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Draft report on the Implementation of the principles of Integrated Water Resources Management in the context of the National Policy Dialogues in Eastern Europe, Caucasus and Central Asia

Prepared by UNECE and OECD

Summary

The purpose of this draft report is to give an overview of implementation of the Integrated Water Resources Management (IWRM) principles and water sector reforms in the countries of Eastern Europe, Caucasus and Central Asia (EECCA), with a focus on the development of institutional and legal frameworks. The report provides baseline data from ten EECCA countries as of late 2012. Findings of the report are mainly based on responses to a comprehensive questionnaire by water and environmental experts in the EECCA countries.

Key conclusions are following:

- The countries of EECCA region are increasingly applying principles of Integrated Water Resources Management (IWRM).
- While the work to introduce basin water management has started in the region, but much needs to be done with regard to establishing the legal and institutional frameworks for basin management.
- The need for coordination between different sectors on water use issues is reflected in national legislation across the region. Achieving institutional stability is one of the challenges for reaching fruitful vertical and horizontal coordination.
- Public participation and involvement of stakeholders in the decision-making process on water management issues remains a challenge while the access to information on water is generally better organised.
- Conservation of water-dependent ecosystems and protection of water quality are weak in the region. Water quality monitoring systems are underfunded and new areas such as ecosystem and biological monitoring need to be introduced.
- While economic instruments are mentioned in national legislations, they will only deliver if properly designed and effectively implemented.
- The National Policy Dialogue (NPD) process helps EECCA countries to understand better and step-by-step apply IWRM principles and to broaden the horizontal cooperation through maintaining regular multi-stakeholder discussions.

Implementation of the principles of Integrated Water Resources Management in the context of the National Policy Dialogues in Eastern Europe, Caucasus and Central Asia

Benchmarking report 2013

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Content

Background

The purpose of this report is to give an overview of implementation of the Integrated Water Resources Management (IWRM) principles and water sector reforms in the countries of Eastern Europe, Caucasus and Central Asia (EECCA), with a focus on the development of institutional and legal frameworks. The mapping and suggestions for further activities are done as part of the project "Support to the EU Water Initiative in Eastern Europe, the Caucasus and Central Asia (EECCA)", financed by the European Commission and carried out by UNECE and OECD.[1] Within the project, National Policy Dialogues (NPDs) are conducted or being initiated in ten countries of the region. NPDs provide a platform for participatory processes for developing national water policies in the EECCA region.

This report provides baseline data from EECCA countries as of late 2012. A second benchmarking report is envisaged for the end of 2015. These reports will make it possible to draw conclusions on the progress achieved by EECCA countries in implementation of IWRM principles and the water sector reforms, including as a result of the policy dialogues.

This report is structured in accordance with key IWRM principles and it describes the efforts to create institutional and legal frameworks and implement IWRM principles in the countries of the region. It also informs about the contribution of NPDs to this process, and provides conclusions and recommendations for the further development of the national dialogues on IWRM. The report does not cover transboundary water management issues.

The report covers the following countries: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Republic of Moldova, Tajikistan, Turkmenistan and Ukraine. Findings of the report are mainly based on responses to a comprehensive questionnaire by water and environmental experts in the EECCA countries. Earlier studies on Integrated Water Resource Management in the EECCA countries have also been used in the development of this report.[2]

[1] Project EUROPEAID/DCI-ENV/2011/260-062

[2] See reports such as EUWI Technical Secretariat (2010). Note on Monitoring of Status of Integrated Water Management in EECCA Countries in 2010 as a Follow up to the 2003/04 Assessment, 16 p. Dukhovny, V., Sokolov, V., Manthrithilake, H. (eds) (2009). Integrated Water Resources Management: Putting Good Theory into Real Practice. Central Asian Experience. Tashkent, 381 p. GWP and UCC-Water (2006). Speedup of the Integrated Water Resources Management Objectives-2005 Implementation in Central Asia. Progress Report November 2005-November 2006. Tashkent, 159 p. Demydenko, A. (2004). Status and plans of EECCA countries in fulfilling the WSSD target on IWRM-plans by 2005. Moscow, 17 p. GWP Central Asia and Caucasus (2004). IWRM Principles Implementation in the Countries of Central Asia and Caucasus. Tashkent, 120 p.

Introduction

Application of the Integrated Water Resources Management (IWRM) principles in the EECCA countries is taking place as part of the efforts to improve water management and in line with the international commitments of the EECCA countries in the area of water management and protection.

