

Deliverable D5:

CABRI-Volga

Policy Recommendations



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1 Executive Summary

CABRI-Volga policy recommendations are the result of a thorough consultation process on environmental risk management and institutional coordination in Russia's Volga Basin.

During three Expert Group Meetings (September 2005 in Nizhny Novgorod, April 2006 in Kazan, and November 2006 in Cherepovets), experts from Russia, the European Union, America and Asia sought solutions and formulated recommendations in the following areas of concern for the Volga Basin and its citizens:

- Water quality, including drinking water, sanitation and public health, biodiversity and natural habitats;
- Water-related risk management and vulnerability of the Volga Basin;
- Use of water resources in a sustainable manner;
- Economic development and sustainable transport in the Volga Basin;
- Institutional cooperation and stakeholder participation.

The Expert Group Meetings provided a still unique opportunity in Russia to bring together for joint discussions experts from various scientific disciplines and institutional backgrounds such as academia, politics, business, industry, and NGO's. Out of the more than 150 experts, the majority (about 2/3) were from Russia.

While the policy recommendations are directed primarily at decision-makers in Russia and the Volga Basin, the present report is also intended to provide suggestions and ideas to other stakeholders in the basin of the Volga as well as in other river basins.

CABRI-Volga developed ten policy recommendations and thirty-eight concrete activities which are summarised in table 1 below and described in detail in the forth chapter of this report.

3 Expert Group Meetings

5 themes

150 international experts

10 policy recommendations

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Table 1: CABRI-Volga policy recommendations and proposed activities

Fundamental Issues	<p>Recommendation 1: Support systematic multi-hazard risk management</p> <p>Activity 1.1: Apply integrated risk assessment methods that include social, economic and environmental dimensions for flood prone areas</p> <p>Activity 1.2: Establish an inventory of hydro-facilities and the risks they pose</p> <p>Activity 1.3: Reduce the risk posed by hydro-facilities through rehabilitation and continuous monitoring (starting with the most hazardous facilities)</p> <p>Activity 1.4: Establish an inventory of drinking water sources (surface and ground) and the risk they pose</p> <p>Activity 1.5: Reduce the risk posed by poor drinking water sources through rehabilitation and continuous monitoring</p>
	<p>Recommendation 2: Ensure coordinated strategic planning and implementation</p> <p>Activity 2.1: Enhance institutional capacities in water governance in the Volga Basin</p> <p>Activity 2.2: Apply vertical subsidiarity principles to strengthen cross-scales cooperation among government authorities responsible for water-related risk reduction (national/regional/local)</p> <p>Activity 2.3: Enforce implementation of the new RF Water Code</p> <p>Activity 2.4: Support the formation of the new system of Basin Councils</p> <p>Activity 2.5: Enhance strategic planning at the river basin level including application of sustainable development approaches</p>
	<p>Recommendation 3: Enhance partnership and stakeholder participation in decision-making and action</p> <p>Activity 3.1: Promote diversified river basin partnerships in good water management</p> <p>Activity 3.2: Introduce a participatory institutional system for river basin management</p>
Major Policy Fields	<p>Recommendation 4: Facilitate the accessibility of the Volga Basin</p> <p>Activity 4.1: Build an integrative transport strategy</p> <p>Activity 4.2: Link different transport modes according to regional needs and development strategies (focus on freight transport)</p> <p>Activity 4.3: Gradually improve the existing infrastructure and overcome existing bottlenecks</p>
	<p>Recommendation 5: Prevent the degradation of natural resources and the loss of biodiversity</p> <p>Activity 5.1: Enhance the system of protected areas and nature reserves</p> <p>Activity 5.2: Increase ecological knowledge</p> <p>Activity 5.3: Create special programs for flora and fauna</p> <p>Activity 5.4: Incorporate the need for preservation of habitats and normal ecosystem's functioning into consideration in decision-making</p>
	<p>Recommendation 6: Carry out effective water quality and water quantity management</p> <p>Activity 6.1: Build modern drinking water processing plants as well as urban wastewater treatment plants and facilities in the Volga Basin</p> <p>Activity 6.2: Improve the drinking water distribution system in order to deliver safe drinking water to consumers</p> <p>Activity 6.3: Address the pollution from non-point sources</p> <p>Activity 6.4: Develop realistic water quality standards based on environmental principles</p> <p>Activity 6.5: Reduce water pollution and enhance sustainable water use</p> <p>Activity 6.6: Improve operation regimes at the Volga hydropower plants</p>

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Tools of Implementation	<p>Recommendation 7: Promote innovative financing solutions</p> <p>Activity 7.1: Reform the licensing and taxation system to promote environmental performance and to stipulate investments into good environmental practices</p> <p>Activity 7.2: Ameliorate and develop institutional frameworks for effective financing of river basin management</p> <p>Activity 7.3: Develop and maintain innovative, sustainable financing mechanisms</p> <p>Activity 7.4: Provide incentives for private sector water conservation</p>
	<p>Recommendation 8: Improve the information management</p> <p>Activity 8.1: Improve the monitoring system in the Volga Basin</p> <p>Activity 8.2: Improve the system of information and data dissemination to decision-makers</p> <p>Activity 8.3: Improve the system of information sharing with all stakeholders in the river basin</p>
	<p>Recommendation 9: Encourage human capacity building</p> <p>Activity 9.1: Build human capacities in water management through education programmes</p> <p>Activity 9.2: Raise public awareness by making environmental education an integral part of cultural education</p>
Outlook	<p>Recommendation 10: Invest human and financial resources in the continued Volga Basin development</p> <p>Activity 10.1: Enhance the interface between science and practice in sustainable development of the Volga Basin</p> <p>Activity 10.2: Enhance multi-stakeholder partnerships for river basin management</p> <p>Activity 10.3: Develop pilot projects to demonstrate the perspectives and challenges of innovative water management</p> <p>Activity 10.4: Promote EU-RF cooperation and exchange of knowledge and practices</p>

2 CABRI-Volga – Basic Facts about the Project

Basic Project Facts

CABRI-Volga (Cooperation Along a Big River) is an international coordination action to facilitate cooperation and to coordinate research in environmental risk management in large river basins in the EU, Russia & the New Independent States (NIS). The project focus is on the Volga Basin which comprises 40 percent of the population of Russia, 45 percent of the country's industry and 50 percent of its agriculture.

**An EU-Russian
cooperation project**



**Focus on Europe's
largest river basin –
the Volga Basin**

Figure 1: The Volga River Basin

Following twenty-seven months of close cooperation, experience and knowledge exchange between more than 150 experts from Russia, the European Union, America and Asia on issues related to environmental risk management in large river basins the CABRI-Volga project ended in February 2007.

**Experts from Russia,
the European Union
and beyond**

The Partnership

The CABRI-Volga partnership comprised seventeen public and private sector partners from Russia and seven EU member states, including universities, private research institutes, resource and

**17 project partner
organisations from
8 countries**

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training centers, industry, NGOs, and international organisations dealing with a variety of aspects in environmental risk management.

The CABRI-Volga Consortium

Rupprecht Consult Forschung & Beratung GmbH (Project Coordinator), Cologne, Germany
Environmental Policy Research and Consulting Center “EcoPolicy” (Scientific Coordinator), Moscow, Russia
UNESCO Moscow Office, Russia
Nizhny Novgorod State University of Architecture and Civil Engineering, Russia
Saratov State Socio-Economic University, Russia
Caspian Marine Scientific and Research Centre, Astrakhan, Russia
Independent Noncommercial Organization - Research Innovation Project Institute "Cadastre", Yaroslavl, Russia
Ecological Projects Consulting Institute, Moscow, Russia
Open Joint-Stock Company “Ammophos”, Cherepovets, Russia
United Nations University - Institute for Environment and Human Security, Bonn, Germany
Wageningen University, The Netherlands
Aristotle University of Thessaloniki – INWEB, Greece
Centro di Cultura Scientifica “Alessandro Volta”, Como, Italy
University of Karlsruhe, Institute for Water Resource Management, Hydrologic and Rural Engineering, Germany
Compagnie Nationale du Rhône, Lyon, France
Regional Environmental Center for Central and Eastern Europe, Szentendre, Hungary
International Ocean Institute, Gzira, Malta

Budget

The overall budget of € 1.2 million was mainly provided by the European Commission under the International Cooperation (INCO) Programme. The UN University and UNESCO provided own match funding.

Key Project Objectives

CABRI-Volga set the following key project objectives:

- Mobilise people and institutions to cooperate internationally
- Strengthen links between scientific community, policy-makers, and society
- Follow an integrative approach for environmental risk reduction and sustainable river basin management
- Contribute to scientific cooperation and experience exchange on policies
- Promote environmental and human security in Russia/NIS and in the EU

**Mobilisation of
people and
institutions one of
the key project
objectives**

These project objectives correspond to the Millennium Development Goals (MDGs) approved by the UN in 2000 to be met by the year 2015, especially to those related to an interdependent relation between the health of the river and achieving the MDGs in the areas of environmental sustainability and peoples' health.

3 Methodology

A substantial workplan, focused on the achievement of the CABRI-Volga objectives, has been defined for the project duration (December 2004 until February 2007):

The CABRI-Volga project consortium organised and held three Expert Group Meetings in cities along the Volga, namely in:

- Nizhny Novgorod in September 2005 - focusing on state-of-the art and problem identification,
- Kazan in April 2006, focusing on scenario development and
- Cherepovets in November 2006 – focusing on the development of policy recommendations.

Three Expert Group Meetings in Russia

From its large stakeholder network, CABRI-Volga recruited experts from various scientific and institutional backgrounds for participation in these Expert Group Meetings. In each of them, over 70 experts from Russia, the European Union, America and Asia identified the following problems and challenges and formulated recommendations to solve them:

Opportunities for dialogue between stakeholder groups

- Water quality, including drinking water, sanitation and public health, biodiversity and natural habitats;
- Water-related risk management and vulnerability of the Volga Basin;
- Use of water resources in a sustainable manner;
- Economic development and sustainable transport in the Volga Basin;
- Institutional cooperation and stakeholder participation.

In each of the three CABRI-Volga Expert Group Meetings, discussions and experience exchange was organised in the following five thematic groups:

Five interlinked thematic areas

Expert Group 1: River & Environmental Rehabilitation
The focus of this expert group was on environmental rehabilitation of large river basins with a special emphasis on improvement of water quality in the Volga river basin. CABRI-Volga explored major problems in water quality management and coordination of policies, tools and activities between multiple stakeholders.

Expert Group 2: Human Security and Vulnerability
The focus of this expert group was on enhancing human and environmental security in large river basins with a special emphasis on reducing vulnerabilities to floods, forest fires and technological accidents associated with water quality deterioration (accidents at sewage systems and accidental discharges with resulting water pollution of the river) and potential accidents at barrages and power plants in the Volga river basin. CABRI-Volga explored major problems in management of natural and technological disasters and coordination of policies, tools and activities between multiple stakeholders in prevention, emergency response and rehabilitation of affected populations and livelihoods.

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Expert Group 3: Natural Resources & Their Sustainable Use

The focus of this expert group was on management of natural resources and their sustainable use in large river basins with a special emphasis on sustainable water use, land cover change, and biodiversity conservation in the Volga Basin. CABRI-Volga explored major problems in natural resources management and coordination of policies, tools and activities between multiple stakeholders.

Expert Group 4: Connecting Goods and People

This expert group focused on the interrelations between large river basins and the transport of goods and people, i.e. on the role of a river as an infrastructure, separating barrier, origin and destination of trips and as an ecological system. These relations reflect the different interests that stakeholders may have in the development of a river basin, deriving partly conflicting claims and requirements.

Expert Group 5: Institutional Coordination & Cooperation

This special target expert group concentrated on exploring institutional coordination in integrated environmental risk management and cooperation between multiple stakeholders in large river basins with a special emphasis on the Volga Basin.

CABRI-Volga held a mid-term validation workshop in Karlsruhe (July 2006) in order to validate the results achieved after the first two Expert Group Meetings, to determinate discussion topics for the third Expert Group Meeting, to analyse the strengths and weaknesses of the achieved results and to formulate recommendations for the next CABRI-Volga period.

In order to improve the overall quality of the project's outputs and to ensure the relevance of the final recommendations, the project consortium was supported by the CABRI-Volga Policy Advisory Board comprising politicians and other high-level decision-makers from Russia and the EU. This Board provided political guidance to the project and recommended political actions and events to support the project development.

In February 2007, its last of twenty-seven project months, CABRI-Volga organised and held several workshops and events in order to support and validate the project's policy recommendations as well as its proposed research agenda, including a local outreach workshop in Astrakhan, a scientific workshop in Pushchino, and a workshop for industry representatives in Yaroslavl. Finally, the most notable event for the validation of the CABRI-Volga policy recommendations was a Policy Roundtable accompanied by an informative meeting in the State Duma of the Russian Federation.

Validation of CABRI-Volga's policy recommendations

4 Policy Recommendations

CABRI-Volga policy recommendations are the result of a thorough consultation process in which experts from Russia, the European Union, America and Asia were involved during three Expert Group Meetings in the Volga Basin (September 2005 in Nizhny Novgorod, April 2006 in Kazan, and November 2006 in Cherepovets).

The Expert Group Meetings provided a still unique opportunity in Russia to bring together for joint discussions experts from various scientific disciplines and institutional backgrounds such as academia, politics, business, industry, and NGO's. Out of the more than 150 experts, the majority (about 2/3) were from Russia.

CABRI-Volga developed a set of ten policy recommendations and proposed corresponding actions which are described in detail below.

Support systematic multi-hazard risk management (R1)

Rationale

Large river basins and their inhabitants are commonly facing multiple hazards, including those resulting from floods, industrial accidents and poor drinking water quality. This is also the case for the largest European river basin – the Volga Basin.

