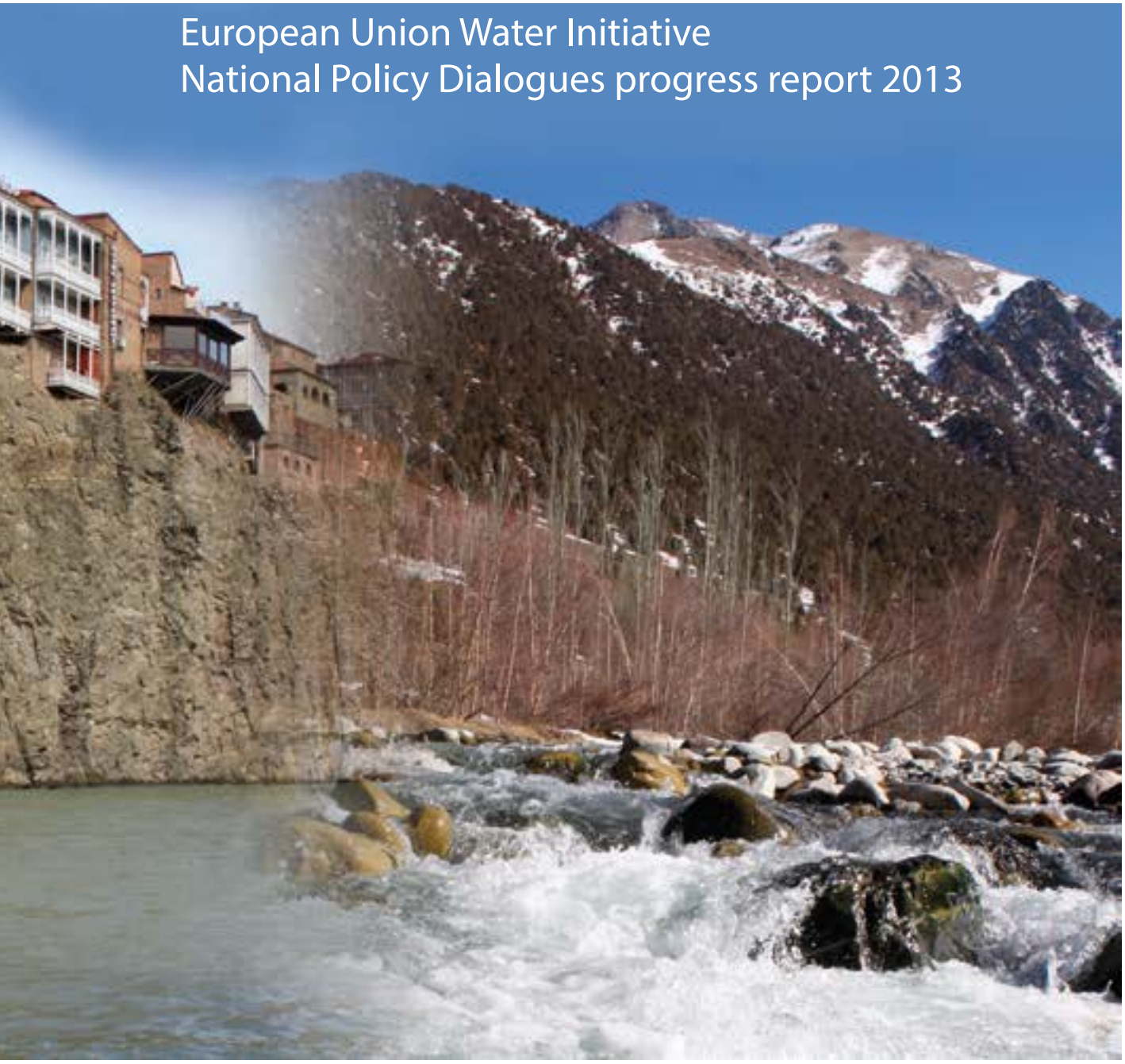
UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Integrated Water Resources Management
in Eastern Europe, the Caucasus and Central Asia

European Union Water Initiative
National Policy Dialogues progress report 2013



OECD

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Integrated Water Resources Management in Eastern Europe, the Caucasus and Central Asia

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UNITED NATIONS
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Foreword

Competition for water resources in the countries of Eastern Europe, the Caucasus and Central Asia is intensifying, driven by the growing demands from agriculture, energy producers, industry and cities. This reinforces the need to adequately protect freshwater resources in a context where climate change is creating uncertainty about future water availability. Ensuring that these competing demands are met requires a robust policy framework and appropriate investments.

Internationally recognized principles of integrated water resources management (IWRM) support these efforts. They are embodied, inter alia, in the European Union (EU) Water Framework Directive and related legislation, in the United Nations Economic Commission for Europe (ECE) Convention on the Protection and Use of Transboundary Watercourses and International Lakes and its Protocol on Water and Health and in the guidance provided by the Organization for Economic Cooperation and Development (OECD) to tranform these principles into efficient policy instruments.

Over the past decade, ECE, the EU and OECD have joined efforts to promote IWRM and to support water sector reforms in Eastern Europe, the Caucasus and Central Asia, in collaboration with a number of EU member States and international organizations. The EU Water Initiative (EUWI) is the key instrument through which such cooperation works. The EUWI has proven to be an effective platform for the exchange of knowledge in the water management sector and today, five years after its start, there is growing interest in the region to learn more from international experience and to adapt European good practice to local conditions.

This report gives an overview of water sector reforms and the status of IWRM principles in nine countries of the region. It builds on the outcomes of the National Policy Dialogues on water held in the countries of the region in the framework of the EUWI. Synthesising this experience makes it possible to assess progress and to identify where further improvements in water resources management are needed.

The report shows that the countries of Eastern Europe, the Caucasus and Central Asia are increasingly applying the principles of IWRM. This takes various forms, such as the revision of water codes, the organization of river basin councils and the development of river basin management plans, as well as an increasing reliance on economic instruments to manage water demand and to cover the costs of water services. These efforts need to be broadened and deepened to fully exploit the benefits of IWRM in the region.

EUWI National Policy Dialogues on water will continue to provide a platform for discussing the role of the water sector in the post-2015 development agenda. Building on the successes already achieved, our institutions are committed, together with the EU as the main donor, to continuing their support for the participating countries in carrying out the necessary water sector policy reforms.

Marco Keiner
Director, Environment Division
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Head of Division, Environment Directorate
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Preface

The purpose of this report is to give an overview of implementation of the IWRM principles and water sector reforms in the countries of Eastern Europe, the Caucasus and Central Asia, 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 to support the EUWI in Eastern Europe, the Caucasus and Central Asia, financed by the European Commission and carried out by ECE and OECD.[1] Within the project, NPDs are conducted or are being initiated in 10 countries of the subregion. NPDs provide a platform for participatory processes for developing national water policies in the target countries.

This report provides baseline data from countries of Eastern Europe, the Caucasus and Central Asia (the target 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 the target 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 subregion. It also details 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 deal with transboundary water management issues.

