

Development of models, transboundary vulnerability assessment and Strategic Framework for the Neman River Basin adaptation to climate change.

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Activities and latest progress in the Neman project achieved in 2014

Strategic Framework (SF) of the Neman River Basin Adaptation to Climate Change was developed, prepared for publishing and coordinated by the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus and by the Ministry of Environment of the Republic of Lithuania.



General Content of the Strategic Framework for the Neman River Basin adaptation to climate change

OPENING SPEECH

EXECUTIVE SUMMARY

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CHAPTER 2 GENERAL CHARACTERISTICS OF THE NEMAN RIVER BASIN

CHAPTER 3 OBSERVABLE CLIMATE CHANGE AND RUNOFF IN THE NEMAN RIVER BASIN

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CHAPTER 6 ASSESSMENT OF VULNERABILITY OF WATER RESOURCES AND OTHER RELATED NATURAL RESOURCES AND INDUSTRIES TO CLIMATE CHANGE IN THE NEMAN RIVER BASIN

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REFERENCES

ANNEX A – LIST OF MAIN REGULATORY ACTS AND OTHER TOOLS OF ECOLOGICAL POLICY

ANNEX B – REVIEW OF MEASURES WITHIN THE FRAMEWORK OF STRATEGY TO ADAPTATION TO CLIMATE CHANGE IN THE NEMAN RIVER BASIN

Overview of Measures within the Framework of Strategies of Adaptation to Climate Change in the Neman River Basin (basin level)

Group of measures	Description of measures	Total estimated cost
Actions to more fully consider interests of the basin	Improvement of the meteorological and hydrological monitoring network (setting new automatic stations and computerization of existing ones)	€€
	Improvement of the Schemes of Complex Use of Water Resources (SCUWR) of the Neman River Basin (Belarus, Kaliningrad Oblast) and Water Resources Management Plan (WRMP) (Lithuania)	€€
	Development of water supply and sanitation systems and improvement of economic mechanisms in this field	€€€€
	Improvement of the hydro power plants (HPP) engineering, construction and operation, information exchange and early warning systems considering the estimated changes in hydrological regime at the basin level.	€€€
	Improvement of flood risk management and flood protection works	€€€

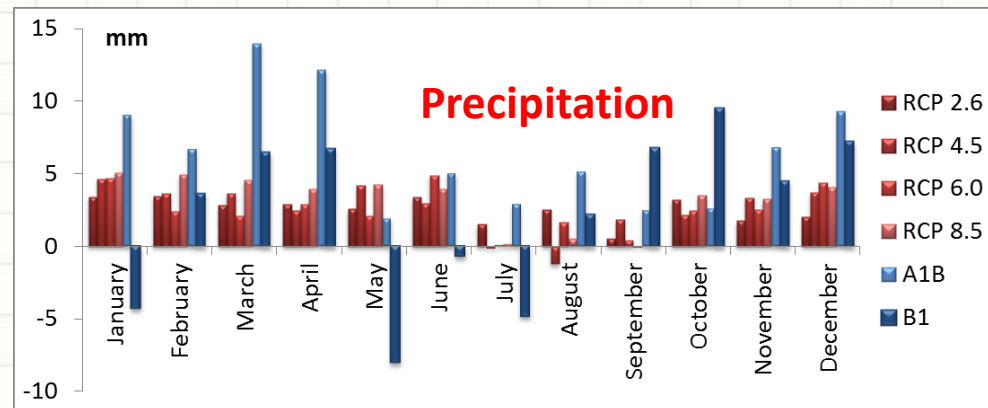
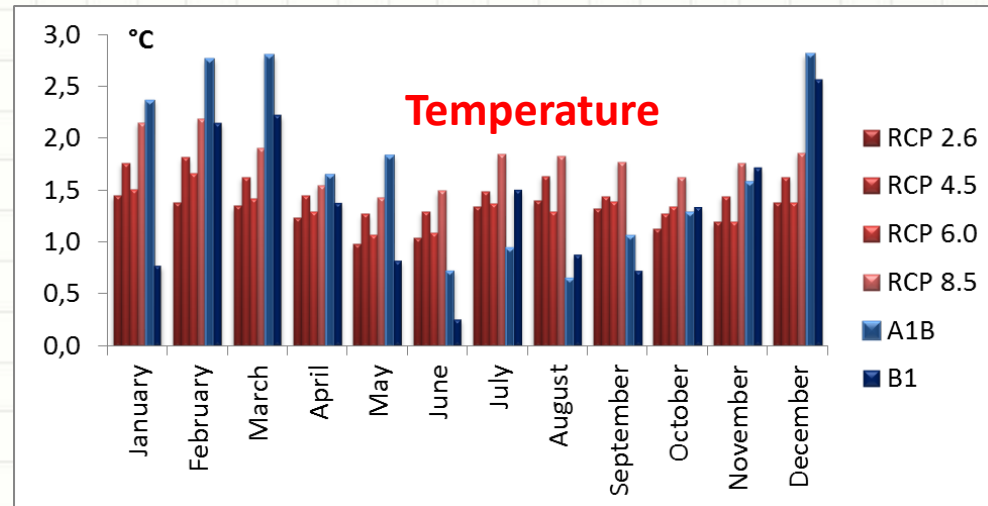
€- up to 100 ths €; €€- up to 1 mln €; €€€- from 1 to 10 mln €; €€€€- over 10 mln €