Despite the fact that the Volga is highly regulated by a cascade of dams, its Basin is regarded as a flood prone area. Flood risk reduction ranks high on the Russian natural disaster reduction agenda. About 400,000 square kilometres of the Volga Basin (the size of Germany and the Netherlands together) are considered prone to flood.

Floods are natural hazards that become disasters when they interact with human society. Natural factors are the main cause of catastrophic floods. However, anthropogenic interventions have modified the natural characteristics of extreme floods. Recent catastrophic floods in Europe and in the United States have shown that human activities and traditional river engineering works may result in an increase in the frequency of extreme floods and thus negative economic consequences. Human activities, especially changes in land-use patterns and engineering works, are a key factor affecting the impact and magnitude of medium and small-scale flood events. Two different attitudes to flood management prevail. The first is to consider the flood as a random natural disaster and to only respond on an ad hoc basis through emergency programmes. The alternative, favoured within the CABRI-Volga project, is to recognize that floods are recurring phenomena and to adopt a proactive and strategic approach, including a combination of mitigation measures with emergency response and rehabilitation. Equally important is the incorporation of disaster risk reduction into sustainable development strategies. Technical solutions alone, such as dams and dykes are not adequate to ensure human security in a long term. Structural and non-structural measures should be integrated and considered at the same time, instead of one after the other. Coordination, integration and packaging of a variety of response policies, measures and tools are essential for living with floods.

**Large river basins
affected by multiple
hazards**

**400,000 m² of the
Volga Basin prone
to flood**

**Impact and
magnitude of floods
influenced by
natural factors and
human activities**

**CABRI-Volga
promotes proactive
and strategic
approach to cope
with floods**

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Many problems identified throughout CABRI-Volga by the consulted experts are the consequences of decades of under-investment in major infrastructures, essential to the success of the economy of the Russian Federation, as well as the livelihoods of communities in the basin. They are also very sensitive issues, and the safety of hydro-facilities in particular was flagged as a major security concern, in the sense that carrying out an inventory of these facilities and publishing the results may be unacceptable for the central government because of the terrorist threats the Russian Federation would expose itself to. This was recognised and highlighted by the experts, and, at the same time, it limits the potential application of the group's recommendations and suggested actions. However, in parallel to this it is recognised that the state of some of these facilities also poses serious threats to communities living in the Volga Basin, so the issue needs to be tackled and addressed seriously. Therefore, solutions need to be found to ensure the safety of the people, but without compromising the security of the facilities with respect to potential terrorist actions.

**State of
hydro-facilities
a security concern**

Changes in the land-use patterns, including agricultural practices and deforestation, urbanisation processes, settlements in the flood prone areas and neglect of existing domestic legislation regulating construction activities in the basin also contribute to increased risks of floods. Therefore, CABRI-Volga recommendations are taking into account the need of an integrated approach to flood risk reduction and of coordinating the problem-solving across various sectors.

Within the Volga Basin, water quality, especially drinking water quality, is high on the environmental agenda. The major challenges for ensuring access to high quality water are a lack of technical facilities, inefficient purification and disinfection systems, deficiencies in municipal infrastructure for drinking water supply, poorly treated sewage, ineffective urban waste water management and leakages from water distribution networks¹. As a result, only 15 percent of treated waste waters meet national standards. None of the major cities in the Volga Basin are supplied with drinking water that meets national and World Health Organisation (WHO) quality standards. At the same time, ecological standards in the Volga Basin, while stricter than their international counterparts, can be difficult or unrealistic for water-users to comply with. Among other water-related concerns is inefficient water use: the level of water per capita consumption in the basin is about 1.2-1.7 times higher than in Western Europe. The major causes of this are inadequate economic incentives for households and businesses to consume water efficiently and/or save water.

**Drinking water
quality affected by
infrastructural
deficiencies**

**All major Volga Basin
cities fail to meet
WHO standards for
drinking water quality**

¹ Water losses in distribution networks in the regions of the Volga Basin annually account for about 25 percent of the drinking water consumption.

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Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 1, namely to “support systematic multi-hazard risk management”.

Table 2: Overview of activities suggested for implementation of policy recommendation 1

Recommendation 1: Support systematic multi-hazard risk management
<p>Activity 1.1: Apply integrated risk assessment methods that include social, economic and environmental dimensions for flood prone areas</p> <ul style="list-style-type: none"> • Compile an inventory of available methodologies for flood risk assessment² and select the most appropriate for the Volga Basin which allow for a multi-disciplinary approach combining social and economic assessments with technology solutions, including GIS • Enhance the capacity of existing centers and if necessary find new centers to apply the risk assessment methodology at local/municipal levels and apply participatory approaches in the Volga Basin • Ensure public awareness relating to results and recommendations of integrated risk assessment via a report in various formats, via media and public fora • Ensure the overall (economic, physical, social) preparedness of relevant institutions and public for flood risks through application of assessment results (for example, ensure ‘economic’ preparedness via developing a legislative basis for the purchase and functioning of insurance policies within flood-prone areas) • Ensure the regular application of the selected risk assessment methods as well as public sharing and debate of the results
<p>Activity 1.2: Establish an inventory of hydro-facilities and the risks they pose</p> <ul style="list-style-type: none"> • Evaluate existing national and international methodologies for integrated assessment of hydro-facilities to estimate the risk associated with their condition • Enhance and implement an appropriate (evaluated) methodology within the existing legal framework • Produce and disseminate the annual Russian Federation report on the state of hydro-facilities’ safety for public use
<p>Activity 1.3: Reduce the risk posed by hydro-facilities through rehabilitation and continuous monitoring (starting with the most hazardous facilities)</p> <ul style="list-style-type: none"> • Rank hydro-facilities by their degree of hazard • Rehabilitate the most hazardous hydro-facilities according to national and international standards • Undertake regular risk inspections and maintain all hydro-facilities according to existing legislation and registers of hydro-facilities
<p>Activity 1.4: Establish an inventory of drinking water sources (surface and ground) and the risk they pose.</p> <ul style="list-style-type: none"> • Rank drinking water sources according to their water quality as well as their related risks

² See CABRI-Volga Consortium (2006a), Meeting Report of Second Expert Group Meeting in Kazan, April 2006 for the shortlist of available methodologies.

Recommendation 1: Support systematic multi-hazard risk management

Activity 1.5: Reduce the risk posed by poor drinking water sources through rehabilitation and continuous monitoring

- Rehabilitate existing and/or establish new public wastewater treatment systems (technological facilities) according to the ranking of drinking water sources
- Rehabilitate existing and/or establish new water purification facilities according to the ranking of drinking water sources
- Preserve and/or restore natural water purification systems (e.g. reeds, wetlands) according to the ranking of drinking water sources
- Review the existing monitoring network and enhance its coverage through the purchase of new (mobile) stations
- Prepare regular public reports on the results of monitoring assessments versus national water quality standards in real-time, online on the Internet and via other media, in a clear, user-friendly and understandable way

In consideration of the various hazards and their potential to affect human and environmental security, the experts of the CABRI-Volga discussion fora suggested paying specific attention to a systematic and holistic risk management approach.

A package of policy recommendations and actions aimed at reducing vulnerabilities from floods, technological accidents and those related to poor drinking water quality in the Volga River Basin has been formulated.

A list of recommendations to decision-makers and practitioners representing various stakeholder groups is suggested. Particular focus of these recommendations is on how to enhance the coordination of policies, tools and actions between diverse groups of stakeholders in prevention, emergency response and rehabilitation of affected populations and livelihoods.

In the area of flood risk assessment, it is suggested to apply integrated risk assessment methods which include social, economic and environmental dimensions for flood prone areas. This general recommendation is substantiated through several suggested actions including:

- Establishing an inventory of available methodologies for flood risk assessment and selection of the most appropriate for the Volga Basin,
- Enhancing the capacity of existing centres and if necessary finding new centres to apply the risk assessment methodologies at local/municipal levels and apply participatory approaches in the Volga Basin,
- Ensuring the overall (economic, physical, social) preparedness of relevant institutions and the public for flood risks through application of assessment results (for example, ensure 'economic' preparedness via developing a legislative basis for the purchase and functioning of insurance policies within flood-prone areas), and
- Providing on-time clear and user-friendly information and advice on possible actions against risks to the public.

**Integrated risk
assessment methods
for flood risk
assessment**

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If the proposed actions are to be implemented in the near future, financial mechanisms should be identified and developed. It is felt to be unlikely that the central government could afford the major investments provided in the recommendations. Hence, the experts suggested elaborating and considering alternative and new financial mechanisms (“innovative financing solutions” are further discussed under CABRI-Volga policy recommendation 7 below).

It is noted that the public at large should be more involved in decision making processes where any of the proposed activities to reduce vulnerabilities and/or risks are concerned. This was mentioned on many occasions and the inclusion of participatory consultations and better public reporting are reflected in several of the suggested actions, for example:

- Production of reports on the state of hydro-facilities
- Reviews on the state of drinking water quality
- Public reporting of the results of drinking water quality monitoring activities, possibly even in real-time via the internet
- Ensuring public awareness of flood risk assessments results
- Risk assessments should be debated publicly, particularly when it comes to making remediation proposals.

Communication to the public and participation of the public at the levels recommended is not currently being undertaken in the Russian Federation for the topics addressed. This should be remedied so as to ensure the appropriate and adequate processes and protection measures for the population.

**More involvement of
the public in decision
making processes
recommended**

Ensure coordinated strategic planning and implementation (R2)

Rationale

There is a growing recognition worldwide that a great deal of water problems in large river basins, and particularly those related to sustainable water use, water protection and natural hazard risk reduction are rooted in failures to establish good water governance at the basin level. It is becoming a common practice, today, in the EU countries and in Russia that good water governance is to be based upon river basin management approaches and they are starting to be more actively applied in practice. For example, the EU Water Framework Directive of 2000 prescribes the basin management approach for all countries and stakeholder groups, and also that their actions within a river basin district are to be coordinated. Similar approaches are introduced by the new RF Water Code, 2006.

Coordination becomes a powerful tool in good water governance at the river basin level, including institutional coordination (horizontal and vertical) between various government bodies as well as partnerships, dialogue and joint actions of multiple stakeholders within a river basin.

However, still both river basin management and coordination are not yet effectively applied in practice. The Volga Basin is not an exception. There are significant loopholes in the system of water resources management at the river basin level, and enhancing domestic institutional capacities for water related risk reduction is at the top of the river basin agenda.

One of the problems identified through consultations with the CABRI-Volga experts is that during the last decade the technical and scientific questions in water basin management were mingled with administrative management and governance issues. As a result, in practice, water management in the Volga Basin is a difficult multilayered institutional problem with a variety of uncertainties, overlap of competences and loopholes, and it compounds good water governance. It is deeply embedded in the domestic institutional context. The water basin management system, i.e. the four Water basin management boards in the Volga, overlaps with the existing structure of government authority and dissemination of responsibilities - vertically and horizontally between bodies involved in water related activities in the Volga area. The latter includes the authorities in 39 federation subjects in the Volga basin responsible for water-related risk reduction in certain segments of the river, and also the layer of administration of the federal districts (Volga, Central, South, North-West). Coordination of their interests 'towards the river' is often complicated.

Another problem is that the lack of effective vertical coordination and clear division of competences between local-regional-federal levels negatively affects the application of integrated water basin management. The basic approach is that while the federal government sets up the framework, the regions and locales are involved in practical action in water use and water protection in the Volga area. Significant innovations in that respect are introduced by the new RF Water Code, in particular, it prescribes the transfer of

**Shortcomings in
water governance at
river basin level**

**Institutional
coordination not yet
effective**

**Overlapping
competences on
various institutional
levels**

**Significant loopholes
in vertical coordination
federation-regions-
locales**

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broader competences to the regions and locales and, also innovative mechanisms for finance allocation between levels.

New expectations concerning strengthening institutional capacities in the water sector, in general, are connected with the entry into force in 2007 of the new RF Water Code which is a framework national law regulating protection and use of water resources. It contains a number of innovations, including, for example, water property rights for a broader variety of actor groups (federation, federation subjects, municipalities, physical persons and legal entities); vertical subsidiarity in water management and division of competences between various levels of authority; institutional coordination based on basin approaches; enhancing new participatory patterns of stakeholders; establishment of basin councils; new principles defining access to water resources; regulations in water protection through adoption of water conservation zones, etc.

Although the adoption of the new law is an important step forward, it is not enough for the overall success in sustainable water use and water protection. The question is how its provisions could be implemented in everyday life by all stakeholder groups, and how this legislation will be enforced. Usually, such an activity is not only limited to introduction of its normative sub-acts. The implementation process is a much deeper. Particularly important is its effectiveness in relation to target groups, i.e. how and to what extent various stakeholders change their water-related behaviour in response to and in compliance with the new rules and principles. This is a difficult task not only for the Volga, but other river basins in Europe as well. Of course this process takes time and significant effort of all stakeholder groups are needed. The lessons learned from implementation practices show that usually a step-by-step implementation strategy combined with concrete actions and targets as well as clearly defined time-frames is put forward. The earlier practice in Russia indicates that there might be significant gaps between the legislation and its implementation and enforcement, so the lessons from the EU, including the successes and failures might be valuable. An equally important problem is the regular control and verification mechanism at various levels allowing to transparently enforce its provisions and to ensure accountability before civil society.

The system of river basin councils introduced by the RF Water Code is an institutional innovation for Russia. Its major goal is to promote the coordination of interests, a dialogue and consensus building between major stakeholders in the basin. Among the important missions is the enhancement of local public participation in decision-making which is still a weak segment in capacity building in the country. How this system will be actually implemented in practice is still a considerable challenge within the river basin management in the Volga area. CABRI-Volga experts indicate at one of their concerns that basin councils might be dominated by government representatives, while in the EU countries, for example, the major focus of the basin councils is on the public, non-governmental organisations and local stakeholder representation. During CABRI-Volga expert groups meetings the possibility of strengthening the role and authority of basin councils in the future – with a gradual shift from the current mandate to ‘develop recommendations’ as introduced by the RF Water Code, towards broader competences in decision-making for sustainable water use and protection has been discussed.