The report covers the following countries: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Tajikistan, Turkmenistan and Ukraine. The findings of the report are mainly based on responses to a comprehensive questionnaire by water and environmental experts in these countries. Earlier studies on IWRM in the countries of Eastern Europe, the Caucasus and Central Asia have also been used in the development of this report.[2]

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

[2] See V. Dukhovny, V. Sokolov, and H. Manthrithilake, eds., "Integrated Water Resources Management: Putting Good Theory into Real Practice — Central Asian Experience" (Tashkent, Scientific and Information Centre of the Interstate Commission for Water Coordination (SIC ICWC) and the Global Water Partnership for Central Asia and Caucasus (GWP CACENA), 2009); Global Water Partnership (GWP) and the United Nations Environment Programme (UNEP) Collaborating Centre on Water and Environment (UCC-Water), "Speedup of the Integrated Water Resources Management Objectives — 2005 Implementation in Central Asia", Progress Report November 2005–November 2006 (Tashkent, 2006), available from www.cawater-info.net/ucc-water/pdf/ucc_water_report_final_en.pdf; A. Demydenko, "Report on the Study 'Status and plans of EECCA countries in fulfilling the WSSD target on IWRM-plans by 2005'", prepared for the high-level meeting on the EECCA component of the EU Water Initiative (Moscow, 26–27 February 2004), available from waterwiki.net/images/d/d4/Report-on-IWRM-2005-Study.pdf; GWP CACENA, IWRM Principles Implementation in the Countries of Central Asia and Caucasus (Tashkent, 2004), available from http://www.gwp.org/Global/GWP-CACENA_Files/en/pdf/iwrm2004_e.pdf.

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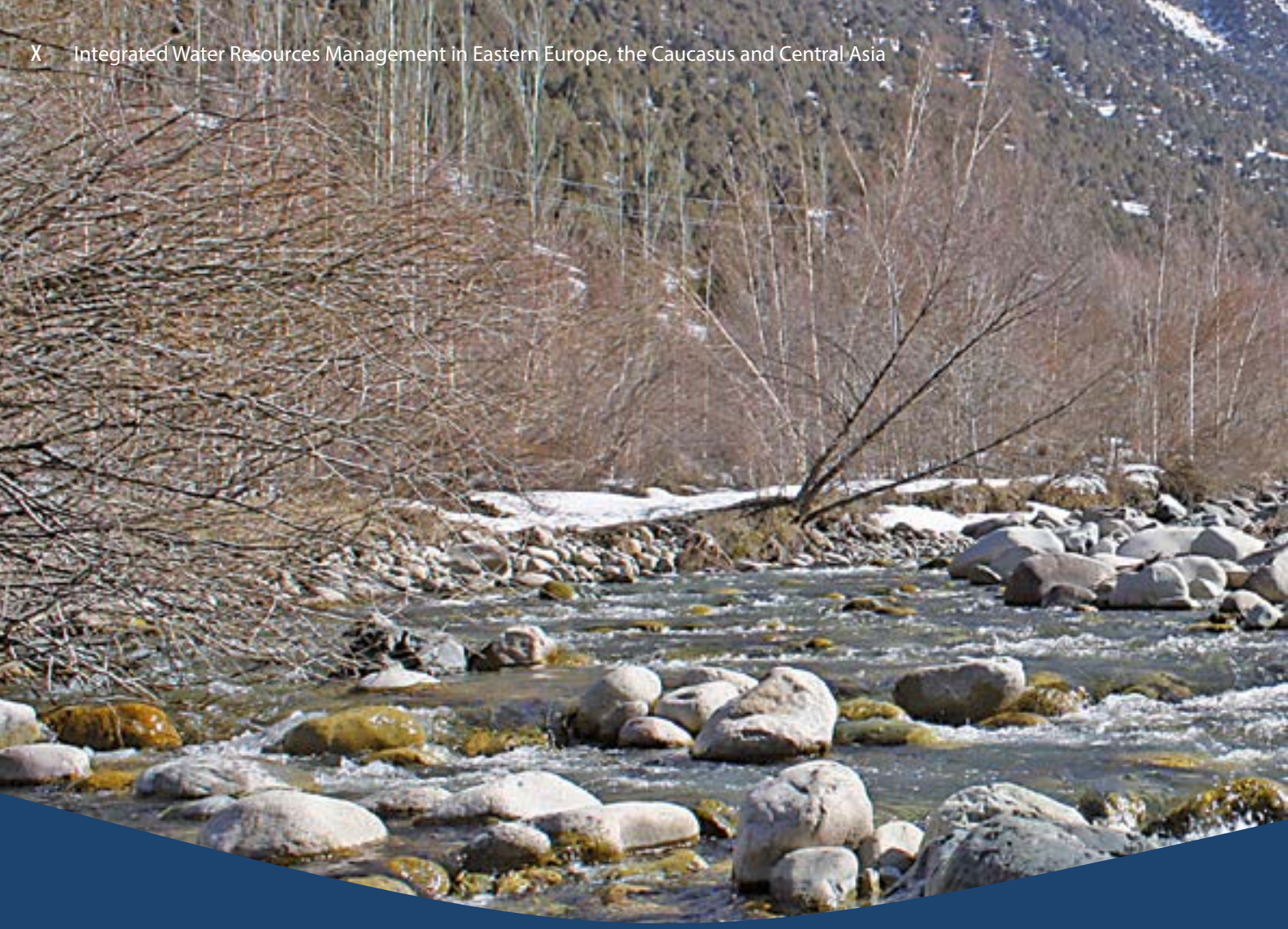


