

BASIN-SCALE PRINCIPLE IN RESOLVING PROBLEMS OF SUSTAINABLE DEVELOPMENT OF LARGE REGIONS (EXEMPLIFIED BY THE VOLGA BASIN)



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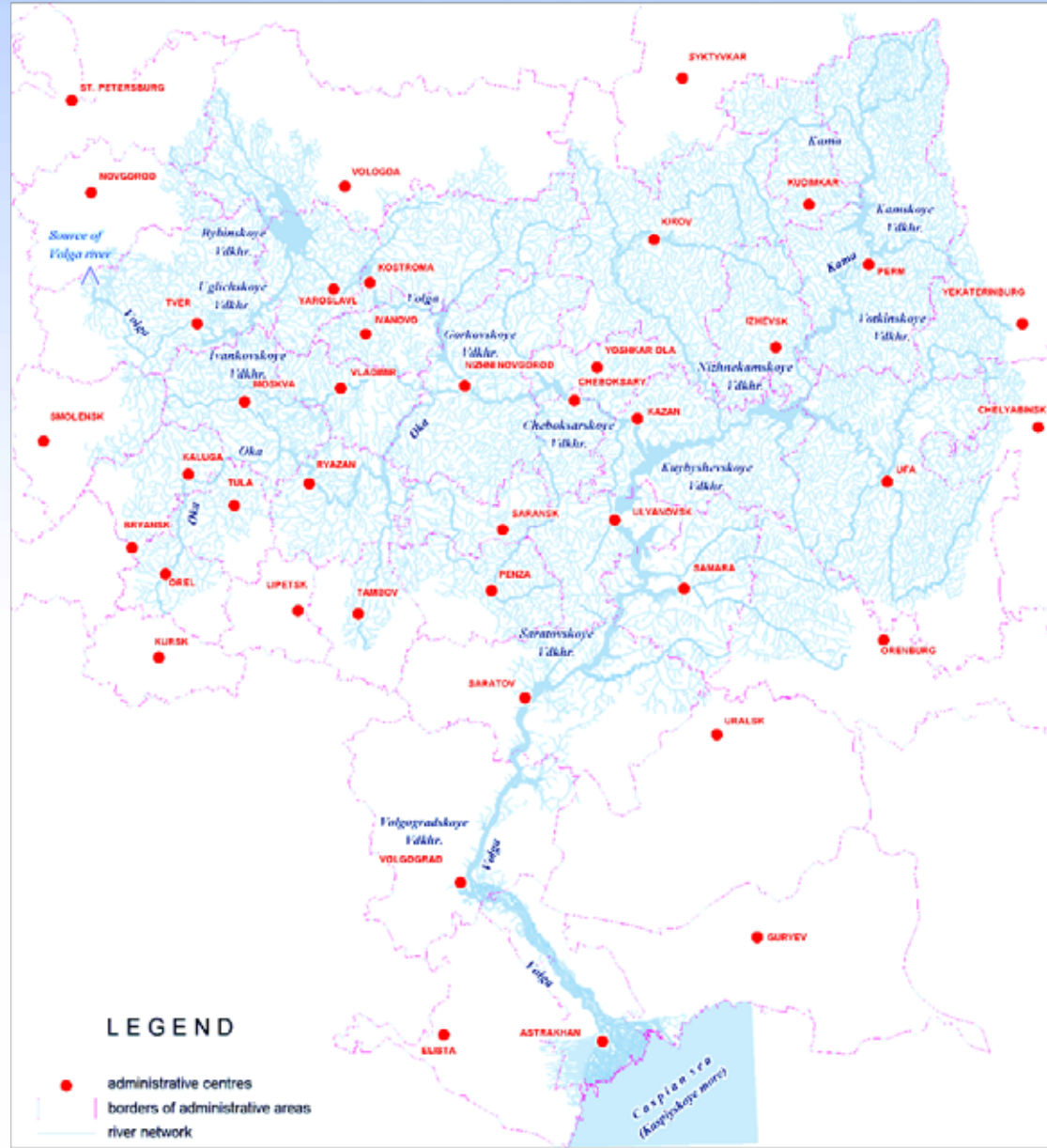
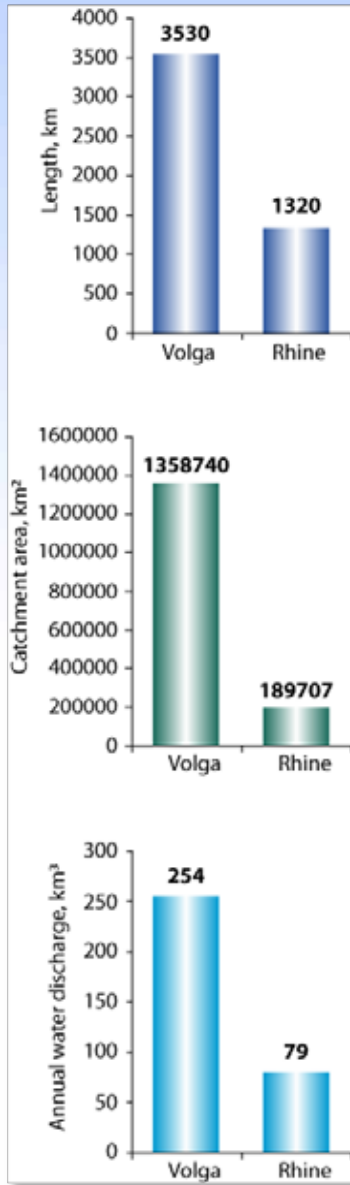
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Comparison of the main parameters of the Volga and the Rhine