The Implementation Plan adopted at the 2002 World Summit on Sustainable Development in Johannesburg set the objective to develop national integrated water resources management and water efficiency plans by 2005.[3] Water-related Millennium Development Goals have become an important framework to foster action on water supply and sanitation (WSS) at the national level until 2015. Water may have an even more prominent place in the post-2015 development agenda.

There is a comprehensive international framework that helps interested countries to introduce and implement the principles of the IWRM. The Water Framework Directive of the European Union and its daughter directives provide an example of a comprehensive approach towards implementation of the IWRM principles. Many of the countries in the region are Parties to the 1992 UNECE Water Convention[4] that lays down principles for IWRM and transboundary cooperation. Its Protocol on Water and Health takes a broader approach to protect human health and well-being by better water management, building on IWRM principles.

For the current benchmarking study a simple set of five principles has been chosen to reflect the basic conditions to be put in place in EECCA countries in order to enable IWRM.[5]

It is a general trend that EECCA countries have taken steps towards creating an enabling environment (policy, legal and institutional framework) for introduction of IWRM principles of water management, in particular the principle to manage water on the level of basins. Some countries have progressed more, including Armenia, Kazakhstan, Kyrgyz Republic, Republic of Moldova and Ukraine while the process is in earlier stages in countries such as Azerbaijan, Georgia, Tajikistan and Turkmenistan. There are promising examples of rapid progress once water sector reforms, especially in protection and management of waters become a political priority. The harmonization with the environmental and water legislation of the European Union and accession to UNECE Water Convention have been important drivers in several countries. The National Policy Dialogue (NPD) process has helped EECCA countries to understand and apply IWRM principles and to maintain regular multi-stakeholder discussions to develop and improve national water policies, as well as transboundary water cooperation.

[3] www.johannesburgsummit.org/html/documents/summit_docs/2309_planfinal.htm (see Paragraph 25)
[4] Convention on the Protection and Use of Transboundary Watercourses and International Lakes (see http://www.unece.org/env/water/text/text.html)
[5] When choosing the principles, the guiding principles of IWRM by the 1992 International Conference on Water and Environment in Dublin and the selection and explanation of principles by the Scientific and Information Center of the Interstate Commission for Water Coordination (SIC ICWC) and Global Water Partnership - CACENA were studied (see Dukhovny, V., Sokolov, V., Manthrithilake, H. (eds) (2009). Integrated Water Resources Management: Putting Good Theory into Real Practice. Central Asian Experience. Tashkent, 381 p.).

Principle 1. Basin management

Explanation of principle

Rivers and other water bodies often cross administrative or national borders. Implementation of the principle on basin management and involvement of interested stakeholders allows taking due account of the natural characteristics and facilitates an efficient management of the water resources, while overcoming the challenges of complex coordination between different administrative entities. As water is in complex circulation, the consideration of the interactions between all types of waters – surface water, groundwater, and return waters – is important for the management and protection of water resources.

Regional overview

All countries of the region have some historic background of river basin management from the Soviet period. The Schemes of Integrated Use and Protection of Water Resources had similar features to IWRM but were not developed applying a participatory process and did not properly address environmental aspects. Application of the basin approach, i.e. transition from administrative borders to hydrographic borders, is now an important part of the process to introduce Integrated Water Resource Management in EECCA region. In some countries modern basin management has been or is being introduced, while in a few countries much work remains. Overall much remains to be done to establish the legal and institutional frameworks for hydrographic basin water management and make them work.

Primary legislation, e.g. a Water Law or Water Code, is in place in all countries of the EECCA region. While primary legislation in some countries requires revision to fully incorporate the principle of basin management, the important secondary, or subsidiary, legislation and implementation plans are frequent bottle-necks. River basin management plans have been prepared in only a limited number of cases. There is still an institutional inertia or even resistance towards reforming institutional structures in some countries that delays the process of overall reforms in the water sector, including the introduction of basin water management.

The first Basin Management Organizations (BMOs) were established in countries of EECCA already some 10 years ago (in Ukraine, Kazakhstan and Moldova). However, many existing BMOs are lacking resources to perform all of the desired functions such as regulation of water use, operation and maintenance, water permitting and activities related to inspection of water use. Important bottlenecks for the application of integrated water resources planning and management are limited staff capacity, low operational budget and lack of technical capabilities or expertise within the BMOs.