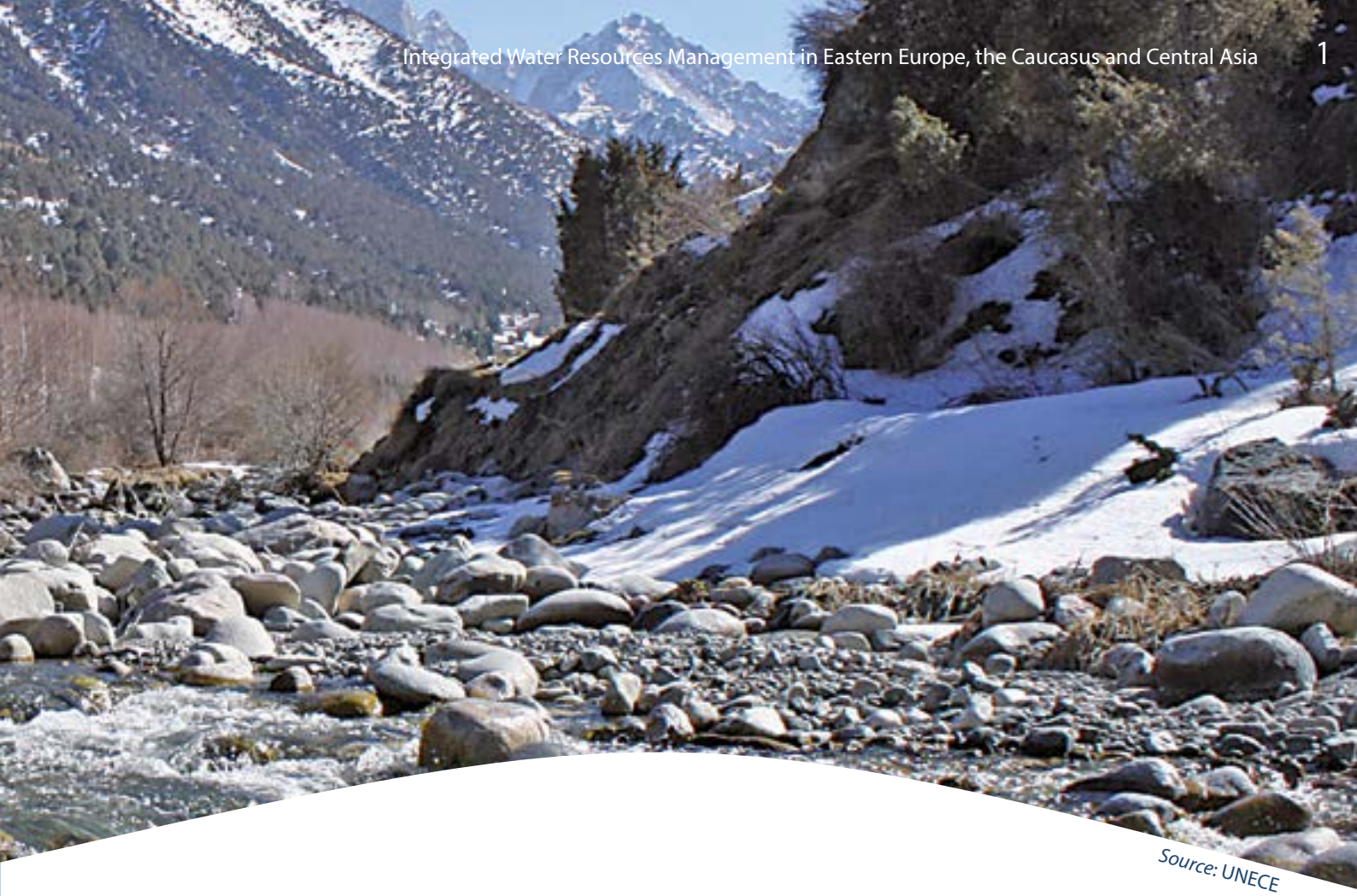
Introduction

Application of the Integrated Water Resources Management (IWRM) principles in the countries of Eastern Europe, the Caucasus and Central Asia is taking place as part of global efforts to improve water management and in line with the international commitments of these countries in the area of water management and protection.

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

There is a comprehensive multilateral framework in place to help countries of the subregion to introduce and implement the principles of IWRM. The EU Water

[3] *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August–4 September 2002* (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex, para. 25.



Source: UNECE

Framework Directive[4] and its daughter directives provide an example of a comprehensive approach towards implementation of the IWRM principles. Many of the countries in the subregion are also Parties to the 1992 ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention),[5] which lays down principles for IWRM and transboundary cooperation. The Water Convention's 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 the target countries in order to enable IWRM.[6]

Countries in Eastern Europe, the Caucasus and Central Asia have in general been taking steps towards creating an enabling environment (policy, legal and institutional framework) for the introduction of IWRM principles of water management, in particular the principle of managing water resources at the basin level. Some countries have progressed more, including Armenia, Kazakhstan, Kyrgyzstan, the Republic of Moldova and Ukraine, while the process is in earlier stages in countries such as Azerbaijan, Georgia, Tajikistan and Turkmenistan. There are, however, promising examples of rapid progress once water sector reforms, especially in protection and management of waters, become a political priority. The harmonization of national legislation with the environmental and water legislation of the EU and accession to the ECE Water Convention have been important drivers in several countries. The NPD process has helped the countries of Eastern Europe, the Caucasus and Central Asia 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.

[4] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. See http://ec.europa.eu/environment/water/water-framework/.

[5] See http://www.unece.org/env/water/text/text.html.

[6] In choosing the principles, consideration was given to the guiding principles of IWRM adopted by the 1992 International Conference on Water and Environment in Dublin and the selection and explanation of principles by SIC ICWC and GWP-CACENA (see V. Dukhovny, V. Sokolov, and H. Manthrithilake, eds., *Integrated Water Resources Management: Putting Good Theory into Real Practice*).

Principle 1. Basin management

Source: UNECE

Explanation of principle

Rivers and other water bodies often cross administrative or national borders. Implementation of the principle of basin management and the involvement of interested stakeholders allows taking due account of the natural characteristics of the water resources and facilitates their efficient management, 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 these resources.

Overview of the subregion

All countries of the subregion 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 issues. Application of the basin approach, i.e., the transition from using administrative borders to hydrographic borders in managing resources, is now an important part of the process to introduce IWRM in the subregion of Eastern Europe, the Caucasus and Central Asia. In some of these countries, modern basin management has been or is being introduced, while in a few of them much work still remains to be done. Overall, there is still a long way to go 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 subregion. While primary legislation in some of these countries requires revision to fully incorporate the principle of basin management, in addition the important secondary, or subsidiary, legislation and implementation plans are frequently lacking. 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 a basin management approach.

The first Basin Management Organizations (BMOs) were already established in countries of Eastern

Europe, the Caucasus and Central Asia some 10 years ago (in Ukraine, Kazakhstan and the Republic of Moldova). However, many existing BMOs lack the capacity and 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. Significant obstacles to the application of integrated water resources planning and management are limited staff capacity, low operational budgets and a 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[7] of 2011, a water management development plan for 2011–2020 and the 2002 Concept of National Policy on Water Resources. In Kazakhstan, the Water Code of 2003 is a key national legal document which establishes the principle of basin water management. In Kyrgyzstan, the transition to the basin management approach is foreseen by the Water Code of 2005, but basin management is only tested in pilot basins. In April 2012, Tajikistan incorporated additions to its Water Code, creating the legal framework to transfer to a basin management approach, and subsidiary legislation is being drafted. In Armenia, the National Water Policy of 2005 is the main document supporting basin-level water resources management. In Ukraine, the Water Code of 1995 sets 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 a new Water Code. In the cases of Azerbaijan, Georgia, Tajikistan and Turkmenistan, the NPD process has provided support and a platform for relevant legislative developments regarding basin management.

Some of the target countries have developed the subsidiary legislation for implementation of the basin water management approach, and established basin management organizations for the respective basins; Azerbaijan, Tajikistan and Ukraine are in the process of doing so.

According to IWRM principles, all types of waters are to be taken into account when developing relevant policies and decisions on water management and protection. In Eastern Europe, the Caucasus and Central Asia, 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. Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan and Ukraine all lack effective coordination between the different State agencies involved in water resources management.

In Armenia, draft river basin management plans have been developed for 4 of 14 hydrological basins.[8] Basin plans are in the process of being developed in four other river basins (the Akhuryan, Metsamor, Arpa and Vorotan River Basins) and are expected to be finalized by the end of 2014. However, the river basin management plans that have been developed have still not been 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, and plans are in the design phase for the Southern Bug, Western Bug, Lower Danube, Northern Donets, Upper Dnieper and Prut River Basins. In the Republic of Moldova, the basin management plans for the Prut, the Black Sea district and the Dniester are expected to be completed in 2015–2016. With the 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" (Moldovan Water), the governmental body responsible for water policy and management within the Ministry of Environment. 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 the river basins in 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, respectively, for the Talas and Kugart Rivers in Kyrgyzstan. However, the BMOs have not yet been established.

Ukraine has established BMOs for all the main rivers and tributaries in the country, covering roughly 90 per cent of its water resources. Armenia adopted a decision

[7] No. 272 of 22 December 2011.

[8] The Marmarik River Basin Management Plan (2008), the Meghriget River Basin Management Plan (2008), the Debed River Basin Management Plan (2010) and the Aghstev River Basin Management Plan (2010).

