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**Integrated water resources management for sustainable
freshwater supply:
challenges and solutions in the Russian Federation**

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INTEGRATED WATER RESOURCES MANAGEMENT FOR SUSTAINABLE FRESHWATER SUPPLY

Challenges and Solutions in the Russian Federation

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Abstract

Russia has access to significant water resources, but diverse geographic and climatic conditions cause an unbalanced situation between water availability and socio-economic interests. Global experience shows that incidents of freshwater stress and risks of water shortage can be reduced, provided that effective integrated basin-wide water basin management is established before situations of water crisis emerge.

Introduction

A UNEP project on integrated water resources management for sustainable freshwater supply in the Russian Federation has explored the need for freshwater protection and rational freshwater use in the context of aquatic ecosystems. The objectives of the projects were to:

- Raise awareness in the Russian Federation of the principles of the “Updated water policy and strategy of the United Nations Environment Programme as for the period 2007-2012 with respect to freshwater,” and
- Increase capacity for ecologically based integrated freshwater resources management in the Russian Federation, using the near Caspian region as a model region.

The project was managed by the Centre for International Projects (CIP) of the Russian Federation in co-operation with specialists from the Institute of Water Problems of the Russian Academy of Sciences. The key outputs were:

1. An assessment of the current state of water resources in the Russian Federation and capacity needs for implementation of the provisions under the “Updated water policy and strategy of the United Nations Environment Programme as for the period 2007-2012 with respect to freshwater”, and
2. Recommendations on improvement of water resources management in the near Caspian region of the Russian Federation. The Astrakhan oblast¹, Republics of Kalmykia and Dagestan were selected for the assessment due to issues with both drinking water supplies and the fishing industry.

Challenges

The global challenge of freshwater protection and rational use is closely connected to the need to protect aquatic ecosystems and to prevent deterioration of water catchment areas. In Russia, the regional climatic and socio-economic conditions are closely related to the emerging zones of freshwater stress and insufficient water supply in the south of Russia, the Trans-Baikal area and eastern Siberia. Access to water is especially critical in the arid areas of European Russia and in the dry-steppe and semi-desert regions of the Astrakhan oblast, Stavropol krai², Krasnodar krai, and the Republics of Dagestan and Kalmykia. The Astrakhan oblast, Republics of Kalmykia and Dagestan were selected for the assessment due to issues with both drinking water supplies and the fishing industry.

The current water deficit can be reduced by improved water management, because it is partly caused by anthropogenic activities such as water consumption, domestic and industrial pollution of river basins and coastal waters, insufficient environmental flows downstream of water reservoirs and water loss due to inefficient water use. The impact of pollution is amplified by the fact that aquatic and coastal ecosystems that normally would contribute to the purification of water, are under strong anthropogenic stress. The water quality of the Lower Volga and its delta is, for example, deteriorating. The river basin is already subject to long-term integrated studies, including climate change impacts.

The most important problem of the water sector in the model region - Russia's near Caspian region - is the poor water quality due to pollution from already regulated domestic and industrial waste water discharges. Measures to improve the situation should include modernization of the current water regulations and adequate institutional arrangements. Improved monitoring and cross-sectoral data sharing should also be introduced to put decision-makers in a better position to meet the water needs of both aquatic ecosystems and people.

Solutions

The “Updated water policy and strategy of the United Nations Environment Programme for the period 2007-2012 with respect to freshwater” was adopted by the 24th Session of the UNEP Governing Council in 2007. The UNEP policy represents internationally acknowledged water management principles and recognizes ecosystem services as an integral part of water management. Integrated water resources management (IWRM), implemented on the basis of the ecosystem approach, is a mechanism to achieve good water supply and sanitary services and associated benefits such as economic growth, improved health and poverty alleviation. IWRM, including cooperation regarding transboundary water resources, is recognized by the Russian Federation as a useful framework for water management in Russia and compatible with the Water Strategy of the Russian Federation for the period through 2020.

Under this featured project, an ecosystem based approach was firstly recommended to ensure sustainable water supply and conservation of freshwater resources in the near Caspian region. To get started, there will be a need to further identify and value the impact of aquatic and terrestrial ecosystems on both water quantity and quality. Secondly, a Programme-Targeted Approach (PTA) was recommended, which considers each hydrological basin as one comprehensive ecosystem, linking freshwater to forests, wetlands, agricultural, urban and coastal zones.

¹Oblast – type of administrative division

²Krai – federal subject of Russia

The approach promotes cross-sectoral integration of aquatic ecosystem provisions into international agreements and national targets relevant to water resources and socio-economic development. It stimulates improved water resources assessments, institutional water conservation capacities and raises awareness of the importance of aquatic ecosystem services. In particular, it opens up to innovative solutions through scientific research and investments in organizational, economic and technical development.