Country examples

In the Republic of Moldova, the main requirements for basin management are provided by the Water Law[6] of 2011, by a water management development plan for 2011-2020 and by the Concept of National Policy on Water Resources from 2002. In Kazakhstan, the Water Code[7] of 2003 is a key national legal document which establishes the principle of basin water

[6] No 272 of 22.12.2011
[7] From 09.07.2003

management. In Kyrgyzstan, the transition to the basin management approach is foreseen by the Water Code of 2005 but the basin management is only tested in pilot basins. In April 2012, Tajikistan incorporated additions to its Water Code, creating the legal framework for transfer to basin water management approach, and subsidiary legislation is being drafted. In Armenia, the National Water Policy of 2005 is the main document supporting the basin water resources management. In Ukraine, the Water Code of 1995 is setting the framework for water policy. Azerbaijan and Georgia are in the process of developing their national legislation supporting the transition to a basin management approach. In 2012, Turkmenistan started the development of the new Water Code. In the cases of Azerbaijan, Georgia, Tajikistan and Turkmenistan, the NPD process has provided support and platform for relevant developments in the legislative area.

Some of the EECCA countries have also developed the subsidiary legislation for implementation of the basin water management approach and established basin management organizations for respective basins. Azerbaijan, Tajikistan and Ukraine are in the process of developing the subsidiary legislation for implementation of the basin water management approach and establishment of basin management organizations.

According to the IWRM principles, all types of waters are to be taken into account when developing relevant policies and decisions on water management and protection. In EECCA countries, surface water and groundwater are traditionally managed by different governmental agencies: geological authorities for groundwater and water authorities for surface water, and the interaction between these agencies is usually rather limited. Lack of effective coordination between different state agencies is for example the case in Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan and Ukraine.

In Armenia out of 14 hydrological basins, draft river basin management plans have been developed for 4 river basins.[8] Development of basin plans are in the process in 4 other river basins (Akhuryan, Metsamor, Arpa, Vorotan river basins) and are expected to be finalised by the end of 2014. However, the river basin management plans developed are still not implemented, mostly due to the lack of adequate financial resources and technical capacities of BMOs. Recently, a model basin management plan has been developed for further replication with the support of the NPD process. In Armenia, return water is incorporated into river basin management plans and accounted for, while groundwater sources are not fully accounted for in the existing plans. Ukraine has developed river basin management plan for the Tisza River; plans are in the design phase for river basins of Southern Bug, Western Bug, Lower Danube, Northern Donets, Upper Dnieper and Prut. In the Republic of Moldova, the basin management plans for Prut, Black Sea district and Dniester are expected to be completed in 2015-2016. With support of the NPD process, a first draft policy document on the work of river basin councils was prepared for the state agency "Apele Moldovei", which is in charge of water management in Moldova. Groundwater is taken into account in the efforts to develop the Moldovan river basin management plans.

Kazakhstan is in the process of developing river basin management plans for all river basins of the country. With the support of the NPD process, Kyrgyzstan has initiated the development of river basin management plan for the Chu river. As part of a World Bank financed project, basin water management plans were developed in 2009 and 2011

[8] Marmarik River basin management plan (in 2008), Meghriget River basin management plan (2008), Debed River basin management plan (2010) and Aghstev River basin management plan (2010)

respectively for the rivers Talas and Kugart in Kyrgyzstan. However, the BMOs have not yet been established.

Ukraine has established Basin Management Organizations (BMOs) for all main rivers and tributaries, covering roughly 90% of water resources. Armenia adopted a decision already in 2004[9] which provides operational procedures for BMOs and a schedule for transition to the river basin management approach. The decision also defines the boundaries of the six basin management areas. The six basin water management organizations[10] have been established in Armenia under the Water Resources Management Agency of the Ministry of Nature Protection. The Republic of Moldova is in the process of developing several subsidiary legislative acts for implementation of basin management, particularly provisions on basin water management, a regulation on basin committees and a regulation on basin boundaries. In 2008, Moldova established Basin Water Management Agencies for the river basin catchments of the Prut and the Dniester under the auspices of the Agency "Apele Moldovei" – the governmental body responsible for water policy and management within the Ministry of Environment.[11]

Water resources in Kazakhstan are managed by the river basin organizations, basin inspectorates, organised according to hydrographic basins. The role and goals of inspectorates are specified in the Water Code. The eight basins[12] are in most cases parts of larger international basins. In Kyrgyzstan, the National Water Council took decision about establishment of borders of river basins across the country in February 2013 but the River Basin Organisations (RBOs) are not yet established.

Tajikistan is in the process of reforming the water sector that will result in the establishment of Basin Water Management organizations. The groundwater and return water resources are taken into account in the current territorial-administrative principle of water management. Water management in Turkmenistan is based in parallel both on the territorial-administrative and basin principles while the work supported by the NPD process prepares the country for the introduction of only basin management. The majority of water resources in Turkmenistan are delivered, allocated and distributed via the artificial main canals and not according to natural river basin catchments, which needs to be taken into account in the reform process. Groundwater resources in Turkmenistan are limited and used exclusively as a source of drinking water, and is thus not accounted for in the management of water resources for irrigation.