High expectations in new Russian Water Code to improve institutional capacities

Step-by-step implementation of the new Russian Water Code recommended

River Basin Councils - innovative tools in coordination and partnerships within the Volga Basin

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**Strategic planning
coupled with
implementation
actions**

Future strategic approaches and planning for water use and water protection within the Volga Basin are essential components in capacity building. At the same time there is a strong need to shift away from often prevailing practices worldwide when good plans and programmes face failures and turn into 'dead letters'.

This is for example also the case in the Volga Basin where the progressive Volga Revival programme of 1998-2004 which was a unique example of multidisciplinary basin-wide coordination and stakeholders' partnerships³ based on integrated water basin management principles was closed after some efforts in its realisation had been closed (i.e. earlier than planned, it was supposed to run until 2010). It had a strong scientific basis, but its realisation was weak. It was facing a number of implementation problems, caused by financial, management and coordination shortages.

Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 2, namely to "ensure strategic planning and implementation in the Volga Basin".

Table 3: Overview of activities suggested for implementation of policy recommendation 2

Recommendation 2: Ensure strategic planning and implementation in the Volga Basin
<p>Activity 2.1: Enhance institutional capacities in water governance in the Volga Basin</p> <ul style="list-style-type: none"> • Establish clear procedures for horizontal and vertical coordination and division of responsibilities between institutions and administrative bodies involved in water use, water protection and natural disaster risk reduction in the river basin • Set up an operational coordination mechanism enabling regular interaction between government bodies responsible for water-related risk reduction and major stakeholder groups • Ensure broader involvement of the science-and-technology community in sharing 'good' water governance knowledge, R&D results and practices • Introduce mechanisms and incentives promoting dialogues and partnerships between stakeholders of the Volga Basin
<p>Activity 2.2: Apply vertical subsidiarity principles to strengthen cross-scales cooperation among government authorities responsible for water-related risk reduction (national/regional/local)</p> <ul style="list-style-type: none"> • Enforce new schemes defining vertical division of authority and responsibilities at government level within the basin as introduced by the new RF Water Code • Ensure broader transfer of competences for practical action away from the federal level to regional and local authorities (while federal government sets the framework conditions, the regions and locales implement water management within this framework) • Enforce new schemes established by the RF Water Code for finance allocations between levels of authority; introduce mechanisms for mobilizing the regional and local resources for water conservation in the basin

³ Among its participants were administrations of the 39 federation subjects, about 11 ministries and agencies and over 60 research institutes and organisations.

Recommendation 2: Ensure strategic planning and implementation in the Volga Basin

Activity 2.3: Enforce implementation of the new RF Water Code

- Develop a strategy containing short- and mid- term schemes and goals for implementation of the RF Water Code, i.e. similar to the WFD implementation process
- Introduce strict verification and control mechanisms over the RF Water Code implementation, including its execution by all stakeholder groups
- Coordinate its implementation (including the subordinated normative acts) with existing water related legislation to ensure compatibility with other national laws, i.e. the environmental law, the law on the earth interior, on emergencies, on hydro-technical facilities, on land-use, etc.
- Introduce regional/local regulations and enforcement mechanisms in water use and water protection in the Volga Basin in compliance with the new national rules
- Discuss and develop concrete schemes for implementation actions of particular stakeholder groups in compliance with the new legislation

Activity 2.4: Support the formation of the new system of Basin Councils

- Develop transparent and effective regime and rules for Basin Councils clearly defining their competences and functions
- Set up regimes for clear division of competences and effective mechanisms of interaction with the existing regional water basin administrations and other territorial bodies responsible for water use and water protection in the Volga Basin
- Ensure real representation and participation of stakeholder groups in the Basin Councils
- Ensure step-by-step broadening of the competences of the Basin Councils in water use and water protection

Activity 2.5: Enhance strategic planning at the river basin level including application of sustainable development approaches

- Introduce realistic short-term and mid-term sustainable development strategies and practice-grounded water conservation programmes for the Volga Basin with tight coordination between social, environmental and economic priorities
- Prepare river basin management plans with particular time-frames and cycles (as, for example, practiced in the EU according to their Water Framework Directive, six-year period)
- Make the river basin management plans an important mechanism to coordinate actions of all stakeholder groups in sustainable water use and water protection and ensure control over their realization
- Introduce the integrated impact assessment of the Volga Basin development strategies

In consideration of various policy options to enhance the institutional capacity in sustainable water use, water protection and water-related hazard risk reduction in the Volga Basin, the experts of the CABRI-Volga discussion fora suggested paying particular attention to application of a set of guiding principles for good water governance in large river basins. They have put a specific emphasis on the need of:

**Six principles for
good water
governance in the
Volga Basin
suggested**

- Application of integrated water management at the basin level
- Enhancing coordination as a powerful tool in water governance

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- Building partnerships between stakeholders as the red thread for future water use, water protection and hazard risk reduction in the Volga Basin
- Integration of sustainable development approaches into basin management with close intertwining between social-environmental-economic priorities
- Combination of water-related strategic planning and implementation actions
- Regular verification, control and enforcement of water-related legislation and programmes

A package of policy recommendations and actions has been formulated aimed at enhancing institutional capacities in good water governance in the Volga Basin through coordination of strategic approaches and implementation efforts in everyday practice of stakeholders.

A list of recommendations to decision-makers and practitioners representing various stakeholder groups is suggested. A particular focus of these recommendations is on how to enhance the coordination of policies, tools and measures towards sustainable water use, water protection and hazard risk reduction for better quality of life of the Volga population and the livelihoods.

The general recommendation of the CABRI-Volga experts to improve the institutional capacity for good water governance that is cross-cutting through major thematic areas of water-related risk reduction in the Volga is suggested to be realised through several priority actions. They include:

- Removing uncertainties in water-related competences and responsibilities of government bodies of various levels and sectors
- Establishing mechanisms for regular coordination, dialogue and cooperation between them
- Promoting exchange between the stakeholders on good practices in sustainable water management in the basin
- Enhancing coordination and cooperation between local-regional-federal authorities for the sake of the better quality of life in the Volga Basin

As a result of the consultations with the CABRI-Volga experts on the problem of the lack of effective vertical coordination and clear division of competences in water management in the basin between local-regional-federal levels, the experts suggested that while the federal government is to set up the framework conditions, the Volga regions and locales are to be involved in practical action in water use and water protection within this framework. They underlined that new innovative approaches for cross-scale financial allocations for water protection and conservation introduced by the new Water Code are expected to contribute to solving existing problems. At the same time they recommended that these innovations have to be combined with more active mobilisation of funding within the Volga regions and locales.

**Priority action to
improve institutional
capacity for good
water governance**

**While the federal
government sets
framework conditions,
the Volga regions and
locales take water-
related action**

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Throughout the CABRI-Volga project there has been a number of active discussions on how to effectively implement the new RF Water Code in everyday practice. A number of actions recommended by the experts, which are based on the experiences and practices in the implementation of the framework legislation in the EU, are of particular value for policy-makers and practitioners in the Volga Basin. For example, first, a step-by-step implementation strategy need to be developed similarly to what has been done by the EU when the Water Framework Directive has been introduced. Second, the action programme for its realisation with concrete actions and targets as well as clearly defined time-frames is also advisable. Third, equally important are regular control and verification mechanisms at various levels. Fourth, experts also recommended to tightly coordinate the existing water-related legislation and its implementation, i.e. the water law, the environmental law, the law on emergencies, on the safety of hydro-technical facilities, etc. Fifth, implementation actions and changes in behaviour of stakeholders in compliance with the new legislation are essential.

A number of recommended actions formulated by the CABRI-Volga experts to support the formation of the innovative system of the basin councils reflect the importance of this mechanism for enhancing the partnerships and coordination in the Volga Basin. Various pathways for development of effective regimes and rules for this basin type organisation have been assessed as well as possible problems identified. CABRI-Volga experts indicate as one of their concerns that basin councils might be dominated by government representatives, while in the EU countries, for example, the major focus of the basin councils is on the public, non-governmental organisations and local stakeholder representation. During CABRI-Volga Expert Groups meetings the possibility of strengthening the role and authority of basin councils in the future – with a gradual shift from the current mandate to ‘develop recommendations’ towards broader competences in decision-making for sustainable water use and protection, as introduced by the RF Water Code, have been discussed.

**Coordinated action
and changes in
behavior of all
stakeholders
required for effective
Water Code
implementation**

**Basin Councils
system in need of
urgent regime
formation**

Enhance partnership and stakeholder participation in decision-making and action (R3)

Rationale

Dialogue and consultations between stakeholders and their involvement in decision-making and practical action in environmental amelioration are among the effective forms of coordination in large river basins. During recent years, various partnerships of stakeholders aimed at sustainable water use and protection have been actively developed in many EU countries.

Among the existing problems in the Volga Basin are weak partnerships between stakeholders⁴ and low involvement of the local public in decision-making and action towards water conservation and basin environmental rehabilitation. One of the reasons for this is the legacy of the Soviet past when the state was the dominant actor in all actions, while environmental interests and initiatives of the public were subdued. Democratic and environmental reforms within the transition (political, economic, social) of the last decade in Russia opened new opportunities and preconditions for broader stakeholder participation and partnerships in the Volga Basin. However, this is not an instant process, more time and practical action for partnership development as an important integral component of capacity building for good water governance are essential.

There is a challenging problem of how to establish effective interaction between authorities in the Volga basin on the one hand, and business and civil society on the other hand. This domain is still a terra incognita for Russia as coordination here is still weak. It relates to the development of institutional settings, including legislation, incentives, mechanisms for resource allocations, tools and methods for formation of partnerships between stakeholders, etc. Examples of good practices in the EU countries can be taken into account.⁵

One of the serious current problems is the low local public participation in environmental decision-making and practical action in the Volga Basin. Today, the local public has a low influence on decision-making. Usually, citizens do not have either a well defined positions towards problem-solving, nor do they desire to be the part of a partnership as they are still significantly disengaged and public awareness is quite low⁶. Among the specific features in the Volga Basin is the high public reliance on the state and on its 'paternalism'

Stakeholder partnerships as an effective means of coordination in large river basins

Low level of local public participation in the Volga Basin

Need to establish effective interaction between authorities and civil society

High public reliance on the state in river rehabilitation

⁴ CABRI-Volga experts identified the following major stakeholder groups for the Volga Basin: federal, regional and local authorities, municipalities, non-governmental organisations, large businesses, small and medium size enterprises, private households/ citizens, interregional associations, groups of local population in need of special support and protection (indigenous people, women, poor families).

⁵ For example, a successful multi-stakeholder partnership has been established by the water management administration of the German federal state Baden-Württemberg in "Integrated Conception for the Catchment Area of the Neckar River". It developed a river-basin action network in water resources management in the Neckar River and its tributaries through combining joint action in flood protection, in enhancing the structure and quality of the river. It integrates local plans with sectoral strategies, it aims to preserve and improve the rivers as living spaces and lifelines of the landscape as well as an important natural factor for business locations. IkoNE addresses citizens, industry and business, associations and authorities.

⁶ Sociological surveys in the Lower Volga region during 2002-2004 indicated that although a large part of the population (80 percent) was not satisfied with the present environmental situation and was preoccupied with the state-of-the-art in environmental protection, only 16 percent of the respondents agreed to take part in actions and activities of environmental organizations aimed at environmental amelioration.

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in environmental rehabilitation in the basin. However, both, the desire and the knowledge on how to take action are low. On the contrary, in the EU countries, as for example in the Netherlands, most citizens take part in water resources management in everyday life. Recently, a number of cooperative pilot projects to mobilise local societies have been initiated in the European river basins to remediate contaminated river banks, to transform the riverside and to open new leisure opportunities. Among them is the “Artery Project: Mersey Basin Campaign” in the UK. One of its major goals is to facilitate and develop partnerships, while building public and private volunteer networks is an important practical tool. The lessons of the Artery Project might be of high value for the Volga Basin.

Today, a number of promising partnerships of multiple stakeholders are emerging in the Volga Basin. They are regarded as an important mechanism for stakeholder participation in decision-making and practical action. Recently, several voluntary regional and local associations were established in the Volga Basin, and they have already contributed to water-related problem solving with their practical action. For example, the voluntary partnership between the heads of the administrations of the Vologda, Kirov, Archangels oblasts and Komi are actively involved in coordinating their efforts and mobilising practical action of local stakeholders, including administrations of the regions and locales, water-users, business, science and NGOs in water conservation and in flood risk reduction within the territory of these four regions. This partnership is also actively involved in consultations and dialogue between the stakeholders because their opinion matters in decision-making. However, so far this is not a typical example for the Volga Basin, and the development of such partnerships in the Volga basin is lower than in the EU river basins. As a new form of joint action, they need to be widely supported and get additional incentives from the local authorities.

Recently, growing attention of the government is paid to constructing new interactions with the business community which starts to play a more active role in water conservation and environmental rehabilitation in the Volga Basin. This is a new trend: business is now more often regarded as a new driver with enhanced environmental and social responsibility in Russia. Since the dialogue and private-state partnerships are starting to be developed recently, it is extremely important to mobilize their potential and use it as a tool for good water governance, especially in water protection and integrated water use. Further development of a dialogue and interactions within a triangle government-business community-local is equally important as current interactions and functioning ‘in tandem’ are insufficient.