Important lessons learnt

Air temperature and precipitation change forecasts using the CMIP5 multi-model ensemble (according to IPCC – 2013) and A1B and B1 scenarios (according to IPCC – 2007)

First international experience for the entire transboundary Neman River Basin in:

- Scenario /modeling and forecasting of climatic and hydrological characteristics (the forecast of runoff change was elaborated using two methodologically similar hydrological models: the WatBal and the Belarusian models);
- Pilot implementation of the assessment of surface water quality using agreed indicators and criteria.



Outcomes of the modeling study

Expected climate change impact (till 2050):

- Slight increase in the average annual runoff;
- Increase of runoff in the winter season (up to +40%), mainly in January and February;
- Summer surface runoff may decrease in the Belarusian part of the Neman River Basin (maximum runoff reduction may be nearly -20%), while in the Lithuanian part of the basin and in Kaliningrad Oblast (Russian Federation) it may increase up to +20%;
- Possible increase in frequency and intensity of adverse meteorological and hydrological phenomena: intense rainfalls, droughts, late frost, flooding;
- *Climate change impact on the runoff of surface water bodies will be rather related to more extent to natural factors (-20%) than anthropogenic factors including projected changes of the water use (-5%);*
- Reduction in the dissolved oxygen in surface waters by an average of 0.25 mg/dm³ in the summer season (may become significant at low oxygen concentrations);
- Possible increase concentrations of biogenic pollutants and also deteriorate hydrobiological indicators (i.e. Deterioration of water quality in Couronian Lagoon);
- Change of groundwater levels, quantity and quality.

Outcomes of the modeling study

Examples of the multi-model maps with runoff forecast till 2050 which illustrate expected climate change impact on water resources

