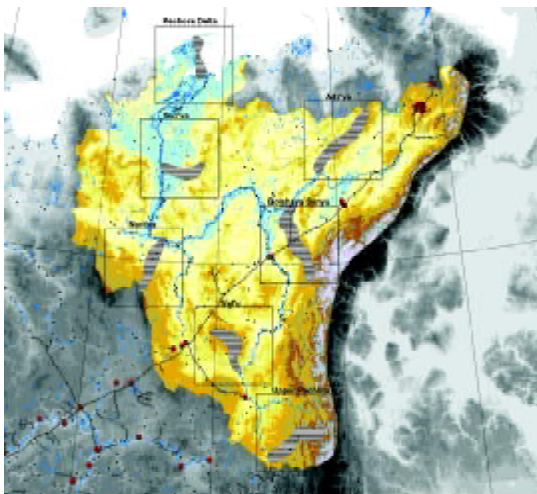| FULL TITLE OF THE PROJECT AND ITS ACRONYM |
|---|
| PECHORA RIVER BASIN INTEGRATED SYSTEM MANAGEMENT (PRISM) |
| BRIEF PREHISTORY OF PROJECT |

The Pechora River (Northeast European Russia) is one of the very few large European rivers that still are almost untouched by human influences. Only one bridge crosses the river's 1800 km main stream, and river training works are completely absent. Practically all 12 European salmonids species still occur in this river. The delta and its adjacent uplands and coastal plain are important breeding areas and stop-over sites for migratory birds, wintering in Western Europe and Africa. Besides large coniferous wood reserves, the extensive taiga landscapes in the river basin include considerable areas of old-growth forests, peat bogs and mountain ecosystems.

It is expected that in the near future industrial activities related to the use of the rich oil, gas, mineral and forest resources will increase significantly. To safeguard the unique environmental quality in the entire Pechora river basin and the Barents Sea region, integrated water management is crucial. As the natural resources authorities in the Komi Republic and the Nenets Autonomous Region have the intention to develop policies in this field, so they are strongly in need of adequate policy instruments based on the integrated knowledge on the hydrological interactions between the terrestrial, wetland and aquatic ecosystems and the specific impact of human activities on these.

PROJECT LOGO & MAP OF THE PROJECT TERRITORY

Photo: M.R. van Eerden

39

The main objective of the PRISM project is to support the development of adequate policy support, including the elaboration of a Decision Support System/Pechora Knowledge System – DSS/PKS, towards the wise use of the ecosystems of the Pechora Basin, focusing on integrated river management and the wise use of natural resources.

Main goals include:

- Facilitate the development and implementation of integrated land and water use planning at the level of the Pechora Basin level (ecosystem approach)
- Stimulate integrated, multidisciplinary scientific research, aimed at the application of system-based knowledge in management directives towards the protection and sound exploitation of natural resources – including food production – in both Russia (especially the Pechora basin) and Western Europe
- Support the decision making process with innovative technologies like user-friendly GIS applications and DSS/PKS
- Stimulate synergy (optimise exchange of information) between relevant research and other programmes, initiatives and data files concerning the Pechora Basin, to create added value
- Focus positive attention on good environmental and hydrological practice in economic development initiatives including food production in the Pechora basin, on a regional, national and European level
- Stimulate international co-operation and the development of international incentives (e.g. financial) to support good environmental and water management practice on the Pechora basin level
- Support institutional development to ensure integrated policy development (and when applicable including legal instruments), regarding natural resources planning and water management at a national and local level
- Support co-operation between government, civil society, private sector and interest groups

Photo: Pieter Slim

Cluster 0 – Project management

Cluster A – The physical system (work packages A1 – Pechora basin modelling, A2 – Delta hydrology) provides basic knowledge on the present state and boundary conditions of natural ecosystem components. The information serves as input into scenario models and analyses which feed decision support models.

Cluster B – The ecological system (work packages B1 – Biodiversity, B2 – Fish ecology, B3 – Delta ecology, B4 - Forestry) integrates basic ecological knowledge towards interpretation on ecological functioning and processes, with a strong focus on biodiversity. Activities within the cluster aim at increasing the understanding on the inter-dependencies of ecosystem components as well as consequences of human interferences on water resources and natural ecosystems.

Cluster C – The socio-economic system (work package C1) focuses on the integration of basic data on existing socio-economic conditions and development trends in the Pechora Basin. A good inventory of the needs and possibilities of the local communities is needed in order to support developments towards a sound economic basis of existance and avoiding misuse of water and natural resources. Also the interaction with economic activities from outside that might require local labour will be considered seriously.