The roles of large businesses and small companies in water conservation in the Volga Basin vary considerably. Environmentally benign activities of SMEs in water use and water protection are insufficient: most of them are not meeting the existing ecological standards, they are not effectively applying the “polluter pays” principle, and they are rather engaged in solving the problems of their ‘survival’. Today, this is a significant problem in Russia in general: only modern and rapidly developing enterprises are interested in compliance with existing environmental regulations; they have financial resources and access to R&D potential which is coupled with a desire to build a ‘green image’. Big firms are usually involved in the

First promising partnerships are emerging in the Volga Basin

New interactions between the government and business being developed in the Volga Basin

Support for SME involvement in environmentally benign action at the top of the agenda

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social contract with the state, while cost for small companies are too high and they are not included in a dialogue. Many problems are also associated with municipal enterprises and water service providers.

Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 3, namely to “enhance partnerships and stakeholder participation in decision-making and action”.

Table 4: Overview of activities suggested for implementation of policy recommendation 3

Recommendation 3: Enhance partnerships and stakeholder participation in decision-making and action
<p>Activity 3.1: Promote diversified river basin partnerships in good water management</p> <ul style="list-style-type: none"> • Organise a regular local participatory action network for the Volga rehabilitation with involvement of various stakeholders • Adopt a ‘common goal approach’ of environmental clean-up and sustainable water use among the public, business, NGOs, the scientific community • Build and maintain a dialogue and consultations within the triangle: government (at all levels) - public – business • Support voluntary regional and local associations involved in water conservation in the Volga Basin
<p>Activity 3.2: Introduce a participatory institutional system for river basin management</p> <ul style="list-style-type: none"> • Introduce procedures ensuring real representation and participation of stakeholders from various groups of water-users (NGOs, scientific community, public, business, municipalities) in the Basin Councils • Establish well-designed and adequately funded short- and mid-term programmes for enhancing local public participation in the Volga River conservation and rehabilitation • Support water conservation/protection action of SMEs, including participation in R&D projects, establish technology innovation funds providing SMEs access to the new environmental benign technologies, organize special regional funds for development support, promote various forms of SMEs partnerships • Support local and regional cooperation and networking of environmental NGOs in the Volga Basin, including regular interregional meetings of environmental NGOs and electronic dissemination of information • Enhance regular accountability of authorities to society

In consideration of various policy options to enhance the dialogue and partnerships between multiple stakeholders in water conservation in the Volga Basin, the experts of the CABRI-Volga discussion fora suggested paying particular attention to overcoming a number of existing loopholes in stakeholder involvement in decision-making and in practical action towards environmental rehabilitation of the Volga Basin.

According to experts’ advice, the first positive steps and experiences in developing partnerships – such as new voluntary associations of stakeholders, or increased business involvement in water protection, urgently need to be further supported and enhanced.

Existing gaps in formation of stakeholder partnerships require urgent attention

First positive experiences need to be promoted

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Expert recommendations for the Volga rehabilitation are based on the principles that include such components such as:

- programmes for stakeholder involvement
- incentives for formation and development of partnerships
- 'common goal'-oriented approach
- local participatory action networks
- support for new partnerships at their initial stages
- mechanisms for coordination of interests
- learning from lessons and good practices in the EU river basins

Promotion of stakeholder partnerships

A list of recommendations to decision-makers and practitioners representing various stakeholder groups is suggested. Particular focus of these recommendations is on how to build partnerships towards sustainable water use, water protection and hazard risk reduction for better quality of life of the Volga population.

The general recommendation of the CABRI-Volga experts to improve stakeholder partnerships in the Volga Basin is based on the need to involve all stakeholders in a joint effort. Discussion and coordination of their interests and formulation of common goals is essential.

Involvement of all stakeholder groups

This process of partnership building envisages a variety of possible tools, among them discussions and dialogues, consultations, exchange of good practices and knowledge, activity networks, common coordinated actions as well as the participation in river basin organisations.

During the consultations with CABRI-Volga experts on the effective engagement of stakeholders in various kinds of partnerships, recent innovative experiences of some regions in the Volga Basin were discussed. Experts found the lessons learned from practices of the existing water council of the administration heads of the Vologda, Kirov, Archangels oblasts and Komi very useful. Particularly, its efforts to involve various stakeholders in consultations and dialogue can be regarded as an example of new practices in good water governance. These experiences in coordination effort can be used by other regions of the Volga.

'Learning by Doing' is advised

Broader exchange of expert opinions on the new role and opportunities for action in voluntary associations of various stakeholders (industrial companies, farmers, water-users, local administrations, cities, etc.) showed that this new type of partnership currently emerging in Russia is to be broadly supported and promoted. It was also mentioned that in Sweden, for example, the voluntary associations are quite popular. They are involved in environmental pollution and water use control and monitoring - all water users must control their pollution and present monitoring results to the local authorities. It is reasonable to pool the resources and take joint action in many cases. They are composed of representatives of local government, various stakeholders, including agriculture and industries. Voluntary associations and partnerships are regarded as a powerful tool in water-related problem solving.

Voluntary associations are suggested by the experts as a promising tool

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A special discussion on how to build a dialogue between the government and business showed a number of interesting results. CABRI-Volga experts agreed that emerging partnerships between business and government can be an instrument in water conservation in the Volga Basin. Support of business involvement in monitoring, conservation activities, in fisheries reproduction and in education programmes should be encouraged.

CABRI-Volga experts paid special attention to environmentally benign activities of SMEs in water use and water protection, and to supporting SME participation in R&D projects. Among possible suggestions is to strengthen the support for various forms of SME partnerships in practical action. For example, in Europe, 'common-goal' oriented partnerships in river rehabilitation are popular and have already shown positive results. In the EU countries, special funds for regional development support the SMEs, including their access to new environmentally benign technologies, while their involvement in R&D projects is highly encouraged, or is even obligatory. They are also involved in information exchange and data sharing⁷. CABRI-Volga experts suggested that government support for various forms of joint collaboration and associations of SMEs can be very useful for water conservation in the Volga Basin. Indirect subsidies⁸ for application of best environmental technologies, e.g. technology innovation funds, can be regarded as a promising tool. New practices in ecological certification and eco-labeling in some regions of the Volga (for example, in the Vologda oblast) are recognized as a useful instrument in water conservation.

Based on a course of consultations between CABRI-Volga experts, the building of regular dialogue between the public and authorities in Volga regions and locales is viewed to be of particular importance. Current examples from ongoing practices indicate public participation in these regions is below desired levels. Among the burning problems is establishing the accountability and transparency of local authorities before the local public in environmental problem solving. Building institutional capacities for regular interaction of authorities with the public, finding means for expanding public involvement in decision-making and environmental action are the avenues for urgent actions of government officials.

**Dialogue
'government –
business'**

**SME involvement and
partnerships are to
be especially
encouraged**

**Regular dialogue of
government officials
and their
accountability to the
local public is a *must***

⁷ In the Netherlands, the committee on integrated water resource management compiles and disseminates information and recommendations on possible options in water pollution reduction in particular industrial sectors.

⁸ Direct subsidies to enterprises are not applied in Europe, but indirect subsidies for the development of new technologies and for research are popular; subsidies for the introduction of technologies are not applied these days, except in the energy sector (for transfer to alternative energy sources).

Facilitate the accessibility of the Volga Basin (R4)

Rationale

The Volga Basin – comprising 40 percent of Russia’s population and 45 percent of its industry – is an important driver for the sustainable development of Russia. It is also an important link between Western Europe and Asia as well as between the Baltic Sea and the Barents Sea in the North and the Black Sea and the Caspian Sea in the South. The accessibility of the basin is strongly connected to the transport of people and freight. Within CABRI-Volga much emphasis was placed on the promotion of sustainable transport within and into the Volga Basin, and in particular on the promotion of inland waterway transport as an environmentally safe and reliable transport mode. In addition, the Volga Basin’s sustainable development will benefit from (and partly depend on) its accessibility for national and international investors.

Geographic and economic accessibility

Aiming at sustainable transport development, water-borne transport represents an important alternative and complementary (to road-, rail- and air-transport) mode promoted by the EU and some of the Member States themselves. Noteworthy in this context is the European Commission’s NAIADES Action Programme⁹ on the promotion of inland waterway transport. NAIADES is intended for the period 2006–2013 and focuses on five strategic areas for a comprehensive Inland Waterway Transport policy: market, fleet, jobs & skills, image, and infrastructure.

Promotion of inland waterway transport in the EU

In the EU countries, water way transport has seen a slight increase in transport volume over the last 15 years. On the Volga and in Russia in general, the importance of water-based transport (expressed in transport volume) has declined sharply since the end of the Soviet Union. According to the Russian Federal Agency for Merchant Marine and Inland Shipping, the maximum volume of goods movement on Russian waterways was achieved in 1988 when 580 million tons of were transported. Following the end of the Soviet Union, the transport volume decreased sharply and bottomed out at 100 million tons in the mid-1990’s. In 2004, already 136 million tons - mainly building materials and other bulky goods - were transported as well as about 30 million passengers. It is forecasted that the transport volume on the Russian waterways will have reached 230 million tons by 2010.

Sharp decline in water-based transport in Russia since the end of the Soviet Union

Freight transport in the Volga-Caspian region mainly takes place on railroads which go along and cross the main rivers. Today, less than 4 percent (i.e. similar to the whole EU) of the total transport volume is carried by inland waterways, while freight transport by trucks accounts for 6 percent of all freight turnovers. Furthermore, oil and gas are transported by pipelines which intersect the Volga Basin.

The Volga is navigable for about 2,600 kilometers, during 200 days in the North and during 260 days in the South. The Volga is a part of the diversified European water-way system which connects Volga-Don-Neva and their basins, as well as five seas in the North, South and in

⁹ Commission of the European Communities (2006): “Together with rail and short sea shipping, inland waterway transport can contribute to the sustainability of the transport system, as recommended by the White Paper on the European transport policy for 2010. In the context of a liberalised inland navigation market, the European Commission aims at promoting and strengthening the competitive position of inland waterway transport, in particular by enhancing its integration into multi-modal supply chains.”

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the West of the European Russia. The system of artificial reservoirs is of great significance for the national economy. The reservoirs provide water and head for the generation of electric power at low cost and cover the peak loads in the power systems. The high-capacity reservoirs on the rivers ensure flood control and safety of the population and natural areas. In addition, it enables regulation of water levels during the navigation period.

Inland water transport in the Volga Basin is poorly integrated into the transport systems of Russia and Europe. The transport water corridor Volga-Don-Danube which would connect the large inland waterways of the Rhine, Main, Danube, Dnepr, and Don is currently promoted.

Governmental control over inland water transport consists of three layers. The Ministry of Transport develops national policy and lays down the legislative basis. The Federal Agency for Merchant Marine and Inland Shipping, together with its local branches, provide for navigational conditions, governs state properties and renders state services in river transport. The Federal Service for Supervision in the Field of Transport performs overall control and supervision.

Volga - a transport route and an energy source

Volga transport poorly integrated into Russian and European transport system

Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 2, namely to “facilitate the accessibility of the Volga Basin”.

Table 5: Overview of activities suggested for implementation of policy recommendation 4

Recommendation 4: Facilitate the accessibility of the Volga Basin
<p>Activity 4.1: Build an integrative transport strategy</p> <ul style="list-style-type: none"> • Initiate a moderated transport strategy development process for the Volga Basin with a strategy timeframe of the year 2020 • Develop regional and local transport strategies • Initiate intermediate working groups for coordination of regional and municipal plans • Enable contributions from applied research (academia, consultancies) to enrich the fact finding process
<p>Activity 4.2: Link different transport modes according to regional needs and development strategies (focus on freight transport)</p> <ul style="list-style-type: none"> • Create intermodal freight ports at key trade nodes • Demonstrate the economic feasibility and profitability of creating freight ports • Develop local business partnerships
<p>Activity 4.3: Gradually improve the existing infrastructure and overcome existing bottlenecks</p> <ul style="list-style-type: none"> • Continue the policy of the federal targeted programmes and independently monitor their implementation impacts • Develop a “Volga Investment Forum” as a meeting platform for international and local investors • Promote private-public partnerships and long-term contracts between private and public sectors • Initiate a feasibility study concerning the requirements of international vessels in the Volga waterway connecting Western Europe and Asia

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Building an integrative transport strategy

Inland waterway transport is considered an environmentally safe and reliable transport mode. However, it is often not sufficiently well interlinked with other transport modes such as road and rail which would increase the flexibility and (economic) attractiveness of goods transport. In the context of updating the Russian transport policy¹⁰, it is suggested to develop an integrative transport strategy specifically for the Volga Basin with a strategic timeframe of the year 2020.

In concrete terms, the initiation of a moderated process for the strategy development process as well as the development of transport strategies on the municipal, local and regional levels are suggested. It is viewed essential that the strategy development process is based on thorough stakeholder consultations, i.e. ensuring the involvement of the governmental level, NGOs, industry/businesses and academia and providing these major stakeholder groups with the opportunity to coordinate their positions and to bring them forward to the highest level (government) themselves.

The strategy development process could be moderated by the Ministry of Economic Development & Trade as the responsible entity and supported (or co-chaired) by the Great Volga Association which has already developed strategy-relevant transport studies in the past.

It is a specific recommendation for NGOs in the Volga Basin to organise themselves, join forces and set up coordination mechanisms amongst themselves in order to organise “one voice” towards the government.

Urban, regional and hinterland interests should be emphasised in the integrative transport strategy. The proper consideration of these interests requires the preparation of respective development plans. The initiation of intermediate working groups for the coordination or municipal, regional and other plans is recommended as a means to harmonise/unite municipal, regional and other plans to one Volga Basin Strategy.

Furthermore, contributions from applied research (including universities, private and public research institutions, consultancies) to enrich the fact finding process for the transport strategy development need to be enabled. In this context, studies from various scientific disciplines should be called for and round tables and other forms of discussion and engagement platforms should be established.

