ECONOMIC COMMISSION FOR EUROPE





STRENGTHENING WATER MANAGEMENT AND TRANSBOUNDARY WATER COOPERATION IN CENTRAL ASIA: the Role of UNECE Environmental Conventions

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Foreword

Central Asia is a region of exceptional strategic importance: it is a major energy exporter, it has the potential to become a key Eurasian transport hub and may well be an important contributor to the long-term stabilization of Afghanistan.

Improved regional cooperation among Central Asian countries, which share similar challenges of transitional economies, is a precondition for fully developing their economic potential and for regional and global security and stability, as well as sustainable development and environmental protection. While certain progress in many areas of regional cooperation has been achieved in Central Asia, unresolved challenges to such cooperation remain.

Perhaps most important are differences over the management and development of regional water and energy resources. Irregular weather patterns worsened by climate change, growing demand for water due to economic development and population growth are likely to increase the already considerable stress on water resources of the region. Cooperative, rational and efficient management of regional water resources offers the only viable long-term answer to these challenges. This requires a solid and modern legal basis and effective regional institutions for water resources management in Central Asia.

The UNECE environmental conventions, in particular the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, constitute a much-needed legal basis for the development of cooperation on water resources in Central Asia, the modernization of regional agreements and the strengthening of regional institutions. These conventions not only codify widely accepted norms and practices, but offer support to their implementation through their governing bodies and their activities on the ground.

In Central Asia, presently, only one country has ratified all the UNECE environmental conventions. In order to take full advantage of these legal instruments there is a need for Central Asian countries to strengthen their capacity to apply the conventions and to accede to them when conditions are ripe.

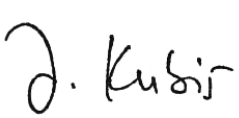
The Federal Foreign Office of Germany has initiated the Berlin Process on "Transboundary Water Management in Central Asia" as an integral part of the Water and Energy Pillar of the EU's strategy for a new partnership with Central Asia. This German initiative aims at promoting regional co-operation and stability. Among others, it provides assistance to modernise the legal basis for water resources management in Central Asia and beyond.

The present publication was developed under the initiative's project on "Regional Dialogue and Cooperation on Water Resources Management" by the *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)* and the United Nations Economic Commission for Europe (UNECE). It is intended to help experts and policymakers alike to better understand how the UNECE environmental conventions can contribute to the development of transboundary cooperation and more effective management of regional water resources in Central Asia. The publication presents these legal instruments together in a comprehensive way and highlights that, as appropriate, a legal framework offers room for an impartial and balanced nature of rights and obligations concerning the use, management and protection of shared resources, codified in the UNECE conventions.

Germany, like Central Asian countries, is very dependent on transboundary waters, with rivers such as the Rhine, Danube, Elbe and Oder that Germany shares with its neighbouring countries. Much of its current economic and social development is built on the judicious use of these resources. Being a Party to the five UNECE environmental conventions, Germany has recognized their usefulness for regional cooperation with its neighbours. From that perspective, Germany promotes their prospective implementation also in Central Asia.

It is our hope that this publication will contribute to the better understanding of policymakers, experts and the civil society of Central Asian countries that UNECE environmental conventions offer a highly effective tool to all countries in the region — be they upstream or downstream — in their efforts to further develop mutually beneficial cooperation in the management of their shared water resources.

The Government of Germany and UNECE will continue to support the long-term development of Central Asian countries through promoting amicable, predictable and equitable transboundary water cooperation.



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Preface

Mutual understanding, dialogue and cooperation are key to finding long-term and mutually beneficial solutions to any transboundary issues in any part of the world. Making no exception to this rule, the sustainable management, efficient use and adequate protection of shared water resources in Central Asia can only be achieved through the cooperation of the Central Asian States. Strong regional institutions and a modern legal framework are instrumental in addressing this challenge — they help to gradually strengthen confidence among upstream and downstream countries and to elaborate mutually advantageous, cooperative solutions for problems and challenges related to the water and energy nexus.