Rivers of the Volga basin longer than 15-20 km



Source of the Volga River

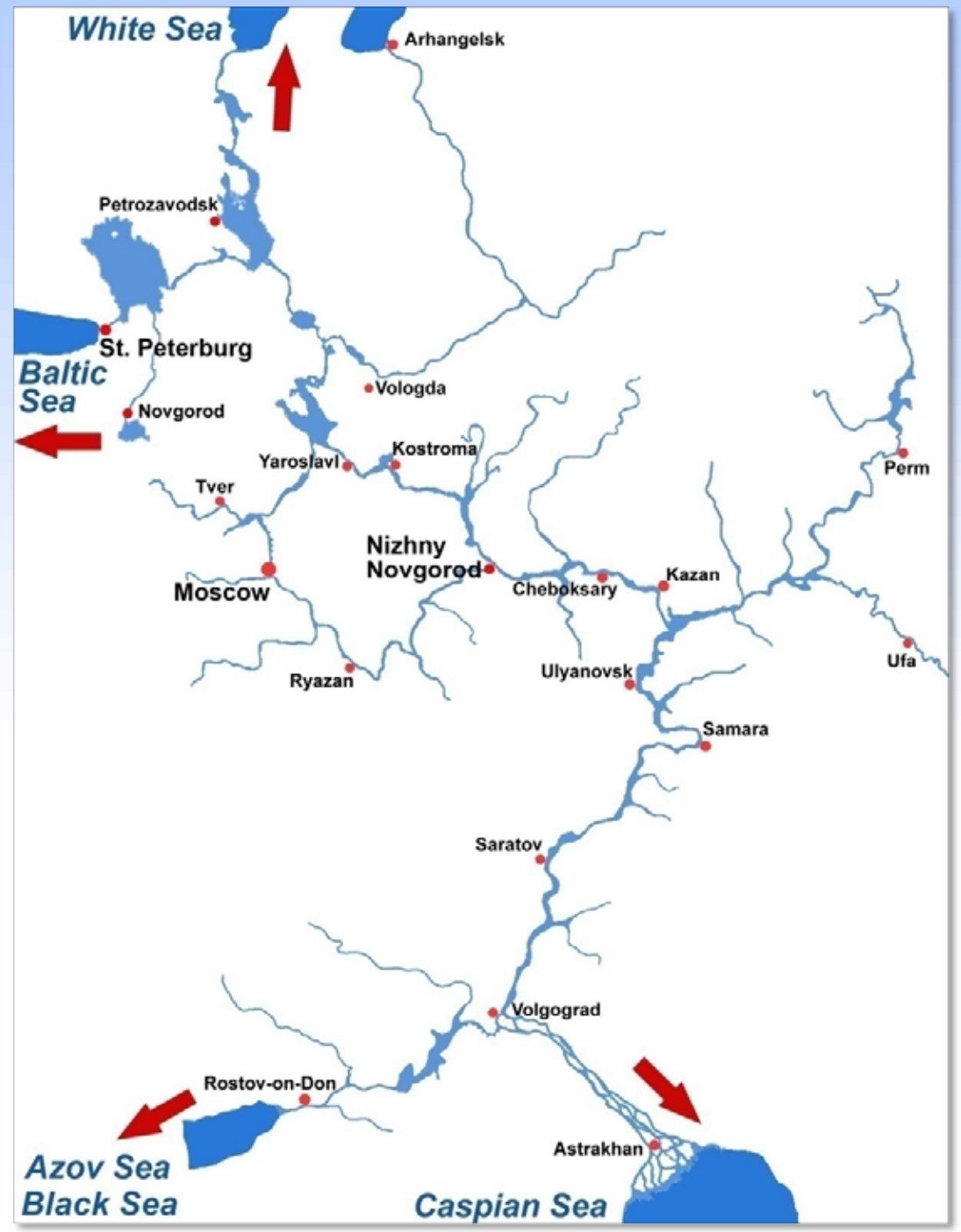


The Volga Delta





United deep-water network in the European part of Russia





Administrative borders of the Volga basin territory

Population – 57 million people

39 districts of the RF

45 % of industrial potential

50 % of agricultural production facilities

444 towns





Specific features of the Target Federal Programme “Revival of the Volga”

- a basin principle of accomplishing socio-economic tasks aimed at radical improvement of ecological situation;
- complex solution of the problems of the region ecological rehabilitation;
- consideration of principle measures aimed at improvement of ecological situation at all levels: federal, basin, branch, territorial (republic, region), municipal, and at a level of an individual enterprise;
- priority of measures enhancing health of population and mitigating man-induced impact on biological resources of the Volga basin;
- coordinating role of the Program relative to other federal and state research and development programs implemented in the Volga basin area.