Other aspects to be considered for the transport strategy development process include:

- Realistic plans for the implementation of actions (finances, timing, involved organisations and groups, etc.)
- A regular updating procedure
- Incorporation of conflict resolution instruments
- Emphasis on sustainable development, i.e. equal and thorough consideration of economic, ecologic and social aspects
- Integration of public (passenger) transport
- Emphasise on short-distance transport

**Inland waterway
transport
environmentally safe
and reliable**

**Stakeholders to be
consulted in
transport strategy
development**

“One voice” of NGOs

¹⁰ The national transport strategy of the Russian Federation is currently under review.

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- Ensuring full navigability in the Unified Deep Water System
- Connection towards other regions (in Russia and beyond)
- Establishment of private-public partnerships
- Development of a Volga Investment Forum

One further integral part of a transport strategy for the Volga Basin is the development of the Volga as a waterway connecting eventually the Baltic Sea and the Caspian Sea/ Black Sea. Moreover, short-distance transport along the Volga and other rivers of the Basin alone will vitalise the Volga Basin only to a limited extent. Therefore, long distance transport with the Volga Basin being the connection between the EU and Asia needs to be enabled.

**Development of the
Volga as an
internationally
important waterway**

The Volga is facing a severe bottleneck which is severely hampering the navigation on the river – the Gorodetsky Lock near (upstream) of Nizhny Novgorod. At Gorodetsky, vessels have to wait for up 2-3 days to pass the lock due to low depths. If the current rate of lowering the water level persists, theoretically the Volga and therefore also the Unified Deep Water System may in the future be divided into two parts, a Southern and a Northern one. To avoid this situation, several options are controversially debated (also among the CABRI-Volga experts), including the construction of a retaining dam between the cities of Gorodets and Nizhny Novgorod.¹¹

**Natural bottlenecks
impeding inland
navigation in the
Volga Basin**

An additional natural bottleneck is the fact that the Volga Basin rivers are frozen during the winter months. In practical terms, this makes navigation on the rivers impossible for several months per year.

In order to develop the Volga as a transport link between Western Europe and Asia, several additional actions were proposed by the CABRI-Volga experts, namely (and described below in more detail), the creation of freight ports as well as the general provision of better linkages between transport modes (activity 4.2) and improvements of the existing transport infrastructure¹² (activity 4.3) are required.

Linking different transport modes according to regional needs and development strategies

It needs to be emphasised that in parallel to working towards the Volga becoming an important link between Western Europe and Asia, basic steps are required for the coordination of actions and interests between the different regions along the Volga.¹³

**Coordination of
actions and interests**

The competitiveness of water-borne transport depends to a large extent on the availability of appropriate interchange facilities at

¹¹ A regional government proposal to raise the navigable water level upstream of Nizhny Novgorod is causing quite a stir. The project would involve the construction of a USD 1 billion dam at Bolshoye Kozino. Bringing economic benefits while causing environmental impacts, the proposal has stirred controversy among a plethora of governmental and non-governmental stakeholders (CABRI-Volga Brief, Issue 2, December 2006).

¹² Radical reconstruction efforts are needed for the old channels in Poland and Belorussia in order to properly connect the rivers of the Volga basin to the territory of the EU. This reconstruction will be very expensive, and the elaboration of the development program of the European water system and calculation of its financial efficacy is necessary.

¹³ In 2006, the traffic of high-speed passenger vessel running from Nizhny Novgorod to Yaroslavl was resumed after a long break. This became possible owing to the agreements of authorities of Nizhniy Novgorod and the Ivanovo, Kostroma and Yaroslavl regions. The voyage of the high-speed passenger ship from Yaroslavl to Vesiegonsk, which was abolished in 2005, was also resumed in 2006. The reason of abolition was the lack of agreements between the authorities of the Yaroslavl and Tver regions. An agreement was reached in 2006 showing once again that the coordination of actions of all interested regions is extremely important for the development of the waterway and, in this case, its passenger transport.

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strategic locations. Under the keyword “intermodality”, the planning, financing and operating of such facilities and the corresponding transport services were discussed in light of (inter)regional and local logistic patterns.

The creation of intermodal freight ports is suggested at key trade nodes in the Volga Basin. All major actors such as port operators, cargo operators and other related businesses and industry would need to participate and private-public partnerships need to be set up. It was suggested to build such intermodal (freight) ports on emerging logistics centres in the Volga Basin.

**Development of
intermodal freight
ports**

The investment cost for an intermodal freight port amount to approximately €100 million.¹⁴ The economic feasibility and profitability of creating freight ports needs to be demonstrated in order to attract and convince potential investors of the advantages.

The also recommended development of local business partnerships and the establishment of new business areas surrounding new freight ports are means to bring new employment opportunities to the respective city and region and to ultimately foster social stability.

In general, policies to promote water-borne transport could be complemented by actions and interactions of local governments, businesses, freight operators, environmental groups, the local community and other interested parties.

Gradually improve the existing infrastructure and overcome existing bottlenecks

The waterway and infrastructure conditions in the Volga Basin are being viewed as poor. CABRI-Volga experts identified the following shortcomings:

- Poor service infrastructure (piers, waiting areas)
- Lack of maintenance of vessels (for example hydrofoils)
- Loss of sluices and locks (sometimes 50 years old) – sometimes not possible to repair, hence need to replace; example of a sluice downstream Don where new and wider vessels cannot enter the narrow sluice
- All locks are designed to fit two vessels standing side-by-side
- Baltic-Volga and Black-Sea Volga connections (at least in part) are not wide enough to comply with international standards
- Tcheboksary hydro power station and its reservoir has never worked as designed in 1982; after design, a smaller area was flooded than originally planned

**Infrastructure
maintenance**

CABRI-Volga experts suggested to continue the policy of the federal targeted programmes and to monitor the implementation impacts of these programmes by an independent assessor.

National and international investment is required for the envisaged infrastructure improvements. The development of a Volga Investment Forum is recommended which would serve as a meeting place or platform for local and international investors to work out common targets, action plans, and investment plans. Furthermore, the

**Development of a
Volga Investment
Forum**

¹⁴ In the case of the intermodal freight port in Cologne, Germany.

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promotion of private-public-partnerships and long-term contracts between private and public sectors are viewed - by the CABRI-Volga experts - as an important pre-requisite for the improvement of the infrastructure conditions along the Volga Basin waterways. Finally, the stimulation of private companies by means of tax breaks and subsidies could be considered.

During recent years, improvements have been made concerning the approximation of national requirements for vessels, standards for ships, rules of the road, signs and signalling to the international standards. The CABRI-Volga experts recommend a feasibility study to (further) investigate the requirements of international vessels on an international Volga waterway, including an assessment of the bottlenecks of the Volga Basin rivers and canals during their approximately 4,000 kilometre-course.

Furthermore, the replacement of cargo self-propelled and not self-propelled ships is necessary.¹⁵ Today, only the largest oil companies may allow themselves to do this replacement. However, a considerable share of the total cargo on the Volga River, for example non-metallic materials, is conveyed on vessels of smaller companies, which do not have the money for the renewal of the equipment.

CABRI-Volga experts mentioned several concrete areas of cooperation between the RF and the EU:

- Commercial cooperation facilitated by the establishment of a Volga investment forum; this would be a meeting place of international and local investors for the development of common targets, action plans and investment plans.
- Technical cooperation in the form of know-how transfer for infrastructure development in the Volga Basin; in this context, the creation of intermodal freight ports which is well-advanced in the EU was mentioned.

**Standards and
technical
requirements**

Status of vessels

**Further cooperation
between the Russian
Federation and the
European Union**

¹⁵ The status of the tourist ships is also a concern. While the development of tourism on the Volga River is continuing and the number of foreign tourists is increasing, a lack of the tourist ships may appear in the near future. Today's functioning ships were built in 1960-80s. And although their resources are not fully realized, measures should be taken to purchase new ships and reconstruct old ones.

Prevent the degradation of natural resources and the loss of biodiversity (R5)

Rationale

Healthy ecosystems are an important aspect of the environment. Biodiversity, the most suitable indicator, can most simply be measured by counting the number of species. Protection and management of biodiversity improves the sustainable use and prevents the degradation of natural resources.

Biodiversity of the Lower Volga region is of global importance and the delta wetlands are considered the best conserved in Europe. A part of the Volga Delta is designated as the Astrakhan Biosphere Reserve.

Aquatic ecosystems

Biological diversity in the Volga River can be represented by its ichthyofauna (fish fauna). Before the dam constructions in the Volga, seventy-four fish species existed. During recent years up to eighty-eight fish species have been counted. Twenty-three species inhabit the Caspian Sea (sturgeon, herrings and carps) and spawn in the Volga River; the other species are full-time residents of water bodies in the Volga Basin.

After construction of the dams, the populations of some permanent species, e.g. grayling, Volga carp, bullhead and others, were reduced sharply; and currently there are small local populations in some tributaries. The construction has impacted the streamflow, the water quality, the fish productivity and biodiversity in the Volga basin. Low effectiveness of fish elevators excludes passage of migratory fish to Volga spawning grounds upstream of the Volgograd dam. All spawning grounds of the five different migrating sturgeon species, for example, are now downstream of the Volgograd Power Station dam (the last in the cascade).

Nevertheless, not a single fish species disappeared completely. Other populations became more numerous and extended their habitat zones. Populations of reophile (living in rivers and streams) species declined, while pelagophilic fish (favouring surface waters for feeding, reproduction, schooling, etc.) developed. Populations of vendace (*Coregonus albula*) and draft smelts from Lake Beloe migrated to all reservoirs in the Volga system. Many fish species which disappeared from the main rivers survive in the tributaries. As a result of lower pollution levels in the basin during the 1990s, these populations increased and are still increasing (chars, dudgeons, minnows, riffle minnows).

The decline of the sturgeon population in the Caspian Sea was caused by the disappearance of 80 percent of the spawning areas upstream of the dams, the changes in the level of the Caspian Sea, the reduction from 120 million to 70 million sturgeon fry through artificial reproduction, and above all poaching. Poaching also leads to damage to the fish that escape capture. Moreover, the genetic diversity of the sturgeon species is declining due to the choice of standard fishes for artificial reproduction, the mass illness 1988-1989 and intensive fishing.

Protection and management of biodiversity improves the sustainable use of natural resources

Low effectiveness of fish elevators excludes passage of migratory fish to Volga spawning grounds upstream of the Volgograd dam

Poaching also leads to damage to the fish that escape capture

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Terrestrial ecosystems

Terrestrial ecosystems of the Volga basin include a vast variety of animal species. There are more than fifty species, which are used for hunting, including furry animals (squirrel, marten, fox, ermine, polecat, hare, lynx, wolf, brown bear), and near water animals (musk-rat, beaver, mink and desman otter listed in the Red Book). Ten species of forest-inhabiting birds use the water for nesting, with approximately twice as many species inhabiting meadows, marshy plains, fields and steppes.

About six percent of the Volga basin area can be classified as special protected zone. The agricultural area covers 50-60 percent, while the rest is forests and pastures. Agriculture is the principal factor of influence on natural systems in the area. The main threats to the terrestrial species are: decrease of habitat, decrease of food due to pest control, use of insecticides, habitat loss of the prey population, human disturbance, hunting, poaching and illegal capturing and accidents such as collisions with power lines. Experts believe that the total protected area needs to be increased in order to maintain the region's biodiversity.

Information obtained from current ecological monitoring systems in the Volga basin is also important for conducting environmental protection activities. However, the information does not fully meet the requirements for the implementation of science-based, effective management decisions aimed at regulating anthropogenic pressures on the environment (see recommendation 9). There is a lack of methods to assess natural capital value, damage to water resources/biological damage and to assess water resources in the context of ecosystems and their functions.

Experts recommend increasing the total protected area in order to maintain the region's biodiversity

Lack of methods to assess ecosystems and their functions

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Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 5, namely to “prevent the degradation of natural resources and the loss of biodiversity”.

Table 6: Overview of activities suggested for implementation of policy recommendation 5

Recommendation 5: Prevent the degradation of natural resources and the loss of biodiversity.
<p>Activity 5.1: Enhance the system of protected areas and nature reserves</p> <ul style="list-style-type: none">• Create more protected areas and nature reserves and enhance their functioning• Develop a network of protected areas and enhance coordination between them as the connection of these areas and national parks is essential to preserve biodiversity• Improve and ensure financial situation and ameliorate funding opportunities for national parks and nature reserves• Enhance rules to regulate implementation and protecting of national parks and enforce punishment for violations (poaching, etc.)
<p>Activity 5.2: Increase ecological knowledge</p> <ul style="list-style-type: none">• Improve the system of environmental assessment• The ecological competence and expertise should be improved and adapted to the regional and federal level• Implement ecological knowledge within public education and maintain broader dissemination of data and investigation results
<p>Activity 5.3: Create special programs for flora and fauna</p> <ul style="list-style-type: none">• Create special programs for fish, birds, longitudinal migration, etc.• Start pilot programs to obtain more information and expertise on the ecosystems and to adapt measures
<p>Activity 5.4: Incorporate the need for preservation of habitats and normal ecosystem’s functioning in decision-making</p> <ul style="list-style-type: none">• Apply ecosystem protection as integral part of management goals in a course of the Russian Water Code implementation• Develop a management strategy incorporating river ecological amelioration, including<ol style="list-style-type: none">a) restoration of natural river channel processes,b) changing of spatial planning with control and limiting the floodplain development,c) correlation between natural processes in floodplains and flood protection measures,d) impact assessment of river environmental flow on biodiversity (hydropower facilities and sturgeon spawning).• Introduce mechanisms ensuring contribution and advice of scientific organizations in ecology to decision-making and water management bodies (possibly through a scientific coordination body)

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The existing system of protected areas and nature reserves aimed at protecting the biodiversity needs to be extended and improved. An assessment of the current system and investigations on pilot systems should be the start for a variety of practical actions. Based on this, new norms and rules supporting the development of an effective network of protected areas are essential. Spatial planning should consider and integrate protected areas of all resources (land, water mineral). Furthermore, different eventualities of funding need to be investigated to improve the financial situation. Federal and regional agencies, the Ministry for natural resources, municipalities, NGOs and scientific community should collaborate and coordinate their practical action to enhance the system and to make it vital.