Challenges

There are significant challenges for EECCA countries to reach the point where all types of water are managed according to the river basin management principle. In some countries the principle remains to be incorporated into legislation (Water Law / Water Code). For most of the countries the subsidiary legislation needs to be developed, approved and enforced, as well as the guidelines for implementation of IWRM. The establishment of basins and responsible institutions, and management plans is a task for the future. In several of the countries the NPDs are providing support in developing and implementing the basin management approach.

[9] Government Decision No 1749-N
[10] Northern, Akhuryan, Araratian, Sevan, Hrazdan and Southern
[11] Established by Government Order No 1056 of 2009
[12] Basins of Ural-Caspian, Aral-Syr Darya, Chu-Talas, Balkhash-Alakol, Irtysh, Ishim, Tobol-Turgai and Nura-Sarysu

Principle 2. Inter-sectoral and vertical coordination of water management

Explanation of principle

Managing the water use is a complex challenge that needs to take into account different water users with different interests. Horizontal coordination between all relevant sectors such as drinking water supply, irrigated farming, power generation, industrial uses, recreation, as well as protection of ecosystems is vital. The domination of a centralised agency representing a single sector should be avoided. Regular coordination and joint planning involving different interests is important. It is equally important that the coordination is well organised and functioning between different levels of management: from national to basin and sub-basin levels.

Regional overview

The need for coordination between different economic sectors on water use issues is reflected in national legislation across the region. Horizontal coordination mechanisms are most typically defined in the respective national Water Codes. Special bodies and mechanisms are needed at least at national and basin levels but the establishment of these proves to be challenging. As of late 2012, intersectoral coordination bodies or mechanisms for water resource use have been established in Armenia, Kyrgyzstan, Tajikistan and Ukraine while being in the process of being established in Azerbaijan and Kazakhstan. There are currently no coordination bodies or mechanisms in Georgia, Moldova and Turkmenistan. In some countries the coordination mechanism exists on paper but is not functional.

Country examples

Throughout the region, the Steering Committees established as part of the NPD processes have become platforms contributing to horizontal cooperation between different sectors.

In Armenia the National Water Council was established in 2002[13] as required by the Water Code. The Council is the central advisory body in the area of water resources management that develops policy recommendations. However, no other stakeholder representatives besides one representative of academia are part of the Council. Chaired by the Prime Minister, the Armenian National Water Council meets regularly and had 4 meetings in 2012. Adjustments and improvements of the mechanisms for interagency cooperation by the Council are still being made.

In Tajikistan the Water-Energy Council under the Government is established for intersectoral coordination on issues linked to use of water resources. The Council consists of heads and experts of various ministries and State agencies but it can also invite outside experts, researchers and NGOs to its meetings. The Water-Energy Council of Tajikistan convenes at least twice a year. In Kyrgyzstan the National Water Council was formally established by the 2005 Water Code but convened for the first time in February 2013. In Ukraine intersectoral councils exist for the management of reservoirs for most rivers.

[13] Republic of Armenia Prime Minister's Decree No 532-N of September 16, 2002

Potential conflicts of interest exist in many countries as water authorities often have responsibilities for policy making as well as operational functions within the same institution. For example, the ministry of agriculture may include a department responsible for water management policies as well as irrigation. This overlap of responsibilities for policy making as well as irrigation is found in Kyrgyzstan and Tajikistan. The institutional setting for water management tends to improve from an IWRM perspective, as recently demonstrated in Georgia and Kazakhstan. Positive changes are also underway in Tajikistan.

In some countries fragmentation of legislation is a bottleneck, as legislation for water, environment, forestry, land use, health, etc. is not coherent. Such fragmentation is reported to be the case in Azerbaijan, Kyrgyzstan and Moldova. In the case of Kyrgyzstan, parallel legal acts regulating water use in basins and within administrative borders are in force.

Countries have taken different approaches with regard to the vertical coordination between various levels such as basin, sub-basin and, where applicable, irrigation systems. Some smaller countries such as Georgia have a more centralised system for water resource management. In Azerbaijan decision-making is also very centralised.

Challenges

One of the challenges in strengthening horizontal cooperation is the lacking ability to equally consider the needs and interests of different users of water resources. Time is needed to build trust among different stakeholders as a basis for cooperation. Including all stakeholders in coordinating bodies is a challenge in some countries.