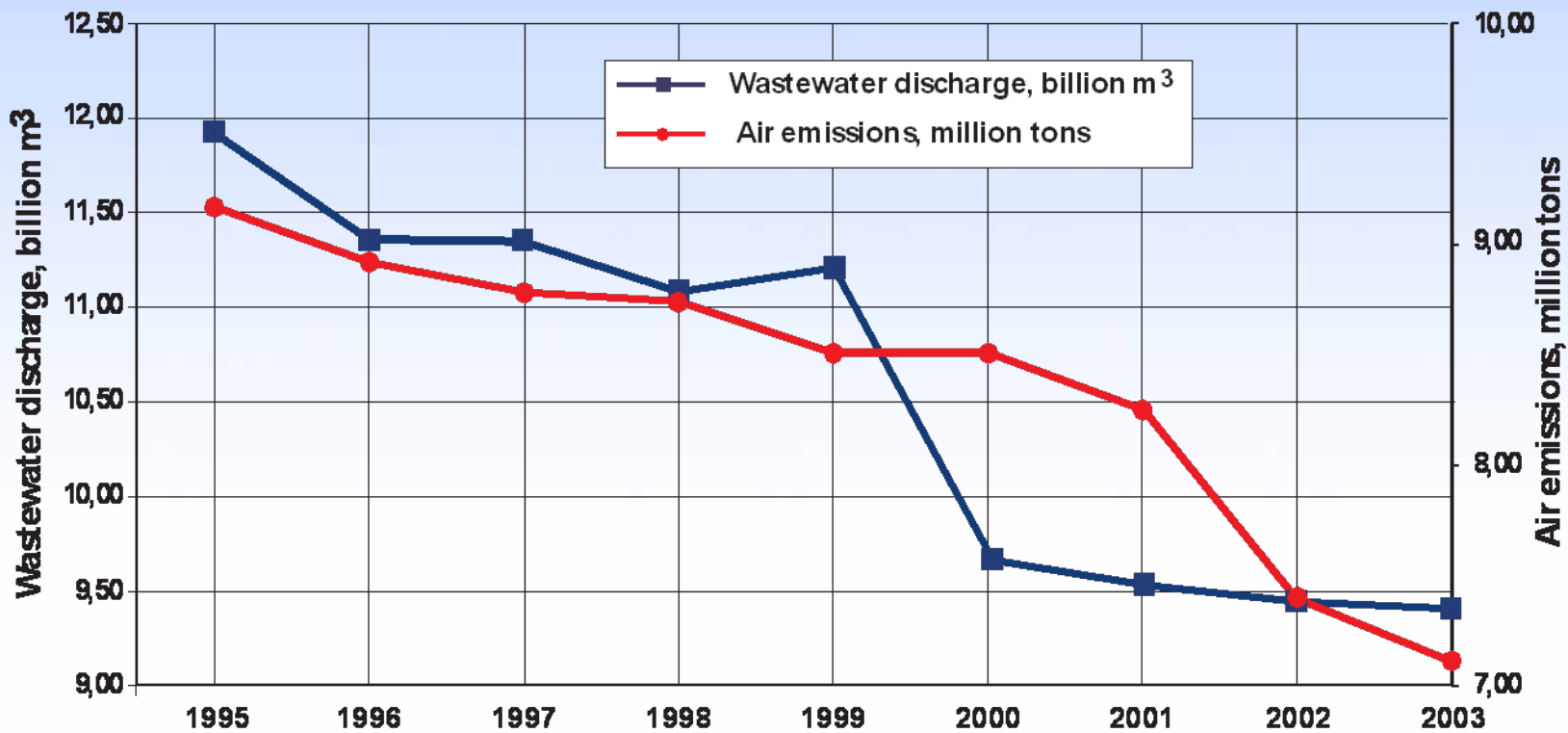


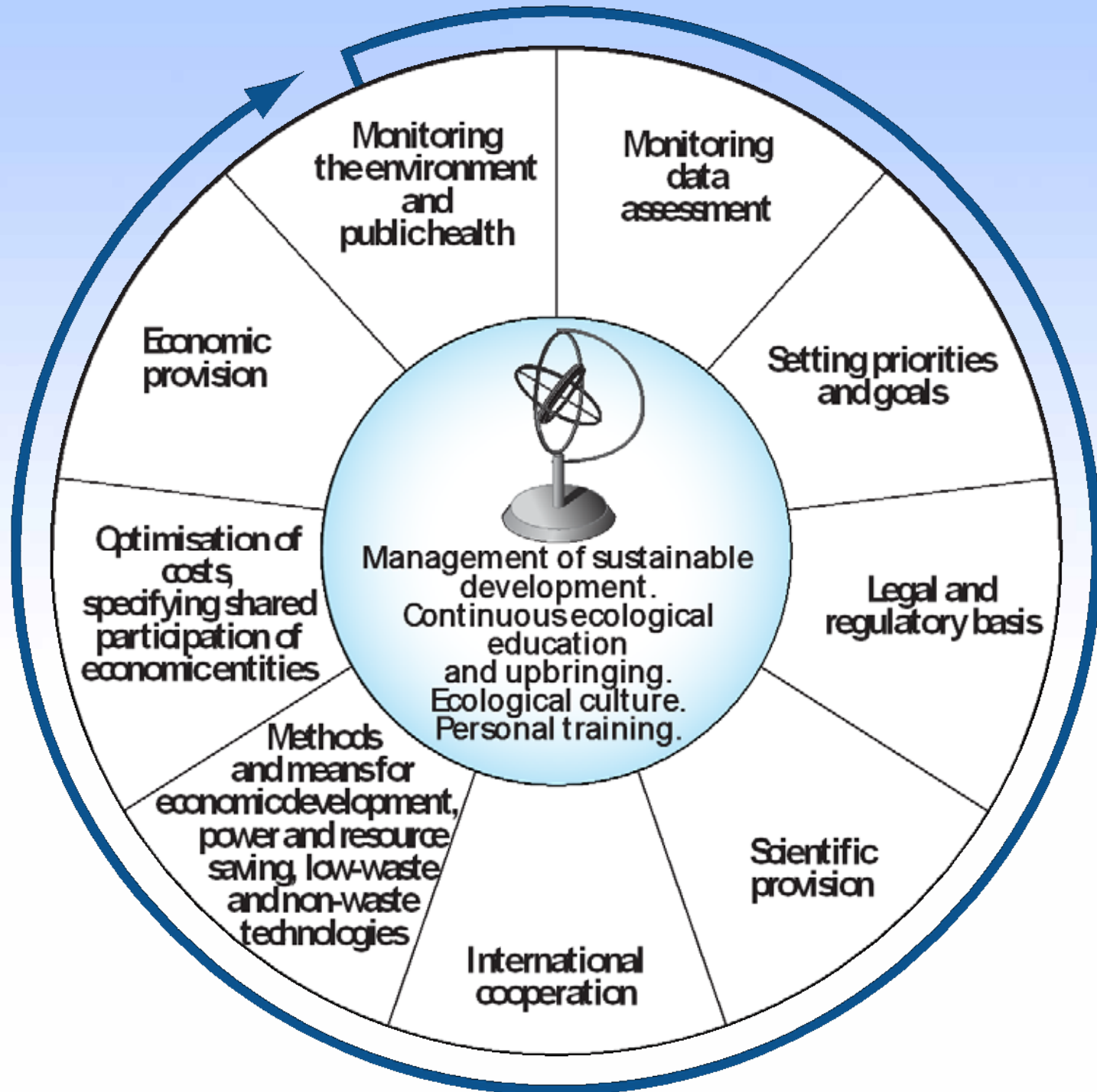
The main directions of the Target Federal Programme “Revival of the Volga”