Cluster D – Tools (work packages D1 – GIS, D2 – DSS/PKS) serves to integrate basic knowledge gathered in the framework of the clusters A, B and C. GIS and database applications are developed to create a unified baseline for data integration and spatial visualisation and analysis. Scenario analyses serve as the main framework for modelling both human interventions on ecosystem quality and functioning as well as the autonomous development of ecosystem components. Results of scenario analyses serve as main input for the DSS/PKS, which serves as the main structure for the defining of development alternatives and comparative analysis of their consequences, and finally for the preliminary River Basin Management Plan.

Cluster E – Public awareness, information and training (work packages E1, E2 and E3) serves as a multi-level interface to the society. The cluster tackles aspects of awareness and education at the local, regional, national and international level, promotes co-operation among scientists.

41

RWS RIZA (Lelystad, the Netherlands) WPs =work packages B1, B2, B3, E
Institute of Biology (Syktyvkar, Russia) WPs B1, B2, B3, B4, D1, E
DHV (Leusden, the Netherlands) WPs B1, D1, D2, E
Alterra Green World Research (Wageningen, the Netherlands) WPs B1, B4
WL | Delft Hydraulics (Delft, the Netherlands) WPs A1
Institute of Economical, Social & Energy Problems of the North (Syktyvkar, Russia) WPs A1, C1
University of Groningen (the Netherlands) WPs B3
Institute of Forestry (St.-Petersburg, Russia) WPs B4
DEMIS (Delft, the Netherlands) WPs D1, D2
Survey Department (Delft, the Netherlands) WP D1
AGIKS (Syktyvkar, Russia) WPs D1, D2
NGO "Man and Nature" (Pechora, Russia) WP E1
NGO "Snegir" (Syktyvkar, Russia) WP E2
NGO "Istoki" (Naryan-Mar, Russia) WP E3

MAIN SCIENTIFIC RESULTS

Ecosystem studies in the project region showed that three main landscape types can be distinguished, which also could be identified on the satellite images: 1) the real Pechora delta landscapes, characterised by the lowest topographical positions, dominated by shrub-meadow communities; 2) Rolling landscapes dominated by typical tundra dwarf shrub-moss and dwarf shrub-lichen communities related to the highest topographical locations; 3) Coastal tundra landscapes dominated by *Carex* marshes and halophytic communities close

to the sea shore. A vegetation classification for the project area — the Pechora delta and the surrounding tundra — was generated. A large quantity of new information on the structure and dynamics of communities of birds, water and terrestrial invertebrates, fish, algae flora, lichens & mosses, as well as soils and soil cover were obtained. It was shown that indication and monitoring of the state of ecosystems and their structural-functional blocks can be conducted using systematic monitoring of several integrated spectral parameters and informative spectral indices. In addition to the possibilities of using the obtained results to solve fundamental ecological problems of arctic regions, the further development of integrated research activities and remote sensing methodologies contains many aspects of practical use.

<div align="center">MAIN PRODUCTS</div>

Ponomarev V., Munsterman M. & Leummens H. (ed.), 2004. The Pechora river basin. Syktyvkar, Russia-Lelystad, the Netherlands, IB-KSC-RIZA. 183 p. (monography)

Van der Graaf A.J., Lavrinenko O.V., Elsakov V., Van Eerden M.R., Stahl J. Habitat use of barancle geese at a subarctic salt marsh in the Kolokolkova Bay, Russia // Polar Biology. 2004. 27. P. 651-660.

Àâãàåâà Ñ.Â. Ðî ëü îáúåêòà Âñåì èðíîãî íàñëåäèÿ ïðèðîäû Þ Í ÅÑÊÎ «Äåâñòâåí íûå ëåñà Êî ì è» â ñîõðàíå-íèè áèîëîãè÷åñêîãî ðàçíîîáðàçèÿ // Ï ðîáëåì û îñîá î îõðàíÿåì ûõ ïðèðîäíûõ òåððèòîðèé åâðîïåéñêîãî Ñåâåðà (ê 10-ëåòèþ íàöèîíàëüíîãî ïàðêà «Þãûä âà»): Ì àòåðèàëû äîêëàäîâ íàó÷íî-ïðàêòè÷åñêîé êîíÔå-ðåíöèè. Ñûêòûâêàð, 2004. Ñ. 29-33.

Elsakov V.V., Kulyugina E.E. Coastal ecosystems of the Pechora river region // Second Internetional Work-shop on Circumpolar vegetation classification and mapping: Abstracts. Tromsø, 2004. — P. 23-24.

Êî ëåñíèêîâà À.À. Ñòðóêòóðà íàñåëåíèÿ ïî÷âåí í ûõ áåñïîçâîíî÷íûõ æèâîòíûõ áàññåéíà ðåêè Áîëüøàÿ Ñûíÿ // Ï ðîáëåì û îñîá î îõðàíÿåì ûõ ïðèðîäíûõ òåððèòîðèé åâðîïåéñêîãî Ñåâåðà (ê 10-ëåòèþ íàöèî-íàëüíîãî ïàðêà «Þãûä âà»): Ì àòåðèàëû äîêëàäîâ íàó÷íî-ïðàêòè÷åñêîé êîí Ôåðåíöèè. Ñûêòûâêàð, 2004. Ñ. 71-73.