Institutional stability is an important pre-condition for developing fruitful vertical and horizontal cooperation. It is also a challenge to provide necessary capacity building to those expected to perform new tasks as result of institutional and legal reforms, as well as ensure financial stability in water management.

In many countries the information exchange between different agencies dealing with water management is lacking or poor. Unless good-quality data is available for all involved institutions cooperation and efficient joint management cannot be achieved (see also principle 3 – Transparency and public participation).

Principle 3. Transparency and public participation

Explanation of principle

Every person and a large number of institutions and sectors are water users and therefore in principle a stakeholder in water management. The development of public participation in water resources management is a difficult challenge. Sound, sustainable decisions on long-term water use requires a broad, real participation in planning, decision-making, implementation and monitoring stages. What is required is not just to inform all relevant stakeholders but to actively engage them and take their views in due account. Transparency and openness, and water management procedures taking into account the views of stakeholders including the public, will ensure that public interests are not ignored. This will contribute to an equitable access to the water and sanitation. Special attention needs to be given to involvement of women and marginalized social groups.

Regional overview

Public participation in water resources management is included in the national legislation in the majority of EECCA countries. However, regulations laying down practical procedures for implementation of participation are largely missing. In some countries the basin councils with the involvement of various stakeholders have been established as advisory bodies to basin management organisations (BMOs). The NPD processes in most countries include regular stakeholder meetings to increase the opportunities for interested parties to participate in water policy discussions. While public participation and involvement of stakeholders in advisory bodies and the dialogue with decision-making bodies is limited, the access to information is better organised across the EECCA countries.

Principles of the Aarhus convention[14] form part of the legal framework for access to information, public participation and access to justice in all EECCA countries under discussion. Two UNECE conventions on transboundary cooperation, the Espoo Convention[15] and the Water Convention[16] include provisions relevant for access to information and public participation in water management.

Country examples

In Kazakhstan basin councils have been created for all eight basins. They include representatives of the water users and NGOs as members and meet typically 1-2 times a year. The share of representatives of the civil society in these councils ranges from 2% to 19%. Up to 30% of basin council members are women. In Moldova two sub-basin councils[17] have started working and are meeting 4-6 times a year. NGO representatives play key role in these sub-basin councils. In Ukraine the basin councils meet 1-3 times a year and serve as the main forum for involvement of the civil society.

Water user associations are natural stakeholders in the development of water sector reforms across the region. Some countries such as Tajikistan, Kyrgyzstan or Armenia have a special

[14] UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters
[15] Convention on Environmental Impact Assessment in a Transboundary Context
[16] Convention on the Protection and Use of Transboundary Watercourses and International Lakes
[17] Sub-basins of Byk and Cubolta

law on water user associations. In countries with functioning basin councils these associations participate actively, having up to 44% of the seats in some basin councils of Kazakhstan.

National legal acts that oblige authorities to disseminate information on water resources to the public exist in all countries. Moldova has specified in legislation what kind of information must be made available for free on water issues.[18] Similar clarifications are currently being prepared in Azerbaijan, Kazakhstan and Turkmenistan.

In Armenia documents such as draft river basin management plans, pending water use permits, draft water tariff strategy and draft water quality standards are subject to public notice according to the Water Code. The National Water Policy requires that while designing river basin management plans, public participation in the form of public hearings and discussions, and communication of relevant information through mass media must be organised. The Armenian Water Code and Government Resolutions also provide the possibility for the water user permit applicants and the public to file a complaint on the final decision on water use permit application.

While some countries release more information for the public, others publish only selected water-related data. For example, the data on drinking water quality is generally made available for public while information about the state of water management infrastructure is less accessible.

Challenges

Some countries need to grant and organise better access to information on water resources management. A significant challenge across the EECCA region is involvement of all interested stakeholders in water resources management. Giving a voice to stakeholders from outside the ministries and State agencies remains a big challenge. Governments must also pay attention to taking into account the interests of women and marginalized social groups. Participatory opportunities will not be fully utilized without capacity building. NPD processes offer a good opportunity to engage and empower stakeholders but cannot replace national legal and institutional frameworks.

[18] Water Law No 272 from 22.12.2011

Principle 4. Ensure sustainability of water resources use including the protection of ecosystems

Explanation of principle

While water is a renewable resource, its functions and quality have frequently deteriorated. This is why the sustainability of water and water ecosystems must be key objectives in the management of water resources. Water cannot be seen only as a resource to satisfy human needs in the short term. Water resources management shall therefore fully encompass the need for preservation of ecosystems. Climate change may lead to additional challenges with regard to the availability and quality of water resources. Such concerns need to be taken into account in the water resources management and be reflected in national strategies for adaptation to climate change.

