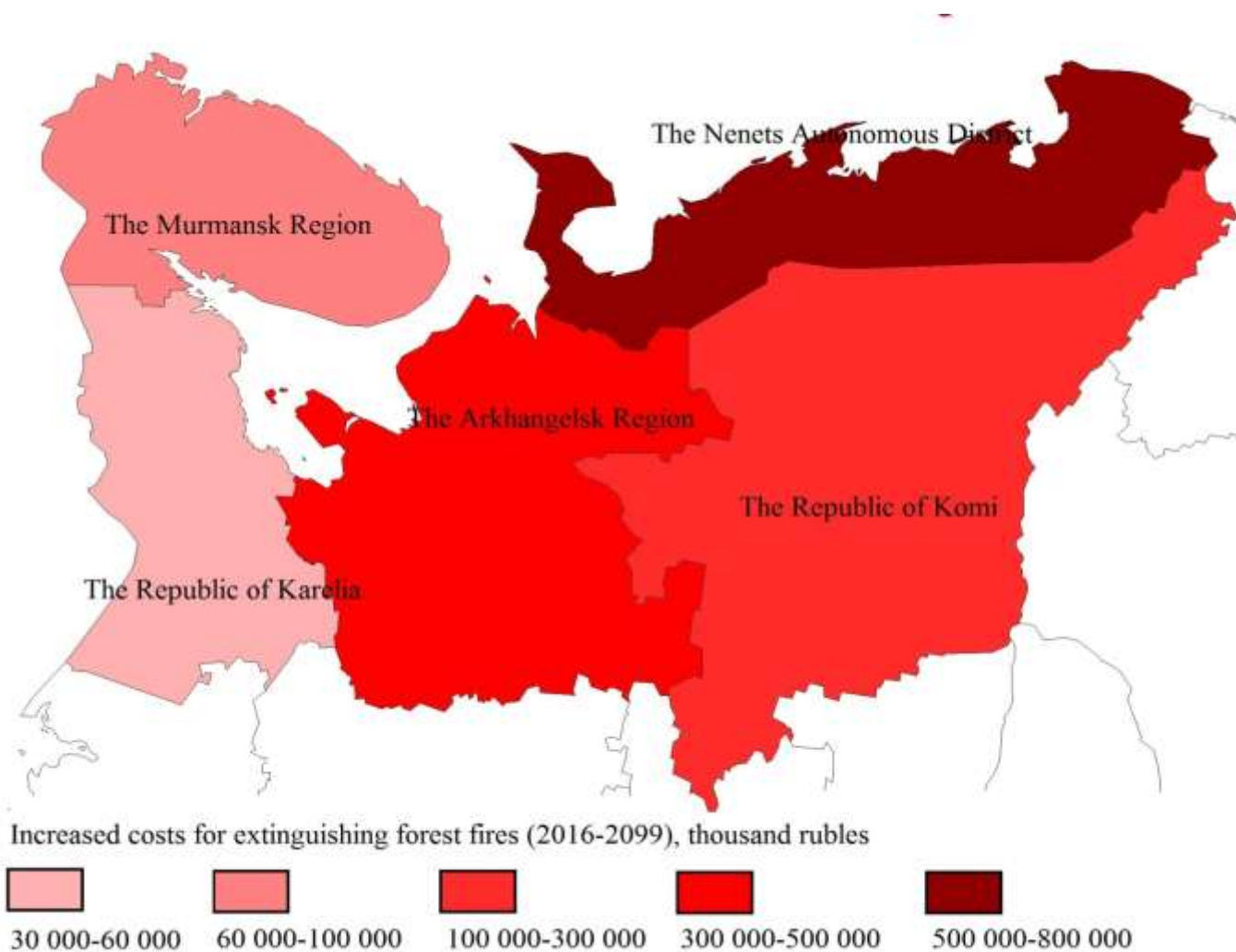
Change in the total growing stock



Change in the total growing stock in the end of the century (2090-2099), million m³



Increased costs for extinguishing forest fires



Classification features of the complex adaptation measures in the forest sector in the conditions of global climate change