The key principles of PTA in the water sector include:

- Identification of goals and hierarchy of supporting objectives;
- A phased approach to achieve complex objectives;
- Agreements across different management levels, as well as among major implementers;
- Formally agreed responsibilities among implementers of the targeted programmes;
- Provisions for resource sharing by combining centralized and decentralized distribution and general control of financial streams;
- Provisions for permanent monitoring, informational sharing and control of the implementation process;
- Promotion of favourable environmental conditions;
- Adaptation strategies to changing environmental conditions.

A PTA is particularly suited to address the water sector challenges facing the near Caspian region. The region's water resources are subject to conflicting interests both in terms of amount and timing of water allocations. The manufacturing industry and urban areas use water resources almost evenly throughout the year. The agricultural sector needs water for irrigation in summer, the fishing industry needs environmentally sustainable water levels in spring, the hydropower plants are most active in winter and the navigation activities are most prominent during summer and autumn.

The recommended PTA was developed on the basis of the environmental and socio-economic assessments in the near Caspian region. The PTA should be based on official legal documents regulating water resources management, such as the "Rules for water resources use of the Volgograd reservoir" adopted in 1961. The rules are designed to protect navigation, energy production, agriculture and fisheries. They determine the regime for spring flows from reservoirs; starting time, duration, volume of maximum water flows and gradation. The rules were updated in 1982, and limit the time for reservoir spring flows to the second and third week of April and set the dates for maximum discharges between the third week of May and early June.

The project has identified four high priority PTA actions to be designed and implemented over the next 10-20 years:

1. The development of an integrated information system for water sector decisions;
2. The development of "Schemes of Integrated Water Objects Use" and protection for improved water development planning;
3. The improvement of water use and protection management systems for the lower basins of the rivers Volga, Terek, Sulak and Sunzha;
4. The development of scientific assessments of the water sector problems in the near Caspian region.

The first actions to improve water quality would be to improve the regulatory basis for water management, modernize the scheme for pollution charges, promote the development of effective water treatment facilities and to strengthen monitoring and data sharing systems.

Water data and information should be made available to all stakeholders to ensure scientific and institutional capacity and confidence building among partners. The Ministry of Natural Resources and the Environment of the Russian Federation, relevant research institutions and NGOs, are well placed to disseminate data and to implement IWRM taking into consideration the specific water resources situation in the region and national water sector activities.

The project outcomes were presented at an expert meeting entitled "Assessment of the current state of water resources in the Russian Federation with regard to the objectives aimed at ensuring environmental stability in

the field of integrated water resources management and capacity needs for implementation of such objectives” organized by the Institute of Water Problems of the Russian Academy in April 2010. The expert meeting concluded that international best practice for freshwater resource management, such as those of the UNEP water policy and strategy, should gradually be introduced in the Russian Federation. At managerial level, an integrated basin-wide water commission should be established for improved decision-making and cross-sectoral and inter-agency cooperation.

The expert meeting concluded further that a strategic action to improve water quality in the Russian Federation would be to review the current schemes for water pricing and waste water treatment financing. In particular, the economic and environmental effects of new water tariffs based on consumption thresholds combined with a water accounting system should be explored. The need to improve technical standards for existing hydrological structures and to develop flood plans for resettlement, eco-engineered controlled flooding areas, monitoring and early warning systems should also be addressed.

The principle action towards ecosystem restoration and conservation in the Lower Volga and Northern Caspian region would be to revise the management regime for the Kama Cascade. Environmental flows needed to sustain migratory and semi-anadromous fish in the lower Volga and its delta should be maintained at all times through a combination of reduced water use, such as more efficient irrigated agriculture, and integrated management of all Volga-Caspian-Cascade water reservoirs. The actions to maintain access to safe drinking water, healthy fisheries and to reduce pollution of the marine environment of the Caspian Sea from land-based sources, would also be compatible with the Framework Convention on the Protection of the Marine Environment of the Caspian Sea and its Strategic Action Programme (Tehran Convention).

The pollution of surface and ground waters the Russian Federation is of environmental and socio-economic concern. The poor water quality is a result of insufficient drinking and waste water treatment and transportation and pollution from non-point sources. The water quality improvements will require adoption of complex and integrated measures within a Programme Targeted Approach framework.

The project recommendations would serve to promote the adoption of high priority measures for the protection and rational use of water resources in the near Caspian region of the Russian Federation. The recommendations are also useful to, and complement, the UNEP-GEF capacity building project on self-assessment for global environmental management, the UNDP-GEF project on the Lower Volga wetlands and Specially Protected Areas and other international projects in the Volga river basin.