Regional overview

In many EECCA countries environmental aspects such as the protection of water-related ecosystems or biodiversity and water quality are not fully taken into account in water management. Protection of ecosystems and ambient water quality standards are only starting to be applied systematically in the region and only a few countries are considering environmental quality parameters when issuing water use permits. All countries have set water quality objectives and criteria.

National targets with regard to the entire water cycle and prevention of water-related diseases, including targets related to water quality and environmental sustainability, are being set up in line with the UNECE/WHO-Europe Protocol on Water and Health by both Parties and non-Parties to the Protocol. A majority of the EECCA region countries are Parties to the Water Convention[19] which requires Parties to define water-quality objectives to prevent, control and reduce transboundary impact.

Environmental Impact Assessment (EIA) is applied by most of the EECCA region countries while only few are carrying out Strategic Environmental Assessments (SEA). There is a long tradition of water quality monitoring in the EECCA countries but the lack of finances and sometimes low standards of sampling and analysis has made monitoring irregular and less reliable in many of the countries. There are data gaps with regard to water ecology, and biological monitoring is largely absent.

Country examples

In particular in Central Asia, environmental authorities do not play a prominent role in water resources management. Georgia, Tajikistan, Turkmenistan and Uzbekistan are further the only remaining countries from the EECCA region not to have acceded to the Espoo Convention on EIA.[20] Only Armenia has ratified the Protocol on Strategic Environmental Assessment (SEA) while Georgia and Moldova have signed the Protocol without yet ratifying it.

[19] with exception of Armenia, Georgia, Kyrgyzstan and Tajikistan
[20] Convention on Environmental Impact Assessment in a Transboundary Context

The polluter-pays principle serves worldwide as an important approach to avoid degradation of the water quality. National legislation refers to polluter-pays principle in all of the countries of EECCA region. In addition to fees for water use, penalties are collected for excessive or non-authorized discharge of pollutants in most countries. In Turkmenistan these fees can amount to millions of USD depending on the scale of damage, while in most countries the fees are very small and do not have a real effect in terms of decreasing pollution. Only few countries of the EECCA region have joined the Convention on the Transboundary Effects of Industrial Accidents. There are however some notification procedures and bilateral cooperation agreements to be used in case of accidental pollution of transboundary water bodies.

To maintain the ecological quality of rivers a minimum flow must be guaranteed. For example, Armenia has adopted a methodology for calculation of minimum ecological flow in rivers.[21] As in many other arid and semi-arid areas the observation of minimum flow remains a challenge in Central Asian countries.

While climate change impacts are already felt in the water sector, the efforts to develop adaptation plans are still largely missing. A national strategy for adaptation of the management of water resources to the impact of climate change has been so far adopted only in Tajikistan as part of a pilot project.[22] The implementation of the strategy is just starting. In Moldova and Turkmenistan the national strategy on climate change adaptation includes references to water issues. Kyrgyzstan is currently in the process of developing the national strategy for adaptation of the management of water resources to the impact of climate change.

Challenges

For rational use of water resources different environmental planning tools need to be more widely applied in the EECCA region. Development of adaptation plans to lower the negative impacts of climate change in water sector remains also a challenge throughout region. As different stakeholders and economic sectors compete for the desired quantity and in some cases quality of water, the needs of ecosystems are often ignored. Conservation and restoration of the ecological health of rivers for the benefit of both humans and ecosystems/biodiversity need to be more centrally placed in EECCA region water management. Practical challenges are the effective functioning of monitoring systems and use of the corresponding information generated, as well as identifying, deciding on and enforcing minimum ecological flows.

[21] Government Resolution No 927-N of June 30, 2011 "On Defining Drinking-Household and Agricultural Water Demand, and Defining Minimum Ecological Flow According to River Basins of the Republic of Armenia"

[22] "The strategic program on adaptation to the climate change (SPACC)", financed by the World Bank, the European Bank for Reconstruction and Development and the Asian Development Bank (2009-2010)

Principle 5. Financial stability of water management and the use of economic instruments

Explanation of principle

The protection and use of water resources should be carefully managed and there is a need for stability of institutions and policy implementation to maintain its availability for multiple uses at present and in the future. Among other things, this requires sufficient financing for water governance, water infrastructure and the provision of water services. Water demand management should provide strong economic incentives for water conservation and protection, and promote water savings. Four key principles for sustainable financing of water resources management have been identified:[23] the **Polluter Pays** principle; the **Beneficiary Pays** principle; **Equity**; and **Coherence** between policies impacting the water sector. They all benefit from well-designed economic instruments, such as water tariffs and pollution charges.