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 BMOs[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, the Republic of Moldova established Basin Water Management Agencies for the river basin catchments of the Prut and the Dniester under the auspices of the "Apele Moldovei" Agency.[11]

Water resources in Kazakhstan are managed by the river basin organizations and basin inspectorates, organized 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 led by the Prime Minister established the borders of the river basins across the country in February 2013, but no River Basin Organizations (RBOs) have yet been established.

Tajikistan is in the process of reforming its water sector, which that will result in the establishment of BMOs. The groundwater and return water resources are taken into account in the current territorial-administrative principle of water management. Water management in Turkmenistan is currently based both on territorial-administrative and on basin principles, while the work supported by the NPD process is preparing the country for the introduction of basin-only 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 are thus not accounted for in the management of water resources for irrigation.

Challenges

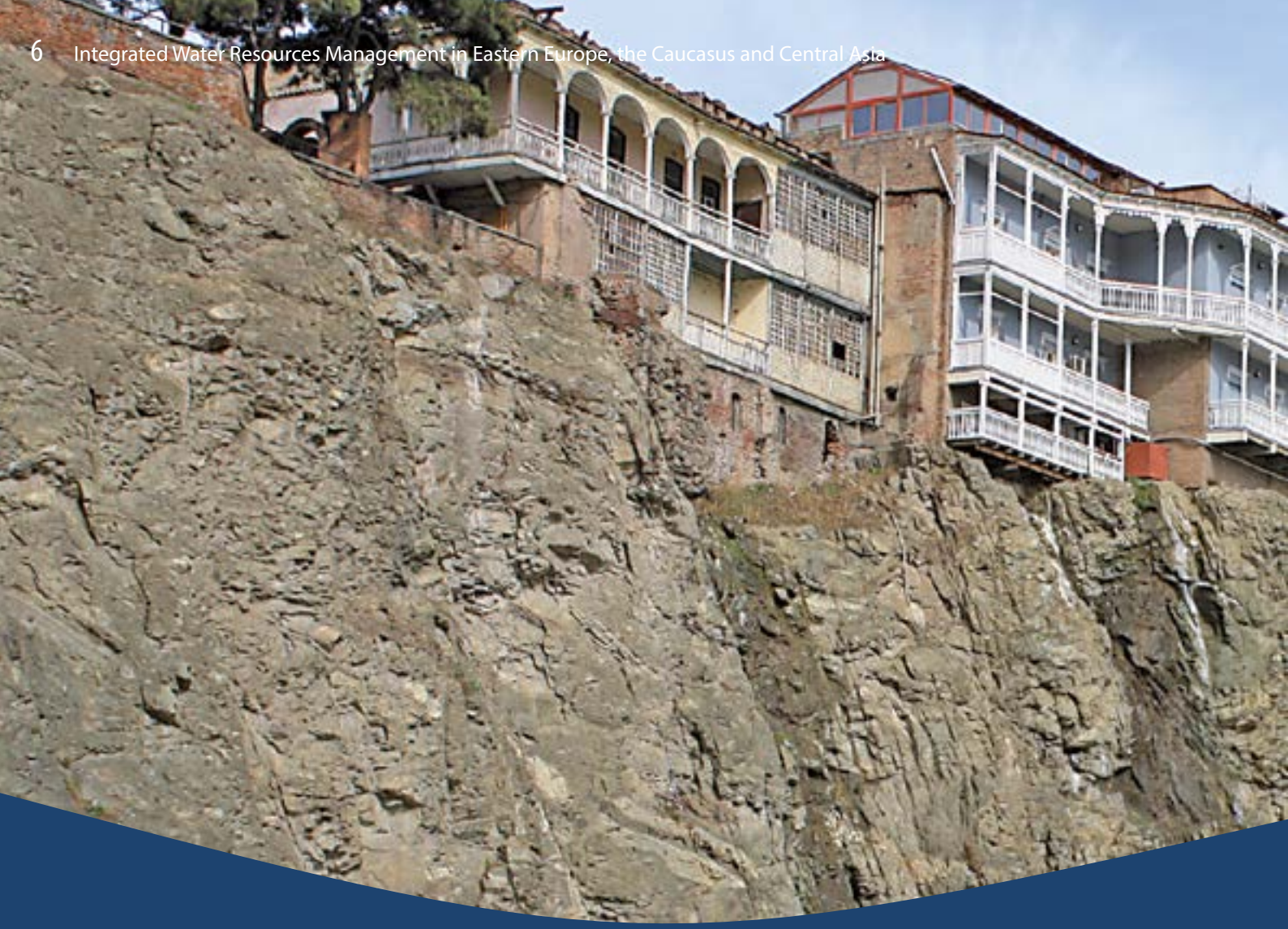
There are significant challenges for countries in Eastern Europe, the Caucasus and Central Asia to reach the point where all types of water are managed according to the river basin management principle. In some countries, the principle remains to be incorporated into legislation (i.e., the water law or 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 the boundaries of hydrological basins and the responsible institutions, and river basin 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.

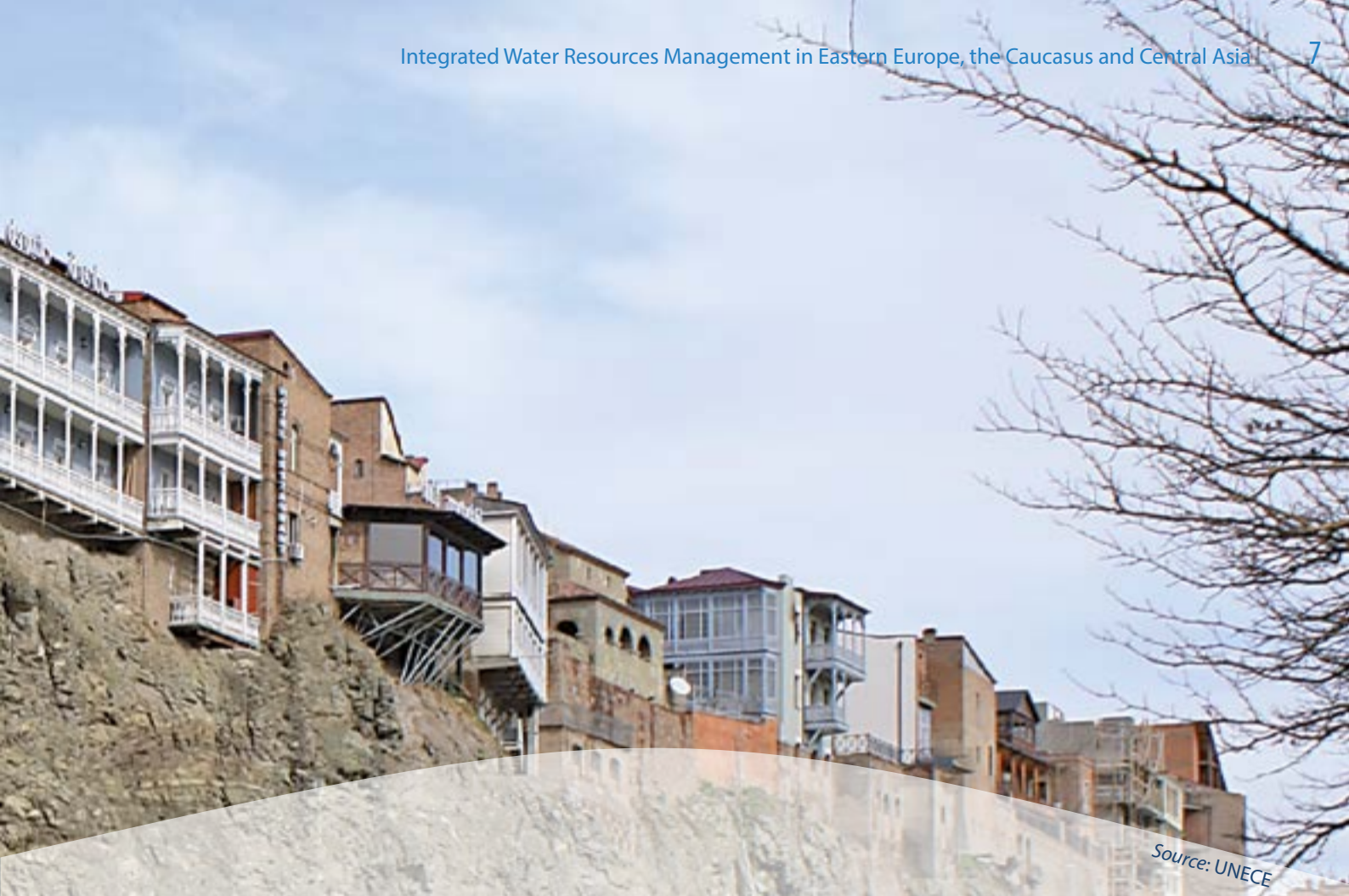
[10] The Northern, Akhuryan, Araratian, Sevan, Hrazdan and Southern.