**Spatial planning
should consider
protected areas of all
resources**

A good condition of dams, water constructions, canals, irrigation and drainage facilities is necessary to assure an efficient and sustainable use of water resources. A number of measures and programs for maintenance and technical innovation will help to reduce losses by leakage and ensure efficiency (for example, for not working fish ladders).

**Restoring and
maintenance of all
water construction will
ensure efficiency**

The development of a basin management strategy aimed at ecological amelioration, incorporation of environmental principles and ecosystem conservation approaches into the RF Water Code management instruments was in the focus of expert attention when assessing the priority tools for ecological problem-solving. Improvements in water quality and ecosystem monitoring and in methods of ecological assessments are crucial. Defining the ecosystems' reproduction capacity and their integrity is important as 'purely natural systems' practically do not exist any longer; biosphere reserves where the nature is protected from human interferences are important in that respect. Equally important is the development of a reliable system of indicators characterizing the sustainability/sensitivity of ecosystems to various anthropogenic pressures. It is necessary to seek compromises between the socio-economic development and ecosystem conservation.

Public access to ecological information was discussed by the experts (see also recommendation 8). There is an urgent need to raise public awareness and the level of environmental education, as well as to stimulate formation among various societal groups of the perception that clean environment is among crucial components in amelioration of the quality of life.

**Raise public
awareness and
the level of
environmental
education**

More environmental staff is required as well as enhancing the prestige of jobs in the field of ecology and environmental protection. The improvement of environmental education and qualification will help to raise ecological expertise and attention.

**More environmental
staff is required**

Carry out effective water quality and water quantity management (R6)

Rationale

Today, water quality within the Volga Basin, especially, the quality of drinking water supplied to households is among the core problems. None of the 444 cities in the Volga Basin is getting the drinking water that meets national and World Health Organisation (WHO) quality standards. In general, while there is sufficient water to satisfy hygiene and domestic needs, drinking water quality is not always adequate. Among the local population, drinking water quality is one of the most important health factors. There is a growing understanding that it is among the major responsibilities of the state to ensure access of the population to drinking water of high quality.

The drinking water quality in the Volga Basin depends on: 1) water source quality 2) water treatment and 3) water distribution systems providing supply for the households. The major reasons for poor quality drinking water supply in the Volga Basin are the shortages in technical facilities, inefficient purification and disinfection systems, deficiencies and poor state of municipal infrastructure for drinking water supply, poorly treated sewage, ineffective urban waste water management, ineffective system of water services in the communal sector and leakages from water distribution networks. This is characteristic not only for the Volga area, but also for other regions of Russia. A package of technical, social, economic, institutional and financing responses is crucial for solving this problem.

Most of the surface water sources¹⁶ in the Volga regions require treatment before use for drinking water supply. In the Volga Basin, about 67 percent of the households are equipped with the communal water supply systems and about 61 percent are equipped with sewage networks. In the urban areas the proportion of centralized water supply and sewage treatment is higher, while in small rural communities the communal water supply facilities are not well developed. A significant number of municipal and district water supply systems is not equipped with the necessary treatment facilities¹⁷. At the beginning of the decade, the municipal waterworks in the Volga Basin purified 64 percent of total water withdrawal, with 18 percent purified in the rural areas. The microbiological pollution is one of the main problems of the drinking water supply in the Volga Basin.

The water supply distribution systems are generally in a poor state due to the lack of finance for maintenance and repair. Partly, the reason also lies in poor management in the water services sector, in corruption and misuse of allocated resources. Mismanagement leads to aggravation of ecological problems, including, for example, microbiological contamination of drinking water and infectious diseases caused by pathogenic microorganisms (hepatitis A, dysentery, etc.). Another problem is leakages in the water pipelines: total water losses in distribution systems are estimated at about 25 percent of the total water supply.

**Drinking water
quality is at the top of
the Volga Basin
agenda**

**Shortages in water
treatment and supply
networks, poor
system of water
services**

¹⁶ Approximately 85 percent of the water used for drinking water supply are taken from surface water sources, although rural areas mostly rely on groundwater.

¹⁷ In Russia, 34.2 percent of water supply networks are not equipped with treatment facilities, and 27.6 percent with disinfection systems; in many of the Volga regions this share is higher than the national average.

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The annual volume of wastewater discharge in the Basin is about 20 km³. Effective water treatment of wastewater discharges from various sources is a top priority for the Volga Basin. During the 1990's, the total volume of polluted wastewater discharges was reduced by about one-third. It was partly a result of construction and upgrade of treatment facilities and introduction of modern production technologies, partly attributed to decline in industrial production in a course of national economic crisis. However, water discharges might increase with the current economic growth; efforts to decouple these two trends are essential. Pollution from non-point agricultural sources and surface polluted water run-off in urbanized areas is another serious problem. As a result, only 15 percent of treated waste waters meet national standards. At the same time, among the existing problems is that ecological standards in the Volga Basin, are stricter than in other countries. Thus, they can be difficult or unrealistic for many water-users to comply with.

At the same time, hydro-chemical and hydro-biological parameters clearly indicate that water quality in the Volga is not ideal, but certainly not poor. Comparisons of pollutant concentrations in rivers of the Volga Basin and in the EU river basins show that the water quality in the Volga is even better than in the Rhine and the Elbe. Officially, the Volga River has been classified as moderately polluted or polluted. However, according to Western European standards the river Volga would be classified as reasonably healthy.

There are some specifics characterizing the water use and availability of water resources in the Volga Basin. The cascade of reservoirs forms a large storage capacity enabling a stable water supply in the Volga. Currently, in general, the water availability is sufficient for most part of human activities¹⁸.

Among other water-related concerns is inefficient water use: the level of water per capita consumption in the basin is about 1.2-1.7 times higher than in Western Europe. The major causes of this are inadequate economic incentives to households and businesses to consume water efficiently and/or save water.

Low quality of treated wastewater discharges into the Volga: only 15 percent meet national standards

Ecological standards in Russia too stringent and difficult to comply with

Water quality in the Volga River not poor

High per capita water consumption

¹⁸ The average annual water discharge at the mouth is 254 cubic kilometers per year, and the total annual water use amounts to 25 cubic kilometers, of which about 3-4 cubic kilometers are not returned back to the river.

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Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 6, namely to “carry out effective water quality and water quantity management”.

Table 7: Overview of activities suggested for implementation of policy recommendation 6

Recommendation 6: Carry out effective water quality and water quantity management
<p>Activity 6.1: Build modern drinking water processing plants as well as urban wastewater treatment plants and facilities in the Volga Basin</p> <ul style="list-style-type: none"> • Construct and modernize the drinking water processing facilities • Speed-up the reforms in the water services sector • Mobilize investments into water services and distribution networks • Establish control mechanisms over finance allocations in administrations to assure that revenues incurred are fully allocated to treatment facilities and water processing
<p>Activity 6.2: Improve the drinking water distribution system in order to deliver safe drinking water to consumers</p> <ul style="list-style-type: none"> • Identify and rank “hotspots” within the water distribution system • Publish and share the (“hotspot”) assessment results through a public forum • Prioritise and renovate (pipes and other infrastructure of the water distribution system) in accordance with the “hotspot” ranking
<p>Activity 6.3: Address the pollution from non-point sources</p> <ul style="list-style-type: none"> • Build urban treatment facilities to handle surface water run-off in small towns as a part of plans for urban development • Abandon agricultural practices resulting in increase of diffuse polluted water run-off • Design and introduce good practices in agriculture
<p>Activity 6.4: Develop realistic water quality standards based on environmental principles</p> <ul style="list-style-type: none"> • Review the standards to make them realistic to comply with • Adopt a long-term strategy with the ultimate goal to achieve standards, with step-by-step targets to be met in short- and mid- term perspective
<p>Activity 6.5: Reduce water pollution and enhance sustainable water use</p> <ul style="list-style-type: none"> • Initiate a constructive dialogue and partnerships with industries • Introduce incentives for good environmental practices, including avoiding pollution at the source, clean production processes, environmental benign systems, ISO principles • Adopt and communicate to stakeholders the gradual strategies envisaging the balance between economic, social and ecological priorities (taxes, emission limit values, water charges in the households) • Elaborate the scheme for integrated use of water resources, including water allocation to various water-users and the lists of priority water-users in the basin
<p>Activity 6.6: Improve operation regimes at the Volga hydropower plants</p> <ul style="list-style-type: none"> • Renovate facilities for drainage and water control • Approve new norms and regimes for operation of hydropower facilities on the basis of new mathematical and physical simulation models

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CABRI-Volga experts agreed that there is a need to distinguish between the environmental quality of water in river basins, and drinking water quality supplied to consumers. Their recommendations and suggestions for action on how to effectively manage water resources focuses on various aspects of this problem and on possible management options.

Improving the drinking water quality in the Volga Basin towards the WHO standards is a major challenge. In principle, the state of knowledge and technology development is not an important constraint because the country has the technology know-how. All basic materials for construction and operation of water supply and sanitation systems are available for a rapid improvement of the present situation. Recent enhancing in the national investment climate contributes to innovations in the water sector. Hence, a good basis exists to ensure that, in a period of about 30 years, all cities in the basin have access to safe drinking water and that all inhabitants are properly connected to water networks. The main problems to overcome, however, lie in the field of legislation, basin management, implementation measures, incentive mechanisms and public awareness.

**Need to focus on
governance
problems**

CABRI-Volga experts suggested a number of recommendations targeting the construction and modernization of existing water treatment facilities and water supply networks. The reform in the water services sector is recommended as a priority activity. Experts suggested making an inventory and assessment of the major hotspots in the drinking water supply networks (see also recommendation 1). It allows identifying a priority set of measures to be undertaken by each municipality towards providing an access for the local population to drinking water of a high quality.

**Reforms in water
services sector**

A complicating factor to improve water quality is that the emission source has become more diffuse. Currently, small and medium size industries and households are the most important water polluters. They cannot afford to invest in more sophisticated purification systems, or provide the necessary maintenance of these systems. Therefore, experts recommended the introduction of additional incentives for installing water treatment facilities. They also underlined that a thorough reform in water services and reorganization in the communal households' water supply and treatment sector is urgently needed.

CABRI-Volga experts underlined that national standards for water quality in Russia are more stringent than corresponding standards in the OECD countries, and, thus, have become unrealistic. In many cases, the industry and other important polluters are not able to comply with them. The system of high standards that cannot be realized in practice and result in water quality amelioration is assessed by the experts as counterproductive. They recommended reforming the existing system of standards making it more realistic and attainable. Experts suggested introducing target indicators that are usually developed as goals that should be attained within a certain time period. Standards might gradually change within this period in order to finally reach the targets. Thus, the same step-wise approach is suggested: set high objectives, but give time, set out a path starting with less strict objectives, but ending at the level pursued. Such an approach incorporates economic incentives to implement clean technologies and pollution-prevention techniques.

**Reforms in the
national system of
water quality
standards
recommended**

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CABRI-Volga experts advised that deficiencies in the system of standards do not free polluters from their responsibility for pollution reduction. Among possible incentive mechanisms for meeting the standards by polluters and to make investments in environmentally benign technologies it has been suggested to introduce regular annual prizes for best businesses or enterprises; the prize-winners could be nominated by the Basin Councils. Finance could be secured from the especially established environmental fund. It is also suggested to introduce “blue labels” for facilities which contribute to water savings and water pollution reductions. Among possible effective mechanisms could be quotas for water-use, and higher fees for the water used above the established level could be a part of such system.

Gaps in the system of standards do not free polluters from emission reduction

It was recognized that serious concerns relate to the problem of non-point sources of water pollution deriving from agriculture and from urban atmospheric run-off. It was suggested, for example, to incorporate the tax for addressing and purification of atmospheric runoff into the communal sector fee. This may allow municipalities to build additional water treatment facilities, or to reinforce the existing ones. Experts underlined the need to identify best practices in agriculture and substitute ineffective agricultural technologies resulting in surface water pollution.

Non-point sources of water pollution need to be handled with

It has been recommended to increase efficiency in water-use in the Volga Basin. Particular expert discussions in CABRI-Volga focussed on enhancing the functioning of the Volga cascade. It was underlined that solving the operational problems and problems related to the poor state of some water facilities operated by RAO UES is essential.

Actions towards improvements in water-use are recommended

Experts also recommended that some Volga reservoirs including dams and water constructions such as drainage facilities need to be reconstructed. A number of technical measures for the Volga Basin need to be realised to optimize the use of hydropower and improve operations.

Finally, CABRI-Volga experts recommended that mechanisms and schemes for water allocation between the different users should be enhanced. First, the needs and demands of various water-users are to be assessed and coordinated. Based on this, a scheme for the complex use of water resources should be elaborated, including a list of priorities. Federal executive authorities should take this responsibility.

Promote innovative financing solutions (R7)

Rationale

In the EU, the internalisation of costs caused by processes and actions that damage the environment as well as the provision of incentives for more benign technologies and environmentally friendly behaviour through the use of economic instruments is high on the political agenda. It is expected that a variety of instruments will be used to fully internalise environmental costs, including taxes, regulation, obligations or commitments, and trading schemes – also sometimes summarised as “green taxation” instruments.