Regional overview

In 1990s, the water sector in EECCA was substantially underfunded and there were little incentives in place for water saving. Many irrigation and water supply and sanitation systems were not operated and became obsolete with many of the operating ones being highly inefficient. Some systems built in Soviet times are now oversized and maladapted to structural changes in the demography and the economy.

At present, most EECCA countries have adopted the ***user pays*** and ***beneficiary pays*** principles, though all of them face implementation challenges. While farmers pay for irrigation water, the rates are typically very low (except in Moldova) and reflect neither the cost of the service nor the scarcity of the resource. The situation with non-consumptive use of water (for electricity generation, essentially) is even worse: in some countries (e.g. Russia, Tajikistan, Ukraine), hydropower stations pay a small fee for non-consumptive uses, while in others (e.g. Armenia, Kyrgyzstan) they pay nothing at all. Charges for water pollution from stationary sources are generally very low in the region and enforcement can be weak. There is no incentive to reduce the use of substances contributing to diffuse water pollution (such as pesticides and motor oil).

Similarly, the water supply and sanitation tariffs are low in most EECCA and fail to cover operations and maintenance costs of the service[24]. Armenia and Moldova (where households pay 1 Euro or more per cubic meter of drinking water) are exceptions. Tariff collection efficiency in WSS has substantially improved over the 2000s in most EECCA: it can be as high as 98-99% (e.g. in Armenia). In contrast, also it can be as low as 30% (e.g. for industrial water users in Tajikistan).

There are ***equity*** issues regarding water services in most EECCA. Energy suppliers (who extract a rent from using water resources) are usually not charged for the water they use. Low efficiency and poor financial status of water service providers prevent extension to currently unserved areas (typically in small towns and villages), hurting the poor most. Affordability is an issue in most countries, for both WSS and irrigation water.

[23] OECD (2012). *A Framework for Financing Water Resources Management*, Paris, 95 p.
[24] OECD (2011). *Ten Years of Water Sector Reform in Eastern Europe, Caucasus and Central Asia*, Paris, 144 p.

Policies influencing water demand and water availability (such as energy, land use and agriculture) are not always ***coherent*** with water policy objectives. Recent studies in the Kyrgyz Republic and in the Russian Federation show how subsidies (for energy and agriculture, in particular) encourage inefficient water uses and wastage[25].

Country examples

The principle "user/beneficiary pays" is reflected in the national legislation of all countries observed. However, the principle is not always implemented in practice yet: e.g. in Turkmenistan, water comes at a cost for industries, while it is free for households. In Tajikistan, all households in Dushanbe city pay a flat fee for water supply and sanitation as individual water meters are rare.

Tariffs for irrigation water vary significantly across EECCA. In June 2011, the fee for 1,000 m³ of irrigation water ranged from 0.22 USD in Kyrgyzstan to 300 USD in Moldova. Tajikistan has established the highest irrigation water tariff in Central Asia, ranging from 10-15 USD for irrigation of wheat to 90-150 USD for cultivation of rice. This measure has helped to reduce the use of water by 10% during last 10-15 years. In Turkmenistan no monetary fee is applied, provided that quantities of water used do not exceed set limits. However, 3% of the final value of the crops is deducted from farmers to cover the costs.

Government support to water users (subsidies) is widely but differently applied across the EECCA region. For example, in 2011 in the irrigation sector in Armenia, the Government subsidy amounted to some 57% of the total operation and maintenance costs on average; it varied between 20 and 80%, depending on the water user association. Affordability concerns have been among the main reasons for subsidies. At present, across Armenia payments for irrigation water supply ranges from 3% to 7% of total production costs of farmers – this is not high by international standards. However, according to an OECD report, in the Debed River Basin, water tariffs for irrigation services represent a higher share of production costs and total revenues from sales for wheat crops.

Challenges

Low efficiency of water uses, water scarcity (compounded by climate change) and/or lack of access to water services in some regions are major problems of water management in EECCA. Irrigation systems are inefficient. According to a World Bank report[26], in Central Asia, for instance, around half of the water is lost between the water intake at source and the farm. The Water Use and Farm Management Survey (WUFMAS) database created under a TACIS-funded project WARMAP suggests that on average 21% of irrigation water is wasted.[27] Irrigation systems in Central Asia certainly need rehabilitation. More efficient water use can free water for other uses and save costs related to supply augmentation.