[11] Established by Government Order No. 1056 of 2008.

[12] Basins of the Ural-Caspian, Aral-Syr Darya, Chu-Talas, Balkhash-Alakol, Irtysh, Ishim, Tobol-Turgai and Nura-Sarysu Rivers.



Principle 2. Intersectoral and vertical coordination of water management



Source: UNECE

Explanation of the principle

Managing 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 and recreation, as well as protection of ecosystems, is vital. The domination of a centralized 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 organized and functions well between different levels of management: from national to basin and sub-basin levels.

Overview of the subregion

The need for coordination between different economic sectors on water-use issues is reflected in national legislation across the subregion. Horizontal coordination mechanisms are most typically defined in the respective national water codes. Special bodies and mechanisms are needed at least at the national and basin levels, but their establishment is proving 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, and are in the process of being established in Azerbaijan and Kazakhstan. There are currently no coordination bodies or mechanisms in Georgia, the Republic of Moldova and Turkmenistan. In some countries the coordination mechanism exists on paper but is not functional.

Country examples

Throughout the subregion, 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.

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

Chaired by the Prime Minister, the Armenian National Water Council meets regularly and had four meetings in 2012. The Council is still in the process of adjusting and improving the mechanisms for inter-agency cooperation.

In Tajikistan the Water-Energy Council of the Government provides intersectoral coordination on issues linked to the 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 non-governmental organizations (NGOs) to its meetings. The Water-Energy Council 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.

Potential conflicts of interest exist in many countries, as water authorities often have responsibilities for policymaking as well as operational functions. For example, the ministry of agriculture may include a department responsible for both water management policies and irrigation. This overlap of responsibilities for policymaking and irrigation is also found in Kyrgyzstan and Tajikistan. However, the institutional setting for water management in the subregion is improving from an IWRM perspective, as recently demonstrated in Georgia and Kazakhstan. Positive changes are also under way in Tajikistan.

In some countries fragmentation of legislation on water is an obstacle to IWRM, as legislation for the water, environment, forestry, land use, health, and other relevant sectors is not coherent. Such fragmentation is reported to be the case in Azerbaijan, Kyrgyzstan and the Republic of 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 basins and sub-basins, and, where applicable, irrigation systems. Some smaller countries such as Georgia have a more centralized system for water resource management. In Azerbaijan decision-making is also very centralized.

Challenges

One of the challenges in strengthening horizontal cooperation is the inability to equitably balance the needs and interests of the 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 precondition for developing fruitful vertical and horizontal cooperation. It is also a challenge to provide the necessary capacity-building for those expected to perform new tasks as a result of institutional and legal reforms, as well as to 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 the institutions involved, cooperation and efficient joint management cannot be achieved (see also principle 3 — Transparency and public participation).

Principle 3. Transparency and public participation

Source: GIZ

Explanation of the principle

Every person and a large number of institutions and sectors are water users, and therefore in principle stakeholders 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 the planning, decision-making, implementation and monitoring stages. What is required is not just to inform all the relevant stakeholders, but to actively engage them and take their views duly into 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 equitable access to the water and sanitation. Special attention needs to be given to the involvement of women and marginalized social groups.

Overview of the subregion

Public participation in water resources management is included in the national legislation in the majority of countries in Eastern Europe, the Caucasus and Central Asia. However, regulations laying down practical procedures for implementation of such participation are largely missing. In some countries the basin councils with the involvement of various stakeholders have been established as advisory bodies to 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 remains limited, access to information is now better organized across the countries of the subregion.

Principles of the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) form part of the legal framework for access to information, public participation and access to justice in all the countries under discussion. Two ECE conventions on transboundary cooperation, the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) and the Water Convention 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 typically meet once or twice a year. The share of representatives of civil society in these councils ranges from 2 to 19 per cent. Up to 30 per cent of basin council members are women. In the Republic of Moldova two sub-basin councils[14] have started working and are meeting four to six times a year. NGO representatives play a key role in these sub-basin councils. In Ukraine the basin councils meet one to three times a year and serve as the main forum for the involvement of civil society.

Water user associations are natural stakeholders in the development of water sector reforms across the subregion. Some countries, such as Armenia, Kyrgyzstan and Tajikistan, have a special law on water user associations. In countries with functioning basin councils these associations participate actively, having up to 44 per cent 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 the target countries. The Republic of Moldova has specified in legislation what kind of information must be made available for free on water issues.[15] Similar clarifications are currently being prepared in Azerbaijan, Kazakhstan and Turkmenistan.

In Armenia document, such as draft river basin management plans, pending water use permits, draft water tariff strategies 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 organized. 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 a water use permit application.