1. Legal, regulatory and scientific-technological provision;
2. Environmentally safe development of industrial production;
3. Environmentally safe development of agriculture;
4. Environmentally safe development of municipal engineering systems;
5. Rational use, restoration and conservation of water resources;
6. Restoration of forests, preventing their degradation, development of nature protection zones;
7. Raising productivity of fisheries;
8. Creating a basin-wide system of environmental monitoring;
9. Monitoring public health;
10. Ecological education, training and information of the population.



Discharge of pollutants in the Volga River basin in 1995-2003







International cooperation of the UNESCO Chair

"Ecologically safe development of the large region – the Volga basin"

UNESCO

Institute for Environment and Human Security of the United Nations University, Germany

International Ocean Institute, Malta

University of Karlsruhe, Germany

Heidelberg University, Germany

Environmental Research Centre Leipzig-Halle, Germany

University of Hannover, Germany

University of Applied Sciences of Cologne, Germany

University of Nice, France

University Zuyd, the Netherlands

University of Grenoble, France





- Target Federal Programme “Revival of the Volga”
- Russian-German project “Oka-Elba”
- UNESCO interdisciplinary initiative on sustainable development of the Volga-Caspian basin
- Russian-German research project “Volga-Rhine”
- EU project “CABRI-Volga” (“CABRI – Cooperation along a big river: Institutional coordination among stakeholders for environmental risk management in the Volga basin”)



Fields of the UNESCO chair activity

Researches on sustainable development

▶ *“Impact of cities on river water pollution”*

The main **objective** is to assess an impact of the Nizhny Novgorod industrial agglomeration on surface water supply sources and development of recommendation on improvement of drinking water treatment processes

▶ *“GIS-based modeling of the Volga hydrological regime”*

The hydrodynamic model can be applied for the following:

- forecasting flood-prone areas for high water of different degree of excess;
- assessment and investigation of the change in the level and velocity of the river water flow;
- forecasting consequences of possible hydrodynamic accidents at hydropower plants.

▶ *“Development of the high-efficient technologies of industrial waste water treatment based on combination of bio-sorption and membrane methods”*

Fields of the UNESCO chair activity

Researches on sustainable development

- ▶ *“Development of an interactive information system for risk analysis, ecological safety management, and emergency situations prevention”*

The main **objective** is to create an information system model that will provide:

- 1) on-line information processing about the current state of environment;
- 2) access to information at any time and at any location of a user;
- 3) GIS-based graphic display of thematic information on demand;
- 4) forecast of development of various negative processes and events.

- ▶ *“Investigation of karst and ravine development using fractal methods ”*

The **objective** is to develop an effective method to access and forecast dangerous karst and ravine development processes to prevent disasters and accidents.

- ▶ *“Assessment of environmental migration potential”*

The **objective** is to assess the main factors of environmental migration of population and to find the most effective ways to manage the process

Fields of the UNESCO chair activity

Preservation of cultural heritage and cross-cultural communication

- ▶ *“Study and preservation of engineer V.G. Shukhov’s constructions in the Nizhny Novgorod region”*
- ▶ *“The project for the development of historic-cultural area “Ilyinskaya Sloboda”*

The project aims at restoration and development of a historical and cultural part of Nizhny Novgorod formed in XVII-XIX centuries.