Kolesnikova A.A., Sluis T. Destructure diversity of soil invertebrates of the Peshora river basin. Abstracts of the XIV International colloquium on soil zoology and ecology. Mont Saint Aignan, 2004. P. 39.

Kochanov S., Van Rijn S. Roos M. Bird fauna and population in the Upper Pechora area // Bird number 2004. Monitoring in a changing Europe. 16th International Conference of the European Bird Census Council: Program and Abstract book. Kayseri, Turkey, 2004. P. 40-41.

Loskutova O. Auqatic Insects of the Rivers of the Western Polar Urals (Russia) // Latvijas entomologs. 2004. 41. P. 80-86.

Ï îííîì àðåâ Â.È. Äûíàì è êà íàñåëåíèå êðóïíûõ îõðàíÿåì ûõ òåððèòîðèé åâðîï íåéñêîãî Ñåâåðà-Âîñòîêà è ïðîáëåì à ñîõðàíåíèÿ èõ ðûáíûõ ðåñóðñîâ // Ï ðîáëåì û îñîá î îõðàíÿåì ûõ ïðèðîäíûõ òåððèòîðèé åâðî-ïåéñêîãî Ñåâåðà (ê 10-ëåòèþ íàöèî íàëüíîãî ïàðêà «Þãûä âà»): Ì àòåðèàëû äîêëàäîâ íàó÷íî-ïðàêòè÷åñ-êîé êîí Ôåðåíöèè. Ñûêòûâêàð, 2004. Ñ. 125-132.

Ponomarev V.I., Loskutova Î .À. Diversity of population of bottom invertebrates and fish of the Bolshaya Synya river basin // Biological resources of the White Sea and inland water bodies of the European North: III (XXVI) International conference: Abstracts. Syktyvkar, 2003. P. 68-69, 155-156.

Ponomarev V., Loskutova Î . Diversity of zoobenthos and fish communities on the Kara Sea basin lakes // SIL XXIX Congess: Book of Abstracts. Lahti, Finland, 2004. P. 196.

Ponomarev V., Loskutova O., Khokhlova L., Leummens H. The Pechora river: a natural-functioning river ecosystem or needs for restoration // River Restoration 2004. Principles, processes, practices. 3rd European Conference on River Restoration: Proceedings. Zagreb, Croatia, 2004. P. 383-392.

Ï îííîì àðåâ Â.È., Ø ðàì À.À. Ðàçí îîáðàçèå ðûáíîãî íàñåëåíèÿ áàéðîâûäå ð. Ì å÷îðà // Ï ðèíöèï û è ñïîñî-áû ñîõðàíåíèÿ áèîðàçíîîáðàçèÿ: Ñá. ì àòåð. Âñåð. íàó÷. êîí Ô. Éîøêàð-Î ëà, 2004. Ñ. 114-116.

Ñòåíèíà À.Ñ., Êóëþãèíà Å.Å., Ï àòîâà Å.Í ., Áåñïàëîâ Â.Ã., Ï åõñïñî Ñ.Í . Cî ñòóäèéñòóå è ñïîñî ðàçñòâà ðàñòåíèÿ îñîá î îõðàíÿåì ûõ ôëîðîöåí îçîâ ì ûñà Êîñòÿíîé Í îñ (Í åíåäåíêèé çàïîâåäíèêè) // Ï ðîáëåì û îñîá î îõðàíÿåì ûõ òåððèòîðèé Åâðîï ïåéñêîãî Ñåâåðà (ê 10-ëåòèþ íàöèî íàëüíîãî ïàðêà «Þãûä âà»): Ì àòåðèàëû äîêëàäîâ íàó÷íî-ïðàêòè÷åñêîé êîí Ôåðåíöèè. Ñûêòûâêàð, 2004. Ñ. 146-148.

43

Photo: T. van der Sluis

❶

Photo: T. van der Sluis

❷

Photo: T. van der Sluis

❸

❹

❶ Merging Russian organisational facilities with Netherlands funding created the interdisciplinarity between Russian and Netherlands experts for successful field work cooperation.

❷ Upscaling of biological data from the plot level to landscape units serves as direct input for forest modelling of the biological consequences of economic use of forest resources.

❸ The largely inaccessible Pechora basin has caused nature to be conserved better than in most regions in Europe. Data collection therefore also can only be done under, sometimes harsh, field conditions.

❹ The signing of a Memorandum of Cooperation on the Pechora River basin Integrated System Management project (PRISM) between Russian and Netherlands government authorities.