As regards WSS, the main challenges are: (a) low efficiency of water systems, characterised by high energy consumption, labour use and non-revenue water (due to leakage or low

[25] OECD (2013), *Improving the Use of Economic Instruments for Water Resource Management in Kyrgyzstan: The Case of Lake Issyk-Kul Basin*; and OECD (forthcoming 2013), *Improving the Use of Economic Instruments for Water Resources Management and Water Complex Governance in The Russian Federation.*

[26] World Bank (2003). *Irrigation in Central Asia. Social, Economic and Environmental Considerations.* Washington, 40 p.

[27] GWP Central Asia and Caucasus (2004). *IWRM Principles Implementation in the Countries of Central Asia and Caucasus.* Tashkent, 120 p.

collection rate for water bills); (b) lack of incentives for efficient water use by end-users (if water users do not pay the bill, or if the cost of water is very low, or disconnected from actual consumption; this is typically the case when water bills are based on a norm for consumption); and (c) unsustainable business models for WSS suppliers; this is particularly the case when systems are oversized and worn out, costly to operate and maintain, and when operators fail to access regular revenue flows.

Low efficiency exacerbates the financing challenge in the sector as it creates high investment needs and calls for more finance for operation and maintenance. At the same time, the use of economic instruments can help address some of these challenges at low cost for the community and for the public purse, and generate finance for providing water services.

Note that efficiency gains have to be considered in the wider context of water resources management, taking account of needs of other users, including the environment. If water saved through efficiency gains is used to expand irrigated areas, the benefit for the environment and other users is null. Moreover, particular attention should be paid to return flows as more efficient irrigation can reduce the volume of water that returns to the environment for subsequent or downstream uses.

Another message is that financing investment and operation have to be considered jointly. Approaching investment and operation and maintenance in a coordinated manner can avoid the decay of newly built infrastructures and lower future investment needs.

Fixing these problems is a requisite to attract the financial resources needed to develop and adapt infrastructure and improve the quality of the service. Realistic financial plans can contribute to that, ensuring that the level of ambition to improve water supply and sanitation matches with capacities to finance investment and operation and maintenance. Well-designed tariffs have several benefits, when properly implemented, as they can signal resource scarcity, deter wastage and generate revenues for operators.

This will raise affordability issues. However, affordability issues are better addressed via targeted social measures than by cheap water.

Conclusions

- The countries of EECCA region are increasingly applying principles of Integrated Water Resources Management (IWRM). An enabling international framework, including the EU Water Framework Directive and the UNECE Water Convention play an important role to facilitate the transition towards IWRM principles.
- While the work to introduce basin water management has started in the region, much needs to be done with regard to establishing the legal and institutional frameworks for basin management and transforming those frameworks into practice.
- The need for coordination between different sectors on water use issues is reflected in national legislation across the region. Horizontal coordination bodies and mechanisms are usually part of the national legislation; however their effective functioning remains a challenge. Achieving institutional stability is one of the challenges for reaching fruitful vertical and horizontal coordination. Ensuring continuity of reforms, financial stability and adequate human resources remains a recurrent challenge.
- Public participation and involvement of stakeholders in the decision-making process on water management issues remains a challenge while the access to information on water is generally better organised. The participation of the public in water resources management is provided for in the national legislation in the majority of EECCA countries. However, the regulations laying down practical procedures for implementation of public participation are largely missing.
- Conservation of water-dependent ecosystems and protection of water quality are weak in the region. To protect ecosystems of rivers a minimum flow must be guaranteed. In semi-arid areas the observation of minimum flow remains a challenge. There are references to water management in national strategies on climate change adaptation only in a few countries and need to be developed in others. Water quality monitoring systems are underfunded and new areas such as ecosystem and biological monitoring need to be introduced.
- Economic instruments (including abstraction charges, pollution charges, tariffs for water services) can incentivise efficient water uses and help allocate water where it creates most value for the community, thus contributing to (green) growth. They can lower the need to augment supply and to invest in new infrastructures, thus saving scarce financial resources. They can also generate revenues for service providers. While such instruments are mentioned in national legislations, they will only deliver if properly designed and effectively implemented. This calls for strengthened capacity to monitor water use and enforce water-related regulation.
- Artificially low water tariffs hurt the poor, as they prevent the development of reliable public services. Affordability issues are a serious concern in all EECCA countries. They are better addressed through targeted social measures than through cheap water for all.

- The EUWI National Policy Dialogue (NPD) process helps EECCA countries to understand better and step-by-step apply IWRM principles and to broaden the horizontal cooperation through maintaining regular multi-stakeholder discussions to develop and improve national water policies, as well as transboundary water cooperation.