The United Nations Economic Commission for Europe (UNECE) project "Regional Dialogue and Cooperation on Water Resources Management" (2009—2011) — part of the Transboundary Water Management in Central Asia Programme, which *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)* is carrying out on behalf of the German Federal Foreign Office — contributes to strengthening regional institutions and legal frameworks for water resources management in Central Asia, building capacity for better understanding and implementation of international water law in this region, and facilitating water monitoring and information exchange as decision-support tools for regional water management.

Under the capacity-building component of the project numerous regional and national activities on international water law, including relevant UNECE multilateral environmental agreements, were organized. Among them are: the regional seminar, "International water law and negotiation of mutually beneficial multilateral water agreements in Central Asia", organized in cooperation with the United Nations Regional Centre for Preventive Diplomacy for Central Asia (Almaty, Kazakhstan, 19-21 April 2009); the national seminar "Legislation and procedures for the application of the Espoo Convention in Tajikistan" (Dushanbe, Tajikistan, 22—23 July 2010); the national seminar "UNECE[1] Water Convention and its role in international law" (Almaty, Kazakhstan, 18—19 October 2010); the national seminar "Strengthening integrated water resources management and transboundary water cooperation: the role of UNECE conventions and of the EU Water Initiative National Policy Dialogue", organized with additional support from Switzerland (Ashgabat, Turkmenistan, 6—7 December 2010); the national seminar "On the way to the International Year of Water Cooperation: the role of international law, including the UNECE Water Convention, in strengthening cooperation on water resources management", organized with additional support from Switzerland (Dushanbe, Tajikistan, 14—15 March 2011); the briefing session "UNECE environmental conventions: key aspects and opportunities for Central Asia", organized as a side event during the second meeting of the Expert Group on the Revision of the Statutory Documents of the International Fund for Saving the Aral Sea (Geneva, Switzerland, 23 March 2011); the subregional training workshop "Strengthening capacities in Central Asia for understanding and implementing the Convention on Environmental Impact Assessment in a Transboundary Context and, in particular, the Convention's Protocol on Strategic Environmental Assessment, with a focus on the water sector" (Almaty, Kazakhstan, 28 March—1 April 2011); the national workshop "Obligations and procedures of Espoo and Industrial Accidents Conventions and opportunities the two Conventions provide for Turkmenistan" (Ashgabat, Turkmenistan, 5—6 June 2011). Additional capacity-building activities are planned for autumn 2011.

This publication is another contribution to the efforts aimed at building capacity and enhancing the understanding of international water law in the Central Asian region. It focuses on the legal framework for inter-State cooperation on water as provided by UNECE multilateral environmental instruments. The publication goes further than explaining the principles and provisions of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes — the key instrument for developing cooperation on the management and protection of transboundary waters in the UNECE region — by exploring the synergies between the five UNECE environmental Conventions and their protocols, which create a cohesive legal framework for water management and environmental protection. Most importantly, the publication is specifically tailored to the interests of the Central Asian region. It addresses a wide range of thematic issues important for regional water management in Central Asia — from water quantity and water quality to floods, climate change and building of hydrotechnical installations — and shows how UNECE environmental instruments regulate these issues.

This publication is addressed to governmental authorities, regional institutions for water cooperation, non-governmental organizations and other stakeholders, as well as international organizations and agencies active in Central Asia, i.e., to all those who participate in the regional water management and debate. Its explanation of the synergies between the UNECE multilateral environmental instruments provides information and food for thought for the broader audience of UNECE member States, international partners, non-governmental organizations and academia, as well as relevant actors from non-UNECE countries.

[1] The officially acronym for the United Nations Economic Commission for Europe is ECE; however, UNECE also sometimes appears.