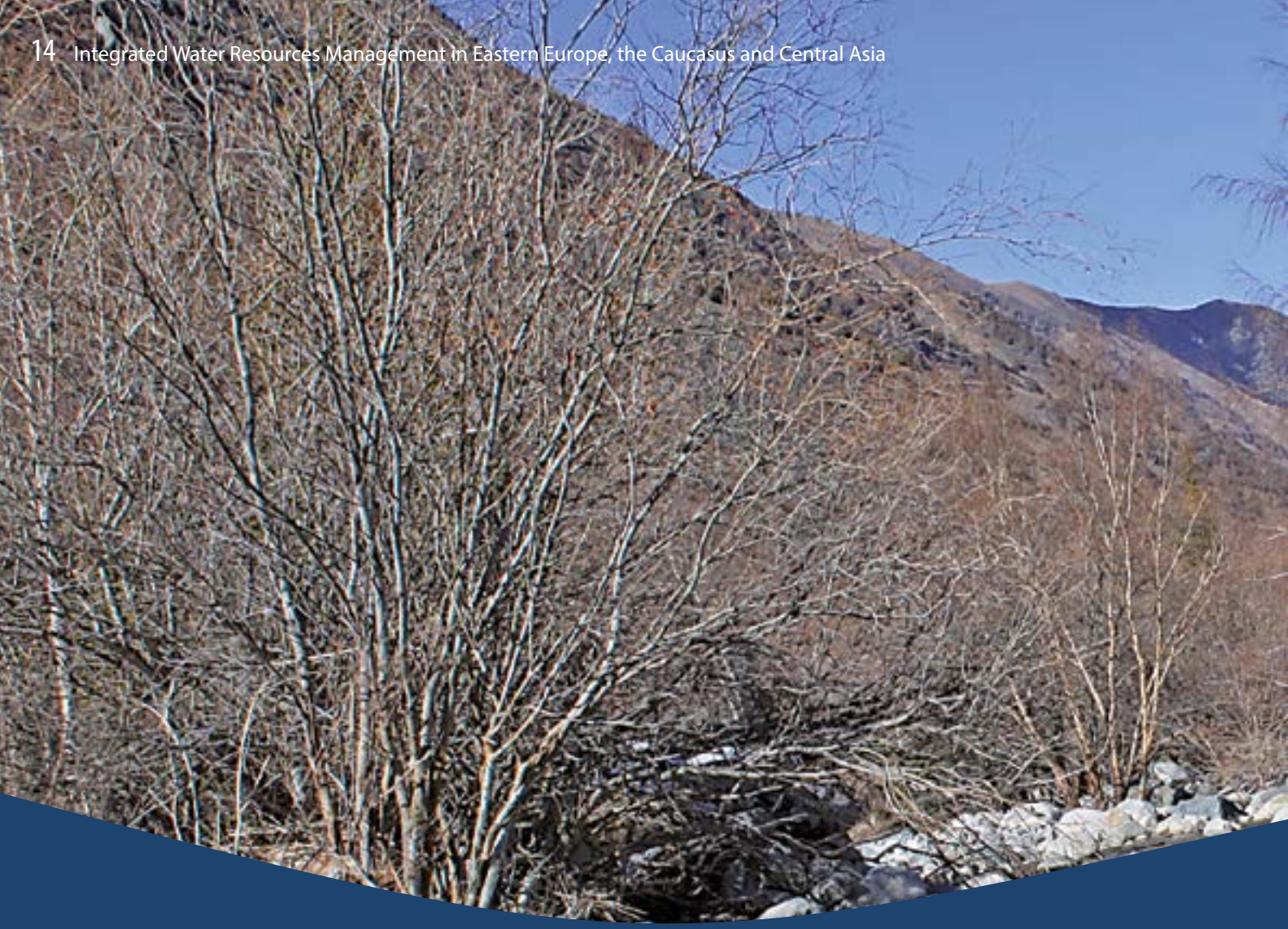
While some countries release more information for the public, others publish only selected water-related data. For example, the data on drinking-water quality is generally made available to the public, while information about the state of water management infrastructure is less accessible.

Challenges

Some countries need to grant and organize better access to information on water resources management. A significant issue across the subregion is ensuring the 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 the interests of women and marginalized social groups into account. Opportunities to participate will not be fully utilized without capacity-building. NPD processes offer a good opportunity for engaging and empowering stakeholders, but cannot replace national legal and institutional frameworks.

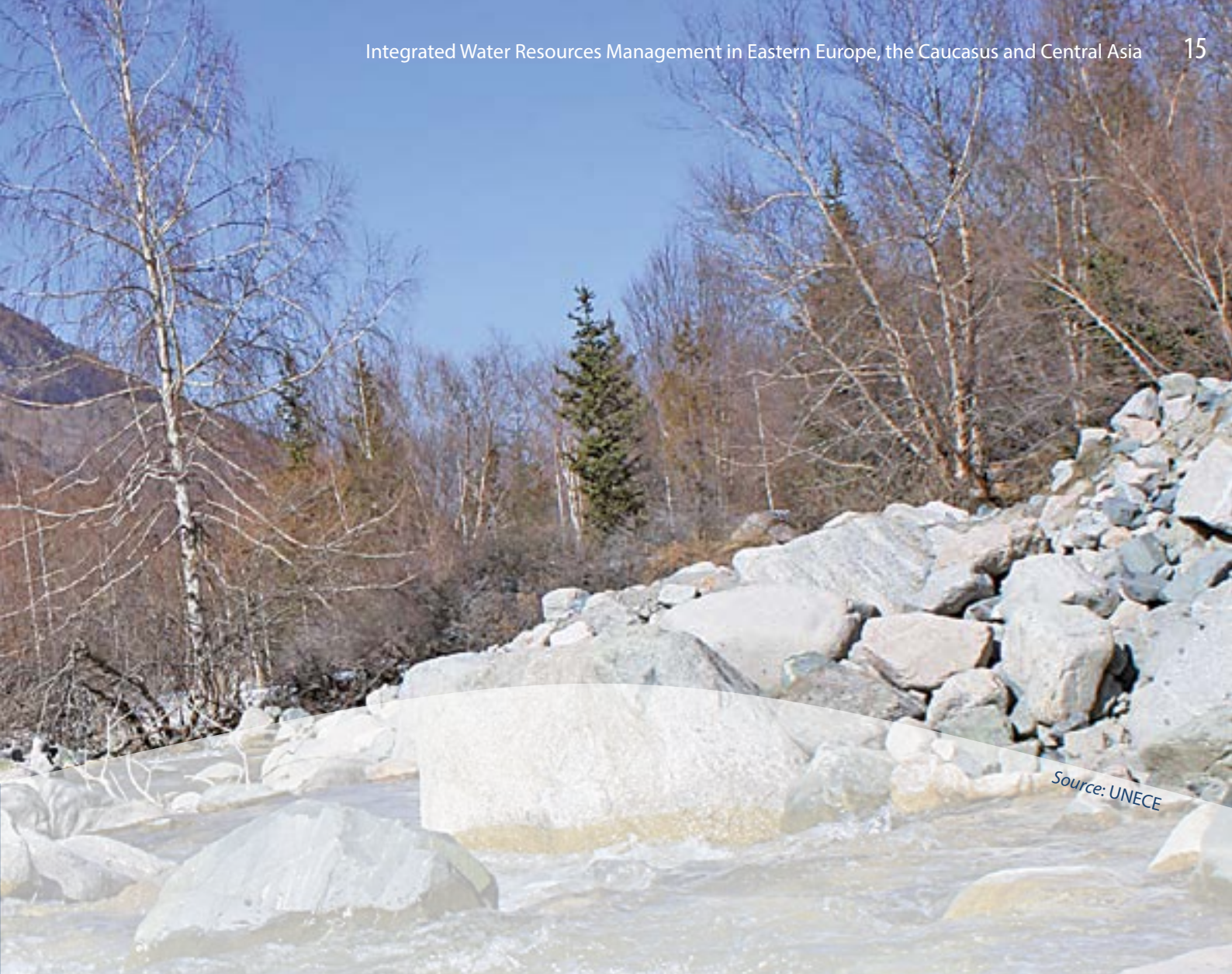
[14] Sub-basins of the Byk and Cubolta Rivers

[15] See Water Law No. 272 of 22 December 2011.



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

Source: UNECE



Source: UNECE

Explanation of the principle

While water is a renewable resource, water quality in the subregion is deteriorating. 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 should 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 water resources management and be reflected in national strategies for adaptation to climate change.