It is positively viewed that these alternative financing solutions involve all stakeholders and are fully reflected in the market.

As a practical example worth considering in the Volga Basin and beyond is the license system for sewage discharges in the Netherlands: Fees are paid depending on the pollution level; a fine has to be paid when limits are exceeded, and in severe cases court action is taken. In the latter case, it is possible that an industry has to close down. The taxes go into a fund which is used a) to give subsidies to enterprises to develop/implement improved technologies resulting in lower pollution levels and b) to fund enforcement and monitoring. In the Netherlands a long-term perspective is taken: polluters know in advance that taxes will be increased over a period of for example ten years. This means that actors can calculate whether investments in clean technology will pay off. Responsibilities for enforcement are clearly allocated. The Ministry has an inspection body which assesses the functioning of the agencies responsible for enforcement. The Dutch system has thus a stepwise approach with incentives to invest in the reduction of pollution.

**“Green taxation”
instruments to
internalise
environmental cost**

**A best practice
example: The Dutch
license system for
sewage discharges**

Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 7, namely to “promote innovative financing solutions”.

Table 8: Overview of activities suggested for implementation of policy recommendation 7

Recommendation 7: Promote innovative financing solutions.
<p>Activity 7.1: Reform the licensing and taxation system to promote environmental performance and to stipulate investments into good environmental practices</p> <ul style="list-style-type: none">• Apply economic and incentive mechanisms wider• Increase taxes on “pollution” and provide subsidies or tax preferences to applying pollution reduction technologies• Introduce awards for outstanding environmental performance, e.g. a progressive tax system, benefits through introduction of clean technologies• Introduce “blue labels” for facilities which contribute to water savings and water pollution reductions

Recommendation 7: Promote innovative financing solutions.

Activity 7.2: Ameliorate and develop institutional frameworks for effective financing of river basin management

- Develop an effective system of funding for river basin management
- Support innovation funds for water protection
- Introduce special funds for infrastructure protection against flooding
- Enforce mobilisation of finances from application of “polluter pays” principle

Activity 7.3: Develop and maintain innovative, sustainable financing mechanisms

- Explore innovative, sustainable financing mechanisms e.g. “polluter pays” principle, green taxation, green funds, etc.
- Further develop a legal base for sustainable finance mechanisms
- Implement and enforce the sustainable finance mechanisms

Activity 7.4: Provide incentives for private sector water conservation

- Introduce indirect subsidies for application of best environmental technologies, e.g. technology innovation funds
- Establish regional development funds in the Volga Basin to support SMEs, their access to new environmental benign technologies and involvement in R&D projects, information exchange and data sharing
- Provide incentives and support for ecological certification and promotion of eco-labeling
- Encourage public campaigns among consumers in support of green labeling

At present, the Volga River Basin generates a considerable income, but little of this is fed back into the system for maintenance and development. This goes at the expense of the river basin and will, in the long run, endanger the ecosystem and the economic benefits arising from use of ecosystem services and goods. It is recommended to introduce and/or improve innovative financing solutions¹⁹, to mobilize funds, for instance the “polluter pays” principle and other economic instruments for users of the services and goods provided by the Volga, and to develop mechanisms for the allocation of funds to the water sector.

It has been recognised by the experts involved during the three CABRI-Volga Expert Group Meetings that the effectiveness of the „polluter pays” principle which has already been in place in Russia since the 1990s needs to be increased.

It is recommended that the hydropower production in the Volga Basin should contribute to the maintenance and development of the infrastructure required including the ecosystem. The introduction of (innovative) financial instruments can already now make funds available for a sustainable development of the Volga Basin. The effective allocation of these funds requires an improved coordination among governmental bodies (see also CABRI-Volga policy recommendation 3). The development of the Volga basin is severely hampered as long as structural funding and improved coordination are not put into place.

Water needs to finance water – effective feedback mechanisms for funds required in the Volga Basin

Structural funding and improved institutional coordination need to go hand-in-hand

¹⁹ Such as those used in the EU/ECE/South East European countries, e.g. “green budgetary reform initiatives”.

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The possibilities and limitations of the application of economic instruments summarised under the term “Green Taxation” should be investigated and assessed. In case such solutions be deemed appropriate (following a thorough research/review), a legislative basis for their implementation would need to be prepared - and enforced.

Among the recommendations suggested by the CABRI-Volga experts was the introduction of indirect subsidies for developing and implementing up-to-date environmental technologies (aimed at water quality improvements and water-related risk reductions), i.e. technology innovation funds. Of particular importance is the suggestion to establish regional development funds in the Volga Basin to support SMEs, their access to new environmentally benign technologies and involvement in R&D projects.

Furthermore, it is suggested to introduce “blue labels” for facilities which contribute to water savings and water pollution reductions. Among possible effective mechanisms could be quotas for water-use, and higher fees for the water used above the established level could be a part of such system.

Finally, the need for a targeted use of funds accumulated from payments by water-users exclusively for the purposes of water resources protection and conservation, e.g. for maintenance of purification or hydro-technical facilities’ infrastructure, for emergency mitigation, or for general water management is emphasized. It is recognized as an important consideration in the formation of effective financial mechanisms in water governance.

**Feasibility of
“green taxation”
instruments to be
tested**

**Funds for developing,
implementing and
accessing
environmentally
benign technologies**

**Incentives for water
conservation**

Target use of funds

Improve the information management (R8)

Rationale

Good water governance and integrated water basin management can be effective only on condition of good monitoring results and dissemination of reliable information, while bodies involved in water-related decision-making have unrestricted access to the data. Three major groups of problems in water-related data management in large river basins can be identified:

- 1) organisation of effective monitoring and data processing;
- 2) dissemination of user-friendly information to decision-makers;
- 3) regular information sharing with all stakeholders.

In the past, the hydro-meteorological and environmental monitoring network in the Volga Basin was well organized and coordinated. All laboratories and monitoring sites applied uniform procedures, protocols and reporting standards which were established and coordinated by a central body. As a result, high comparability of data was achieved. Unfortunately, this strong institutional framework was dismantled during the transition period of the 1990s. The number of surface water hydrochemical and hydrobiological water quality monitoring sites was reduced, as well as the number of analytical testing laboratories. In contrast, the current practice in Germany is that it is essential to rely on time-series and spatial (every 100 meters along a river) hydrometeorological, hydrogeological and morphological data for the effective management of rivers.

Although the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Hydromet) is a leading agency responsible for hydrological data compilation, only a fraction of all data collected in the Volga Basin reaches the Hydromet Data Centers. One of the reasons is the introduction of data charges for its consumers; data collectors prefer to deal directly with consumers. As a result, the information from different regions of the Volga Basin is fragmented, and it is difficult to get a comprehensive inventory and a thorough picture. Thus, it is difficult to have reliable information for decision-making.

The problem of data charges is characteristic not only for Russia, but for many other countries as well. It is being discussed at the international level but without much success. Data is available and ready to be shared but not everyone can afford buying data. Producers of monitoring results tend to charge for the access to their data because of limited funding they have from the government. Introduction of special fees for monitoring for example in Canada can contribute to problem solving: the fees are collected by the environmental agency and funds are used to support monitoring activities. A similar scheme is applied in the Netherlands.

Nowadays many private industrial enterprises (Lukoil, RaouES) conduct their own environmental monitoring in the Volga Basin: often they are turning out to be the main owners of updated environmental information, which is not made widely available to the general public and experts; there are also doubts concerning its quality and reliability. Another problem is that the methods of data collection and formats of their presentation differ and yield incompatible results.

Regular basin-wide monitoring and data sharing are among preconditions for good water governance

During the last decade the well-organized monitoring network in the Volga Basin has deteriorated

Data access charges limit information sharing

Private industrial companies initiated their own monitoring programmes in the Volga

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Links between data processing and decision-making are insufficient. Miscommunication is a serious problem in the Volga Basin. So far, State bodies are not very open to sharing the data. Decision-support systems are not sufficiently applied in the Volga. This is a problem within the EU as well. For example in the Netherlands, a gap and disconnection exists between policy/decision makers and scientists who design and implement monitoring programmes. Monitoring programs are essential, but are often considered as too expensive. Usually, they deal with different elements (water quality, ecology, chemistry), and different bodies are responsible for their implementation. Many decision-makers consider the amount of information generated and supplied to them excessive compared to their needs. As a result, the impression is created that considerable resources are wasted (the so called “data rich - information poor” syndrome). It is therefore essential that a) decision-makers are involved in defining what particular data sets are required, and b) compilation of data is user-friendly and presented to policy-makers in a clear and synthesised manner.

Insufficient links between data processing and dissemination to decision-makers

Communication of information about the river to the public is ineffective in the Volga Basin. Water-related data and information about practices and problems are neither clear, nor user-friendly or understandable for a layman.

Sharing and circulating information is critical to mobilising public support for actions towards river rehabilitation. There is a lack of public awareness in the Volga Basin related to water quality, water related risks and management problems. Problems emerge partly because of a limited number of available mechanisms promoting access to the required information. Information presented is often biased reflecting only approaches of a particular interest group. Water-related information dissemination through television, radio and internet is not developed well enough.

Information communication to the public is a ‘must’ in integrated water basin management

Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 8, namely to “improve the information management”.

Table 9: Overview of activities suggested for implementation of policy recommendation 8

Recommendation 8: Improve the information management
<p>Activity 8.1: Improve the monitoring system in the Volga Basin</p> <ul style="list-style-type: none"> • Revitalize the monitoring network in the Volga Basin and adjust it to modern requirements; renovate the data centers and laboratories • Increase the number of observation sites in the Volga • Unify the system of water-related data collection and analysis in the Volga Basin • Enhance coordination between different institutions responsible for data collection • Compile, process and disseminate more information about the river and its tributaries
<p>Activity 8.2: Improve the system of information and data dissemination to decision-makers</p> <ul style="list-style-type: none"> • Enhance dissemination of the monitoring results to decision-makers in a user-friendly manner • Enhance early warning of floods and regular information dissemination

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Recommendation 8: Improve the information management

- Involve representatives of decision-making bodies in defining their requirements concerning the data sets they need
- Improve regular links between policy/decision makers and scientists who design and implement monitoring programmes
- Apply forecasting methods wider in decision-making
- Apply decision-support systems in the Volga Basin

Activity 8.3: Improve the system of information sharing with all stakeholders in the river basin

- Enhance information sharing and dissemination of user-friendly data to all stakeholders
- Produce river basin annual reports, containing data on water use, water protection and water-related hazard risk reduction
- Improve early warnings to citizens about natural hazards
- Ensure regular public access to information, including Internet, television and radio
- Maintain broader dissemination of data free of charge

There are a number of general recommendations on how to improve the water basin information management. Through consultations with the CABRI-Volga experts it was underlined that integrated water basin management can only be effective if based on profound information, while water managers have unrestricted access to data. In addition, provisions have to be made to ensure easy data exchange between all actors involved (e.g. glossaries with definition of terms applied in water management, data formats including names, abbreviations, units for reporting, etc.). Tighter links and coordination should be established between monitoring and application of its results in decision-making in the Volga Basin.

The revitalization of the former well-organised monitoring infrastructure in the Volga Basin and its adjustment to contemporary monitoring requirements was strongly emphasized by the experts and should be put on top of the agenda. It is also important to develop a multi-level monitoring system (state, regional, industrial, etc.). As monitoring networks and data processing in the basin were weakened during the last decade the renovation of data centers and laboratories in a modern setting is recommended.

While discussing the problem of how to communicate data and information to decision-makers in a user-friendly manner CABRI-Volga experts referred to practical lessons learned from the European initiative on the decision-support system for river basin management - The Elbe DSS: Development of a Decision Support System for the Elbe River Basin²⁰.

Combination of river basin monitoring with dissemination of user-friendly data to decision-makers and stakeholders in the Volga Basin

Development of a decision-support system for the Volga basin

²⁰ The goal is to develop a prototype decision-support system which helps water managers to formulate an effective strategy for sustainable management of the Elbe Basin. It supports the provision of information to administrators and decision-makers on interactions of natural and anthropogenic factors within a river basin. A key aspect of the design is the combination of process models and data from different scientific disciplines in an integrated system network. Water management within a river basin is a complex task and requires integration of a number of topics; the DSS format includes: 1) water quality and reducing pollutant loads, 2) flood control and flood risks, 3) ecological state of floodplains, and 4) navigability. It also takes into account external scenarios such as climate change, agricultural policy and demographic developments.

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A decision support system (DSS) is recommended as a useful tool for decision-making allowing users to assess the impact of selected measures and alternative solutions. The Elbe DSS is user-friendly and practice-oriented, also because its development was based on a participatory approach – the data requirements of possible users such as local authorities, nature conservation organizations and others had been taken into account. Its experiences were recommended to be introduced within the Volga Basin, while its format has already been applied in the Oka River DSS.

Communication of information to the public is essential for proper water management. Water-related data and information about practices and problems should be clear and understandable for a layman. Since water-related information dissemination through television, radio and Internet is not well enough developed, it is necessary to establish close links with the mass media and make all water quality information easily accessible, understandable to the general public and transparent. Local NGOs can be a powerful driver towards problem-solving.

CABRI-Volga experts suggested a series of actions to be taken for improvement of information dissemination in flood risk reduction in the Volga Basin. As the spring floods occur annually in the basin, a better forecasting and warning system would make it easier to deal with them. The interests of different stakeholders should be coordinated and integrated into a common strategy and approaches which in turn are an integral element in flood risk reduction. A number of possible measures towards improvement of water quantity management suggested by the experts include the following:

- Better acquisition of data and information including monitoring and communication. The development and maintenance of warning and action plans could be a regular practice for flood risk reduction.
- Improving the predictions through hydrologic models could help to have a better forecast.
- Linking all information programs with education of the public living in the flood prone areas. This includes ecological education and knowledge exchange about behaviour during floods.
- Early warnings of the local public concerning floods because they need to be prepared rather than scared.