Annual



Winter



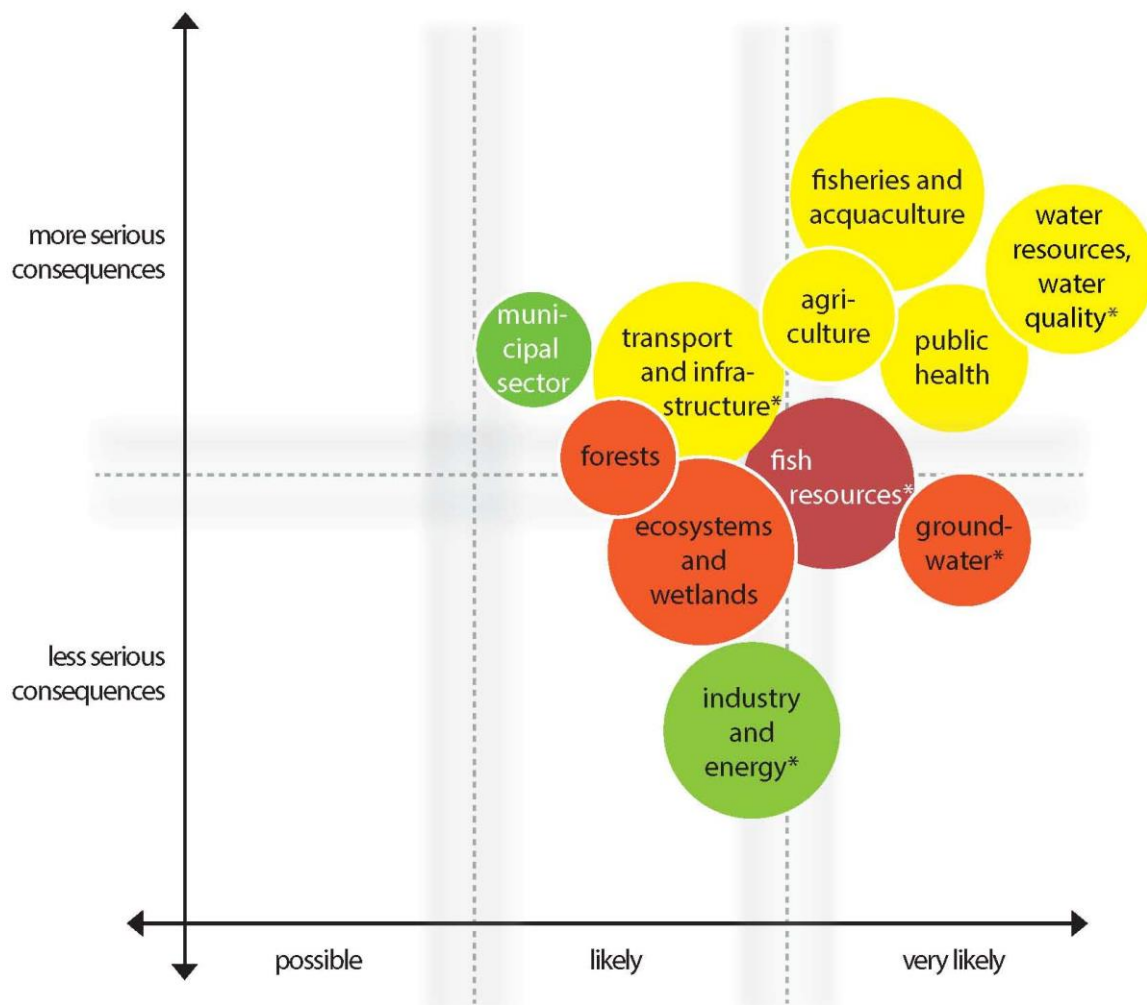
Summer



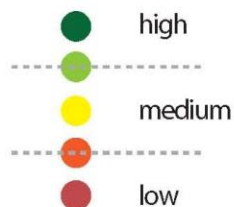
Outcomes of the possible impacts of climate change in the Neman River Basin

After discussions in the frame of the intersectoral cooperation in the next last meetings:

- Multi-stakeholder seminar, 21-22 January, 2014, Kaliningrad, Russian Federation;
- Stock-taking project conference, Vilnius, Lithuania, 19 June 2014.



Current adaptation potential:



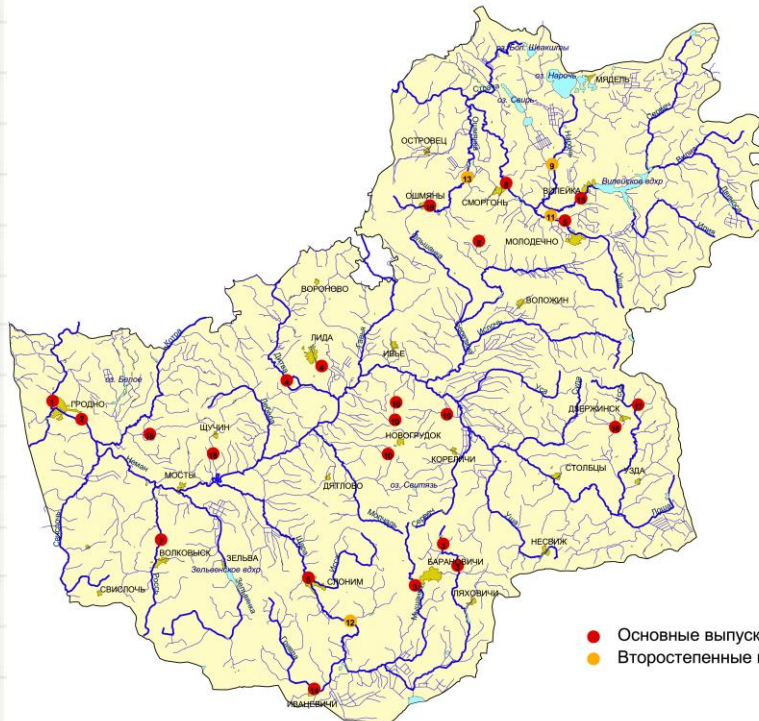
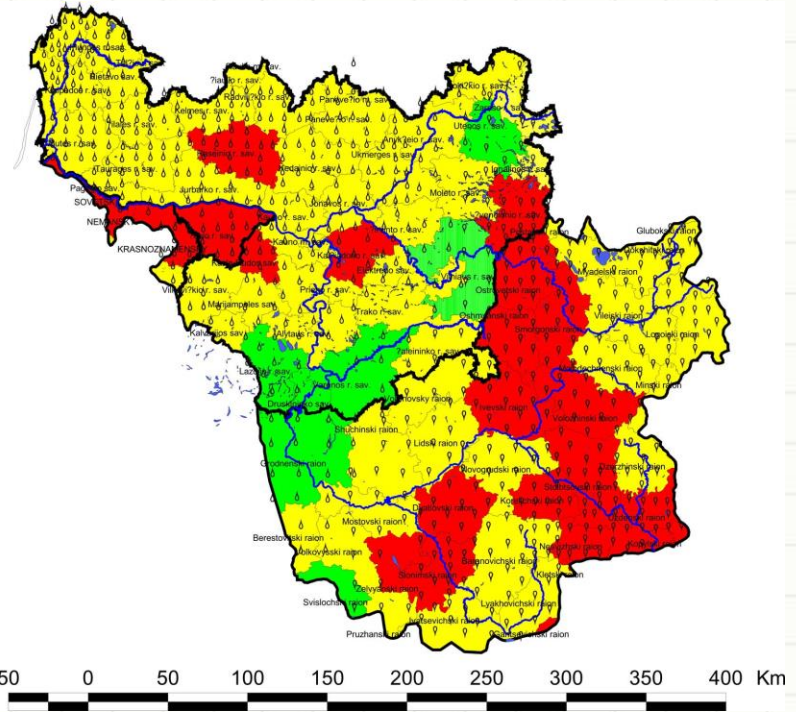
* (coordinated) basin-level actions are needed