Overview of the subregion

All the countries have set water quality objectives and criteria. However, in many countries of Eastern Europe, the Caucasus and Central Asia 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 subregion, 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 the prevention of water-related diseases, including targets related to water quality and environmental sustainability, are being set up in line with the ECE/World Health Organization Regional Office for Europe (WHO-Europe) Protocol on Water and Health by both Parties and non-Parties to the Protocol. A majority of the countries of the subregion are Parties to the Water Convention,[16] which requires Parties to define water-quality objectives to prevent, control and reduce transboundary impacts.

Environmental impact assessment (EIA) is applied by most of the countries in Eastern Europe, the Caucasus and Central Asia, while only a few are carrying out strategic environmental assessments (SEAs). There is a long tradition of water quality monitoring in these countries, but the lack of finances and sometimes low standards of sampling and analysis has made

[16] With the exception of Armenia, Georgia, Kyrgyzstan and Tajikistan.

monitoring irregular and less reliable in many of them. There are data gaps with regard to water ecology, and biological monitoring is largely absent.

Country examples

In Central Asia, in particular, environmental authorities do not play a prominent role in water resources management. Georgia, Tajikistan, Turkmenistan and Uzbekistan are, furthermore, the only remaining countries of the subregion not to have acceded to the Espoo Convention. Only Armenia has ratified the Protocol on Strategic Environmental Assessment (Protocol on SEA), while Georgia and the Republic of Moldova have signed the Protocol but have not yet ratified it.

Worldwide, the polluter-pays principle serves as an important approach to avoid the degradation of water quality. National legislation refers to the polluter-pays principle in all of the countries of Eastern Europe, the Caucasus and Central Asia. In addition to fees for water use, penalties are collected for excessive or non-authorized discharge of pollutants in most of these countries. In Turkmenistan these fees can amount to millions of United States dollars (US$) 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 a few countries of the subregion have joined the ECE Convention on the Transboundary Effects of Industrial Accidents. There are, however, some notification procedures and bilateral cooperation agreements to be used in case of the 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 calculating the minimum ecological flow in rivers.[17] 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 so far been adopted only in Tajikistan as part of a pilot project.[18] The implementation of the strategy is just starting. In the Republic of Moldova and Turkmenistan the national strategies on climate change adaptation include references to water issues. Moreover, an adaptation strategy for water supply and sanitation was developed in the Republic of Moldova with support from OECD and the EU. Kyrgyzstan is currently in the process of developing a national strategy for adaptation of the management of water resources to the impact of climate change.

Challenges

For the rational use of water resources, different environmental planning tools need to be more widely applied in the countries of Eastern Europe, the Caucasus and Central Asia. Development of adaptation plans to lower the negative impacts of climate change in the water sector also remains a challenge throughout subregion. 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 needs to be more centrally placed in the subregion's water management. Practical challenges include the effective functioning of monitoring systems, and the use of the corresponding information generated, as well as identifying, deciding on and enforcing minimum ecological flows.

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

[18] "The Pilot Programme for Climate Resilience", 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

Source: UNECE

Explanation of the principle

The protection and use of water resources should be carefully managed. There is a need for stability in the institutions responsible for water resources and in water policy implementation to maintain the availability of water resources 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:[19] the Polluter Pays principle; the Beneficiary Pays principle; Equity; and Coherence between policies impacting the water sector. Some well-designed economic instruments, such as water tariffs and pollution charges, have already been developed to implement these principles in the countries under review.

[19] OECD, *A Framework for Financing Water Resources Management*, OECD Studies on Water (Paris, OECD Publishing, 2012).

Overview of the subregion

In the 1990s, the water sector in Eastern Europe, the Caucasus and Central Asia was substantially underfunded and there were few incentives in place for water saving. Many irrigation and water supply and sanitation systems were no longer used and became obsolete, and many of those that were in operation were 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 of the countries in the subregion 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 the Republic of Moldova) and reflect neither the cost of the service nor the scarcity of the resource. The situation with non-consumptive use of water (essentially, for electricity generation) is even worse: in some countries (e.g., the Russian Federation, Tajikistan and Ukraine), hydropower stations pay a small fee for non-consumptive uses, while in others (e.g. Armenia and Kyrgyzstan) they pay nothing at all. Charges for water

pollution from stationary sources are generally very low in the subregion 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 of Eastern Europe, the Caucasus and Central Asia and fail to cover operations and maintenance costs of the service.[20] Armenia and the Republic of Moldova (where households pay €1 or more per cubic metre (m^3) of drinking water) are exceptions. Tariff collection efficiency in WSS has substantially improved over the 2000s in most of the subregion: it can be as high as 98–99 per cent (e.g., in Armenia). In contrast, it can also be as low as 30 per cent (e.g., for industrial water users in Tajikistan).

There are equity issues regarding water services in most of the target countries. Energy suppliers (who extract a rent from using water resources) are usually not charged for the water they use. The low efficiency in the operations of water service providers, as well as their poor financial status, prevents the extension of service 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.

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 Kyrgyzstan and the Russian Federation show how subsidies (for energy and agriculture, in particular) encourage inefficient water uses and wastage.[21]

Country examples

The user/beneficiary pays principle is reflected in the national legislation of all the 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 the city of Dushanbe pay a flat fee for water supply and sanitation as individual water meters are rare.

Tariffs for irrigation water vary significantly across the subregion. In June 2011, the fee for 1,000 m^3 of irrigation water ranged from US$ 0.22 in Kyrgyzstan to US$ 300 in the Republic of Moldova. Tajikistan has established the highest irrigation water tariff in Central Asia, ranging from US$ 10 to US$ 15 for irrigation of wheat to US$ 90–US$ 150 for cultivation of rice. This measure has helped to reduce the use of water by 10 per cent during past 10 to 15 years. In Turkmenistan no monetary fee is applied, provided that quantities of water used do not exceed set limits. However, 3 per cent 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 subregion. For example, in 2011 in the irrigation sector in Armenia, the Government subsidy amounted to some 57 per cent of the total operation and maintenance costs on average; it varied between 20 and 80 per cent, 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 per cent 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

The low efficiency in water use, water scarcity (compounded by climate change) and/or lack of access to water services in some regions are major problems for water management in Eastern Europe, the Caucasus and Central Asia. Irrigation systems are inefficient. According to a World Bank report,[22] in Central Asia, for instance, around half of the water is lost between the water intake at the source and the farm. The Water Use and Farm Management Survey database created under a TACIS[23]-funded project on Water Resources Management and Agricultural Production in Central Asia suggests that, on average, 21 per cent of irrigation water is wasted.[24] 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.

[20] OECD, *Ten Years of Water Sector Reform in Eastern Europe, Caucasus and Central Asia*, OECD Studies on Water (Paris, OECD Publishing, 2011).

[21] OECD, "Improving the Use of Economic Instruments for Water Resource Management in Kyrgyzstan: The Case of Lake Issyk-Kul Basin", report presented to the Annual Meeting of the EAP Task Force, 24–25 September 2012 Oslo, Norway (ENV/EPOC/EAP(2012)5), available from http://www.oecd.org/environment/september2012annualmeetingoftheeaptaskforceinnorway.htm; and OECD, Economic Instruments for Water Resources Management *in The Russian Federation* (Paris, OECD Publishing, 2013).

[22] World Bank, *Irrigation in Central Asia: Social, Economic and Environmental Considerations* (Washington, D.C., 2003).

[23] Technical assistance programme (2000–2006) stimulating partnerships between the EU and the Community of Independent States.