Regular information sharing with the public among priorities in data management

Improve information dissemination about floods

Encourage human capacity building (R9)

Rationale

Human capacity building is an integral element in capacity building for good water governance. Two major groups of problems in human capacity building have been identified by the CABRI-Volga experts.

First, there are loopholes in professional education and training among decision-makers in sustainable water management in the Volga Basin. It is supplemented by low status and image of environmental workers in the society. Part of the reason - along with insufficient level of professional education, is the current low level of environmental concerns among decision-makers against the economic and social priorities. This situation reflects the general trends at the national level: while at the start of the reforms at the beginning of the 1990's, the environment was at the top of the national policy agenda, then during the transition period its ranking, unfortunately, gradually shifted to the bottom of priorities of most policy-makers.

Second, in the Volga regions, public awareness in the environmental field is low, thus reflecting a comparatively low level of human capacity building. Recently, it was widely recognised that public awareness is as important for sustainable water management as for the scientific and technological development of society. Enhancing awareness and participation are not objectives in themselves – they serve the broader target of sustainable development by making decision processes within each stakeholder group better informed, and also by strengthening policy implementation through increased support of a well educated public.

The issue of public awareness and participation is relatively new. In the EU, only during the recent years higher attention is given to these issues, for instance, in the context of the EU Water Framework Directive. Many authorities in the EU are struggling to implement these new approaches in environmental practices. The authorities in the Volga Basin stand for a task which is far more demanding, given the socio-economic conditions and the size of the basin.

Part of the reason for low public awareness and participation (see also recommendation 3) is insufficient environmental education among the local public. Education is equally important as the sharing of user-friendly information about the river with the public (see also recommendation 8). As a result, there is a certain 'misfit' between three interrelated elements in human capacity building, i.e. between public awareness and participation – public education – information sharing with the public. All these three elements need to function together and be coordinated.

Gaps in professional education are coupled with low ecological concerns versus economic and social priorities

Misfit between three interlinked elements: public awareness – public education – public access to information

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Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 9, namely to “encourage human capacity building”.

Table 10: Overview of activities suggested for implementation of policy recommendation 9

Recommendation 9: Encourage human capacity building
<p>Activity 9.1: Build human capacities in water management through education programmes</p> <ul style="list-style-type: none"> • Set up special training courses and training centers for professionals and water managers • Develop regular education and life-long learning • Enhance the image of people working for the environment • Increase salaries of environmental workers • Enhance participation of scientific community in professional education and training • Integrate traditional knowledge about water management in local water conservation programmes
<p>Activity 9.2: Raise public awareness by making environmental education an integral part of cultural education</p> <ul style="list-style-type: none"> • Introduce the “parents’ education through their children” approach • Start ecological education in kindergarten and schools • Support NGOs mission in environmental education for all groups of local population • Promote business involvement in environmental education programmes • Involve children and students in river monitoring and clean-up (‘learning-by-doing’)

In consideration of various options to enhance human capacity building in sustainable water management in the Volga Basin, the experts of the CABRI-Volga discussion fora suggested paying particular attention to overcoming a number of existing loopholes related to two major aspects of the problem. First, they recommend building human capacity through modern education programmes for decision-makers and professionals involved in water management. Second, experts advised enhancing public education in sustainable use and protection of water resources.

A package of policy recommendations and actions aimed at enhancing human capacity in water management has been formulated. It is suggested as an integral element of the general capacity building for good water governance in the Volga Basin.

A list of recommendations to decision-makers and practitioners representing various stakeholder groups was suggested. A particular focus of these recommendations is on how to improve human capacity in the society, i.e. through mobilisation of human potential of all stakeholder groups – from managers and professionals to the local public. Experts did not consider human capacity building as a target in itself, but underlined that it is important for the overall goal of sustainable water basin management and enhancing the life quality in the Volga livelihoods.

Modern education programmes for decision-makers & professionals as well as for the local public

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Within their consultations, CABRI-Volga experts identified a number of general principles that can be used as a red thread within the human capacity building efforts in the basin:

- Increasing the role of environmental protection and sustainable water use within the regional and local policy-making
- Combining ecological, social, cultural and economic concerns within education programmes
- Ensuring life-long education and training
- Involving all stakeholder groups in education and training
- Designing special education programmes for various generations
- Combining innovative approaches with rich traditional knowledge of the local public
- Relying on broad dissemination of modern knowledge and good practices
- Providing learning from practices and exchange of experiences between the Volga and the EU river basins

CABRI-Volga experts recommended seeking for new forms in providing support to the development of environmental education of both professionals and the local public. For example, they underlined the need to broader involve the business and scientists in designing and support of education programmes. Furthermore, they referred to recent interesting lessons from the Volga Delta areas: The oil producing company LUKOIL put its efforts into ecological public education in Astrakhan oblast. It supports initiatives of ecological competitions organized in schools and colleges of Astrakhan. LUKOIL regularly organizes public hearings and workshops on prospects of its activities in oil and gas development in the region, and specialists in environmental protection and conservation are invited to take active part in them. These experiences were recommended to be borrowed and transferred to other regions of the Volga Basin.

CABRI-Volga experts advised to put special emphasis on the development of environmental education programmes for children and students. They suggested using the experiences of the Pushino Scientific Center in involving children in specially designed sampling and bio-monitoring programmes in the Oka during the summer periods. Children can learn about their river and their neighborhoods from practical action, thus supplementing the learning process within their regular curriculum at schools.

**Eight principles for
human capacity
building**

**Useful examples of
business
involvement**

**Specially-designed
bio-monitoring
programmes for
children**

Invest human and financial resources in the continued Volga Basin development (R10)

Rationale

Sustainable development in the Volga Basin and integrated water basin management are closely interlinked. Within these two concepts, there is a growing understanding that the integration of environmental, economic and social concerns is of utmost importance. The management of natural resources and ecosystems must be built on a multi-disciplinary approach encapsulating good coordination, cooperation and partnerships between major stakeholders based on transparency and access to information, as well as on local public participation and initiative. Although significant advances have been made in the Volga Basin during the last decade in integrating institutional coordination and multi-stakeholder partnerships into river basin management, as with other large river basins in the European Union, coordination still remains a challenge.

River basin management in general, and in the Volga Basin in particular, is highly dependent on broader socio-economic, regional and national contexts. The current socio-economic situation in the Volga Basin defines major future trends in water-related risk reduction. Stable socio-economic development is an important driving force for environmental amelioration in the basin, since environmental measures need to be financed and this requires a healthy, taxable economy. Today, the Volga Basin, while accounting for only 8 percent of Russia's territory, contributes to nearly 45 percent of the total domestic industrial output, and 50 percent of its agricultural production. During the recent years the high economic growth rates (annual GDP growth account for 6-7 percent) coupled with significant increase of investments create important opportunities for sustainable development in the Volga Basin. However, there is an increasing concern that it might result in growing load on environment and natural resources. Thus, practical solutions about how to decouple the rapid economic growth from pressure on environment are needed from decision-makers and scientists. At the same time, the rapid growth of modern corporations is among the major drivers of innovation and technological change in the basin. Consequently, there is an increasing diversity of actors with multiple interests towards the sustainable development agenda. All these create an important framework for the good water governance in the basin, and the major challenge is how these opportunities would be used in practice.

It is often found that the poor state of the environment or water-related problems are directly linked to the deterioration in human health, social problems and a particular demographic profile. Currently, in the Volga Basin, like in many other Russian regions, the social and demographic risks, and hence societal vulnerabilities, are high. A considerable portion of the Volga Basin's population lives in poverty. About 43 percent have an income lower than the minimum subsistence level. Among the most alarming indicators of human insecurity is a declining population, which has been the case since the early 1990s. Current mortality rates in the Volga Basin are higher than the birth rates, while life expectancy (66 years) has also declined

Coordination between environmental, social and economic concerns essential for the Volga Basin development

Recent rapid economic growth needs to be decoupled from resulting environmental pressures

Decreasing life expectancy in the Volga Basin

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over the last decade²¹. Significant efforts are to be taken to solve social problems, combat poverty and enhance the quality of life in the Volga regions. Action toward sustainable water use and water protection is among important priorities within such an agenda.

According to official sources, wastewater discharges in the Volga Basin were reduced by about one-third during the nineties. The major reasons are the decline in industrial production brought about by economic crisis. A comparatively modest share in the reduction of wastewater discharges has been achieved through the installation of new purification facilities and technological innovation. Water discharges may even increase under the current economic growth. However, the expanding economy is also expected to finance the environmental clean-up. Recently, there have been promising signs for instance that in some Volga regions, economic growth has been achieved in parallel with declining levels of water pollution.

**Expanding economy
is expected to
finance the water
quality amelioration**

Recommendations and Activities

The following table provides an overview of the activities suggested for the CABRI-Volga policy recommendation 10, namely to “invest human and financial resources in the continued Volga Basin development”.

Table 11: Overview of activities suggested for implementation of policy recommendation 10

Recommendation 10: Invest human and financial resource in the continued Volga Basin development
<p>Activity 10.1: Enhance the interface between science and practice in sustainable development of the Volga Basin</p> <ul style="list-style-type: none"> • Incorporate the sustainable development approaches into integrated water management in the Volga Basin • Identify possible tools and mechanisms for decoupling the economic development in the Volga Basin from pressures on water resources and test them in practice • Mobilise growing investment opportunities in the Volga regions for sustainable water use and water quality amelioration • Develop methodology for integrated assessment of risks associated with hydro-facilities and water distribution networks
<p>Activity 10.2: Enhance multi-stakeholder partnerships for river basin management</p> <ul style="list-style-type: none"> • Support for cooperation and partnerships between the regions of the Volga Basin in water management • Identify instruments for enhancing various forms of stakeholders’ ‘acting’ partnerships along the river and coordination between their interests • Enhance and support the local public awareness and participation in water-related risk reduction and in practical action for rehabilitation of the river basin • Develop mechanisms and tools to enhance joint action and interactions between government-business-civil society in water quality amelioration

²¹ At the beginning of the 21st century Russia ranked first amongst developed countries on the mortality index and 51st in the world for average life expectancy.

Recommendation 10: Invest human and financial resource in the continued Volga Basin development

Activity 10.3: Develop pilot projects to demonstrate the perspectives and challenges of innovative water management

- Develop and implement a project in the Volga sub-basin to test new mechanisms of river basin management in practice
- Develop and implement a project to assess the human vulnerability in local livelihoods to water-related natural hazards (floods, droughts) and to formulate possible policy responses
- Develop and implement a project to identify possible social and economic impacts of climate change and respective adaptive water management strategies (case studies in the Upper and Lower Volga)

Activity 10.4: Promote EU-RF cooperation and exchange of knowledge and practices

- Incorporate water-related environmental risk management and related human security issues into the new Partnership Cooperation Agreement between the EU and Russia
- Promote twinning initiatives and develop partnerships between the Volga and river basins in the EU; start with scientific cooperation and exchange of data
- Support European investment resulting in water conservation/protection in the Volga Basin
- Joint research and scientific cooperation in application of integrated water management approaches in large river basins in the EU and Russia
- Exchange and application of best practices in sustainable development that combine both socio-economic interests and ecosystem conservation
- Organisation of monitoring and research for effective management of large river basins and exchange of data

In consideration of various options of investing human and financial resources into the continued Volga Basin development the experts of the CABRI-Volga discussion fora suggested concentrating a particular attention and practical efforts along the following major directions:

**Four major avenues
for practical action**

- Enhancing the interface between science and practice in sustainable development of the Volga Basin
- Enhancing multi-stakeholder partnerships for water basin management
- Developing a set of pilot projects to test innovative water management
- Developing EU-RF cooperation and partnerships

A package of policy recommendations and actions aimed at effective investment of human and financial resources for the Volga Basin development has been formulated. This list of recommendations and actions targets decision-makers and practitioners representing various stakeholder groups.

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A particular focus of these recommendations is on how to effectively contribute to development and good water governance in the Volga Basin. They envisage elaboration of the major approaches to future development strategies and combining them with practical action - through testing these approaches in the sub-basins or locales in the Volga. The overall goal of these efforts is sustainable water basin management and enhancing the life quality and development pathways in the Volga livelihoods.

Elaboration and testing of development strategies in the Volga Basin

CABRI-Volga experts recommended that significant research efforts based on multidisciplinary principles as being essential. The expert recommendations for future research are summarised in the CABRI-Volga Action Plan and Research Agenda (CABRI-Volga Consortium, 2007b).

Practical action needs to be combined with further research

CABRI-Volga experts regard the EU among important stakeholders that can have an impact on the decision-making process in environmental risk reduction in the Volga Basin. They underline that cooperation of the Volga regions with their counterparts in Europe and twinning partnerships are of a growing importance. Starting from spring 2005, the Road Maps in cooperation between EU and Russia were initiated. There is an expert opinion that common environmental space should be in the focus of a special Road Map. It should not be diffused within common economic space, although there are close and integral links between them within sustainable development pathways. Specific project proposals for building common environmental space and development of international twinings might be a backbone for common environmental space formation.

EU regarded as an important stakeholder impacting decision-making in the Volga Basin

CABRI-Volga experts recommended that good practices and tools for coordination between stakeholders in environmental risk management in river basins should be exchanged and transferred between Russia and the EU countries. However, national conditions, cultural, economic, social and political peculiarities are to be carefully taken into account. There was also an opinion that 'packaging and transfer' of practices across river basins, or across national borders might be misleading. In that respect, the alternative possible option might be learning from each other in creating capacities and building preconditions that promote equal access, effectiveness, transparency, openness in water protection and conservation within river basins.

EU – RF twinning partnerships in the Volga Basin are essential

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