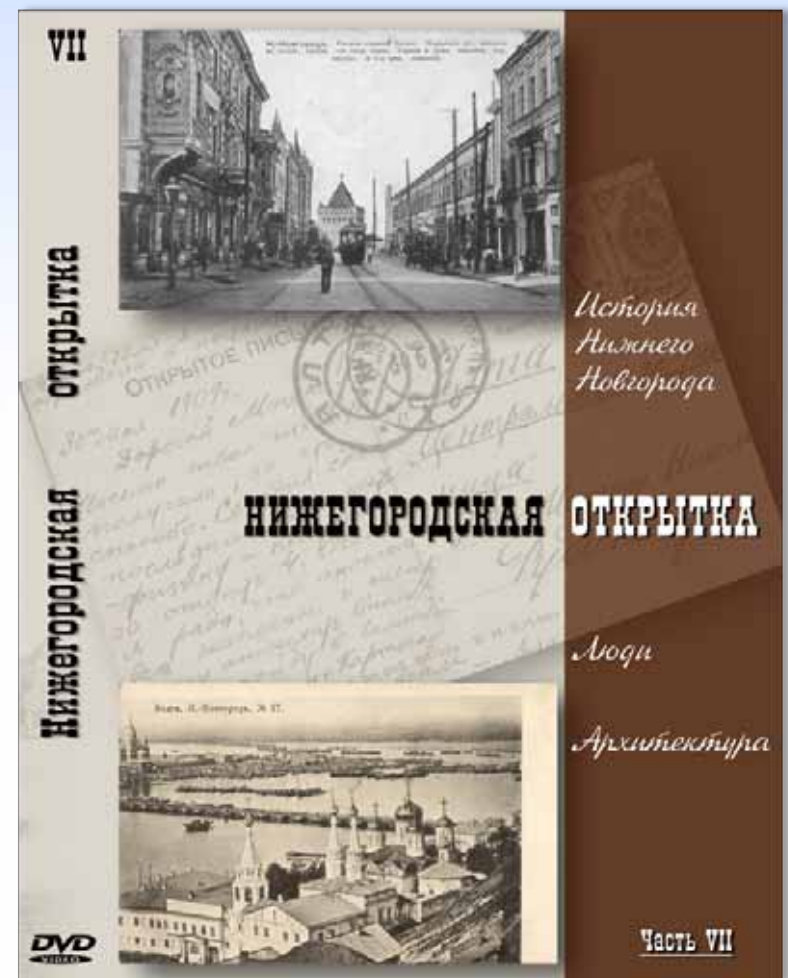
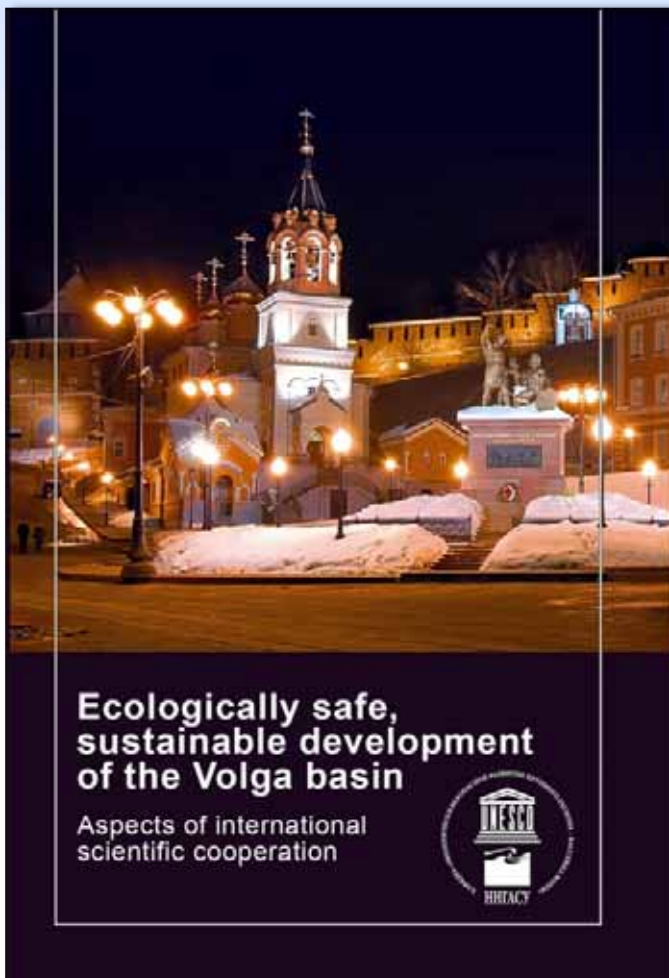
The square of National Unity before and after reconstruction



Fields of the UNESCO chair activity

Preservation of cultural heritage and cross-cultural communication

▶ *Multimedia and publications*





“It is difficult to find another sphere of human activities that would be as moral as the careful attitude to nature not out of duty, but out of heart”.

V.V. Naydenko



Thank you!