Classification feature	Types of adaptation measures	Priority in the implementation of adaptation measures in relation to Russian forest sector
Time	Anticipatory	High
	Incidental	Medium
	Reactive	Low
Duration	Tactical	Low
	Strategic	High
Scale	Localized	High
	Disseminated	Medium
Acting persons	Public sector	High
	Private sector	Low

Environmental services as adaptation options

Climate risk	Impact	Environmental service	Adaptation option (examples)
Changes in rainfall regime	Droughts, floods	Water system regulation	Watershed management: plantations of species with high regulation capacity, agroforestry, etc.
Extreme events (e.g. torrential rains, hurricanes)	Damage to infrastructure, floods		
Changes in rainfall regime	Droughts and floods	Micro-climate regulation	Restoration and rehabilitation: forest enrichment, research in forestry.
Average temperature changes	Change in ecosystems structure. Habitat loss for some species .		
Extreme events (e.g. torrential rains, hurricanes, fires)	GHG emissions	Carbon fixation and storage	Mitigation projects in LULUCF. Fire control.
Changes in rainfall regime	Change in ecosystem. Habitat loss for some species. Loss of species (fauna and flora). Loss of genetic pool. Epidemics.	Conservation of biological diversity (including pollination, seed distribution, habitat and natural pest control)	Bioprospecting studies. Sustainable management of forests: conservation, restoration and rehabilitation; sustainable plantation management.
Extreme events (e.g. torrential rains, hurricanes)			
Temperature changes			
Changes in rainfall regime	Erosion	Soil protection	Restoration and rehabilitation: forest enrichment. Plantations with soil protecting species in highly degraded areas.
Extreme events (e.g. torrential rains, hurricanes)	Landslides		

Proposals for the national plan to reduce GHG emissions from deforestation and forest degradation, enhancing conservation measures, sustainable management and increasing carbon stocks in forests (I)

- Guaranteed reproduction of forests on the basis of compensatory measures when converting lands of Forest Fund into lands of other categories due to the implementation of infrastructure and settlements development plans;
- Support of reforestation for any type of forest use;
- The inclusion in the Forest Fund lands of other categories those are suitable for sustainable forest plantations in order to increase the total forest area;
- To ensure the reproduction of forests located in borders of settlements, with the aim to reduce GHG emissions from deforestation and forest degradation;
- Monitoring of forest regeneration in the boundaries of settlements and borders of forested green belts around settlements;
- The establishment of a comprehensive agro-forestry land, including forest plantations;

Proposals for the national plan to reduce GHG emissions from deforestation and forest degradation, enhancing conservation measures, sustainable management and increasing carbon stocks in forests (II)

- The creation of economic incentives and motivations of tenants for the use of innovative technologies of reforestation those reduce time of cultivation and ensure the quality of forest plantations;
- The obligation for the authorities of subjects of the Russian Federation to place in the Internet the information on reforestation with the aim to create a public control mechanism on activities for planning and implementation of forests reproduction measures;
- Ensuring public control over the implementation of forests reproduction measures using modern media, Internet technologies, remote sensing, photo and video recording;
- Targeted funding of the reconstruction previously created state shelterbelts in the steppe and forest-steppe areas;
- Protection of forests from fires by increasing the level of timely detection and extinguishing of forest fires;

Proposals for the national plan to reduce GHG emissions from deforestation and forest degradation, enhancing conservation measures, sustainable management and increasing carbon stocks in forests (III)

- The further development of a remote monitoring system for forest fires;
- Development of a system to inform public about fire danger in forests and forest fires;
- Reclamation and revegetation of land subjected to the negative anthropogenic impact as a result of economic activities with the aim to reduce GHG emissions and increase carbon accumulation in forest plantations;
- The development of the domestic bioenergy market, including by promoting the use of wood as fuel in industrial and municipal power engineering;
- Improving the legal framework for the use, protection and reproduction of forests on lands not included in Forest Fund, as well as creating incentives for efficient land use and positive impact of forests on the ecological state of the territory in zones of active forests use;
- Improvement of normative legal acts for the effective implementation of a mechanism to facilitate reduction of GHG emissions and support sustainable development in the forestry sector by attracting investments from business in order to implement projects to increase carbon sinks in the forest sector on the basis of market and non-market approaches.



Thank you for your attention!

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