Other important lessons learnt

Development of the summary of the vulnerability assessment and corresponding maps for different types of natural resources and for different sectors of economy.
Improvement and update of the common information platform (Internet database) www.cricuwr.by/neman.

Generalized map of vulnerability to climate change

Generalized map of vulnerability to climate change



Assessment of the impact of point sources in the territory of Belarus.
15 largest enterprises (out of 84 enterprises within the basin limits) in the Neman River Basin account for about 86% of the total wastewater discharge within the basin boundaries (according to the 2008-2012 data).

- Основные выпуски сточных вод
- Второстепенные выпуски сточных вод

The links of the Strategic Framework for the Neman River Basin adaptation to climate change to national policies and strategies

- ✓ **National Strategy of Sustainable Socio-Economic Development in the Republic of Belarus until 2020;**
- ✓ **Water Strategy of the Republic of Belarus until 2020;**
- ✓ **The National Strategy of Lithuania on Adaptation to Climate Change until 2050;**
- ✓ **Water Strategy of the Russian Federation until 2020;**
- ✓ **Climate Doctrine of the Russian Federation and Comprehensive Plan for Implementing it until 2020;**
- ✓ **Regional Climate Strategy of Kaliningrad Oblast – strategy of adaptation to climate change (2014).**

The links of the Strategic Framework for the Neman River Basin adaptation to climate change to national policies and strategies

The climate change adaptation measures are implemented by integrating these measures into the management of water resources of the Neman River Basin.

This integration process is intensified most during the development and implementation of pilot climate change adaptation projects at the regional level and also during improvement and preparation of the following documents:

- **Nemunas River Basin Management Plan (Lithuania);**
- **Schemes of Complex Use of Water Resources (SCUWR) of the Neman River Basin (in the future – Neman River Basin Management Plan) – territory of Belarus;**
- **Complex Schemes of Water Bodies Use and Protection of the Neman River Basin and Baltic Sea River Basin – Russian part in Kaliningrad Oblast.**

Future planned activities

Priority areas for future cooperation include:

- ✓ **Input to the Lithuanian RBMP to be prepared by 2015 under the WFD requirements;**
- ✓ **Upgrading of the monitoring system, e.g. installation of automatic monitoring stations;**
- ✓ **Sharing of data: through the improvement of the informational platform, including its harmonization with European practices (e.g. WISE).**

Future planned activities

Publishing of the Strategic Framework of the Neman River Basin Adaptation to Climate Change.

Further develop the scope and the framework of transboundary cooperation at all levels for the joint water resources management and for the adaptation to climate change including realization of the new international project in the Neman River Basin.

A technical agreement (protocol) on transboundary water cooperation will be elaborated between Lithuania and Belarus, based on the existing instruments of cooperation. Possible areas to be covered include monitoring and assessment, data exchange, environmental flow, hydrology, water quality, water infrastructure etc. It is planned to widely discussed the draft technical protocol during the expert meeting which will be organized in October 2014, Vilnius, Lithuania.

Thank you for attention



Transboundary district of the river Neman (Belarus – Lithuania)