[24] GWP CACENA, *IWRM Principles Implementation in the Countries of Central Asia and Caucasus*.

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

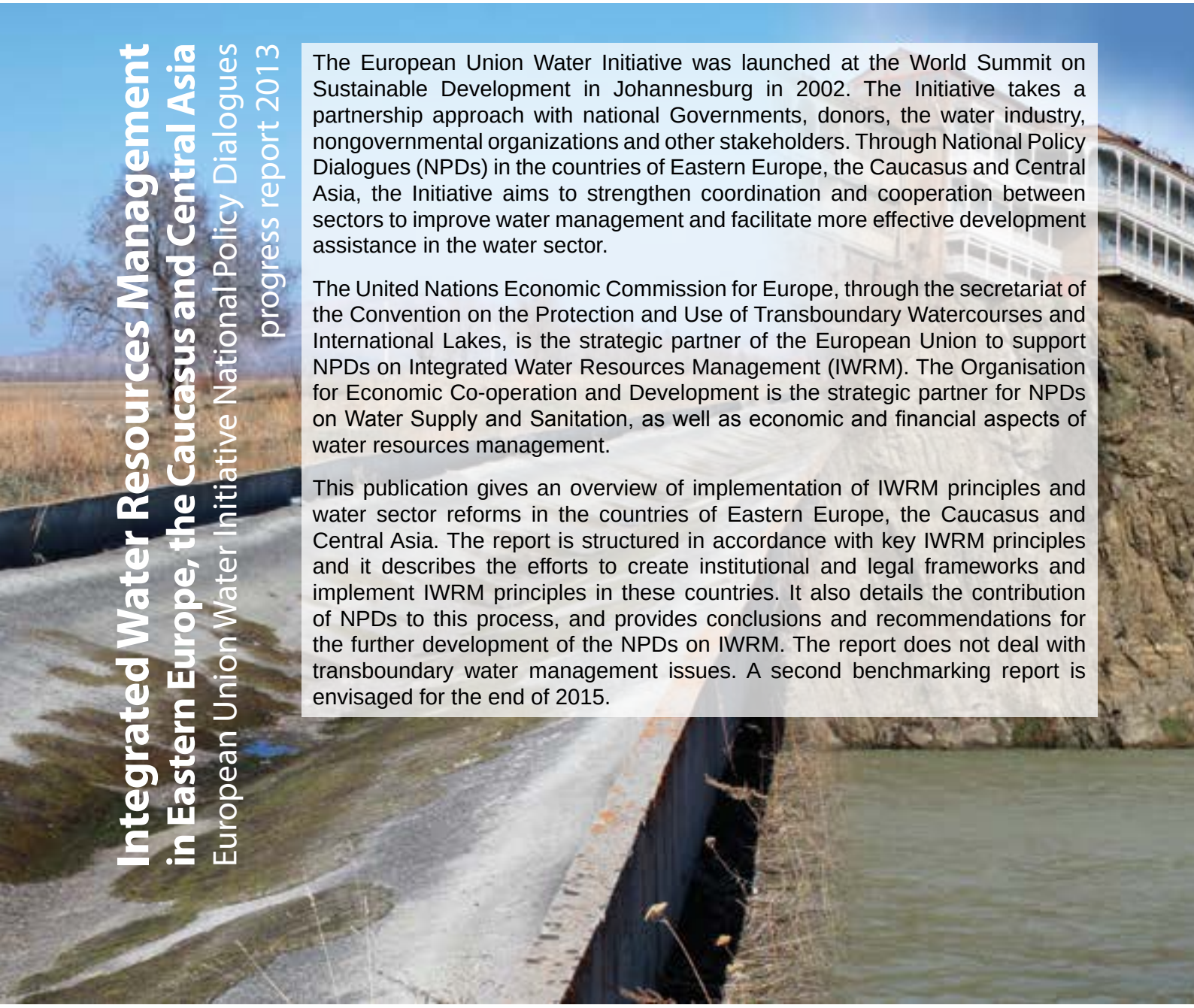
Another message is that financing investment and operation have to be considered jointly. Approaching investment and operation and maintenance in a coordinated manner can avoid the decay of newly built infrastructures and lower future investment needs.

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 WSS matches the capacities to finance investment, 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.

Realistic financial plans will raise affordability issues, which are indeed of serious concern in all countries of Eastern Europe, the Caucasus and Central Asia. However, affordability issues are better addressed via targeted social support measures than by the blanket provision of cheap water.

Conclusions

- The countries of Eastern Europe, the Caucasus and Central Asia are increasingly applying principles of IWRM. An enabling international framework, including the EU Water Framework Directive and the ECE Water Convention, plays an important role in facilitating the transition towards IWRM principles.
- While the work to introduce basin water management has started in the subregion, 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 subregion. Horizontal coordination bodies and mechanisms are usually part of the national legislation; however, their effective functioning remains a challenge. While achieving institutional stability is one of the prerequisites to reaching fruitful vertical and horizontal coordination, ensuring the continuity of reforms, financial stability and adequate human resources to do so remains a recurrent challenge.
- Public participation and the involvement of stakeholders in the decision-making process on water management issues remains a challenge, while access to information on water is generally better organized. The participation of the public in water resources management is provided for in the national legislation in the majority of the target countries. However, the regulations laying down the practical procedures to implement public participation are largely missing.
- Conservation of water-dependent ecosystems and protection of water quality are weak in the subregion. To protect the ecosystems of rivers, a minimum ecological flow must be guaranteed. In semi-arid areas the observation of minimum flow remains difficult. There are references to water management in national strategies on climate change adaptation only in a few countries, and such linkages have yet 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 and 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 infrastructure, thus saving scarce financial resources. They can also generate revenues for service providers. While such instruments are generally mentioned in the national legislation of the target countries, 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 the countries of the subregion. They are better addressed through targeted social measures than through cheap water for all.
- The EUWI NPD process helps countries in Eastern Europe, the Caucasus and Central Asia to understand better and to apply IWRM principles step by step, and to broaden horizontal cooperation through maintaining regular multi-stakeholder discussions to develop and improve national water policies, as well as transboundary water cooperation.



Integrated Water Resources Management in Eastern Europe, the Caucasus and Central Asia

European Union Water Initiative National Policy Dialogues

progress report 2013

The European Union Water Initiative was launched at the World Summit on Sustainable Development in Johannesburg in 2002. The Initiative takes a partnership approach with national Governments, donors, the water industry, nongovernmental organizations and other stakeholders. Through National Policy Dialogues (NPDs) in the countries of Eastern Europe, the Caucasus and Central Asia, the Initiative aims to strengthen coordination and cooperation between sectors to improve water management and facilitate more effective development assistance in the water sector.

The United Nations Economic Commission for Europe, through the secretariat of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, is the strategic partner of the European Union to support NPDs on Integrated Water Resources Management (IWRM). The Organisation for Economic Co-operation and Development is the strategic partner for NPDs on Water Supply and Sanitation, as well as economic and financial aspects of water resources management.

This publication gives an overview of implementation of IWRM principles and water sector reforms in the countries of Eastern Europe, the Caucasus and Central Asia. The 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 these countries. It also details the contribution of NPDs to this process, and provides conclusions and recommendations for the further development of the NPDs on IWRM. The report does not deal with transboundary water management issues. A second benchmarking report is envisaged for the end of 2015.

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