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List of Maps, Tables, Flow-charts and Boxes

List of Acronyms and Abbreviations

ECE	United Nations Economic Commission for Europe (also, sometimes UNECE)
EIA	Environmental impact assessment
EPR	Environmental Performance Review
EU	European Union
HPP	Hydroelectric power plant
ICJ	International Court of Justice
ICWC	Interstate Commission for Water Coordination of Central Asia
ICSD	Interstate Commission for Sustainable Development
IFAS	International Fund for Saving the Aral Sea
ILC	International Law Commission
IWAC	International Water Assessment Centre
IWRM	Integrated water resources management
MDGs	Millennium Development Goals
MEA	Multilateral environmental agreement
NGO	Non-governmental organization
PES	Payment for ecosystem services
PRTR	Pollutant Release and Transfer Register
SEA	Strategic environmental assessment
WFD	Water Framework Directive

Executive Summary

WATER RESOURCES IN CENTRAL ASIA

The collapse of the Soviet Union in 1991 resulted in the emergence of five sovereign States in Central Asia — the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan. As a result, the large rivers flowing through the territories of these countries have become transboundary rivers, with their catchment areas and existing water and energy infrastructure now located in the five new States. Central Asian countries now face the challenging task of finding mutually beneficial solutions for the management and protection of water resources through cooperation.

The most challenging situation with the management of transboundary water resources has emerged in the basins of the Amu Darya and Syr Darya Rivers, the largest rivers in Central Asia which flow into the Aral Sea. Implementation of large-scale plans for the development of hydropower in the upper reaches of the Amu Darya and Syr Darya River basins is likely to further complicate the relations between the upstream and downstream countries regarding the types and regimes of water use to pursue, if no balance of interests, acceptable to all States, is found. Moreover, an increase in the river flow fluctuations and expected decrease in river flow in the Aral Sea Basin influenced by climate change, along with the growing demands for water, will probably lead to greater competition for water between Central Asian countries. In addition, Afghanistan is projected to increase its use of the river flow of tributaries to the Amu Darya River.

In the early 1990s, Central Asian States had concluded agreements and established a system of regional organizations for water management, which is now functioning under the auspices of the International Fund for Saving the Aral Sea. Today, however, it is often claimed that the current legal and institutional frameworks for regional water resources management require strengthening to be able to cope with the existing and emerging challenges.

Although issues of inter-State cooperation on the use of transboundary water resources and, primarily, issues of water allocation, are at the forefront of inter-State relations in Central Asia, the need for broader comprehensive inter-State cooperation on the protection of water resources is also receiving a growing recognition. Such cooperation needs to address water quality and conservation of ecosystems, maintenance and safety of ageing hydro-technical facilities and the safety of tailings dams, measures to adapt to climate change, groundwater management and a number of other substantive issues. There is also a need to improve the efficiency of the everyday mechanisms of transboundary water cooperation, including exchange of information, monitoring, accident prevention and response, and participation of stakeholders. Water management requires strengthening also at the national level. Major principles of integrated water resources management still have to find their way into people's thinking and mindsets, legal and institutional frameworks, and practice.

UNECE ENVIRONMENTAL CONVENTIONS: PART AND PARCEL OF INTERNATIONAL LAW

Being UNECE member States, Central Asian countries can benefit from participation in the UNECE environmental conventions and protocols. Although each Central Asian country participates in at least one UNECE convention, with Kazakhstan being a Party to all five, the knowledge of UNECE environmental instruments and the opportunities they provide is often limited in Central Asia. In relation to some UNECE instruments, poor understanding of their obligations sometimes results in misinterpretation of their key provisions.

Five environmental conventions for which UNECE serves as a secretariat — the Convention on Long-range Transboundary Air Pollution (LRTAP Convention, 1979), the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention, 1991), the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention, 1992), the Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention, 1992), and the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention, 1998) — have been developed by UNECE member States, but they are based on the rules and principles and constitute an integral part of international law.

Presently, the UNECE environmental instruments are regional instruments with States Parties coming from the UNECE region only. However, some UNECE instruments may reach a global scope, insofar as they are opening up to universal participation. For example, the Espoo Convention and the Water Convention have been amended to allow for accession by non-UNECE countries upon approval by their respective Meeting of the Parties. This is particularly important for the Central Asian region, as it makes these Conventions a potential legal framework for cooperation with their non-UNECE neighbours.

In the main, and consistent with their nature as "framework" instruments, the UNECE environmental Conventions lay down general principles, obligations and requirements for their Parties that have been further developed through the adoption of subsequent protocols as well as "soft-law" instruments in the form of guidelines and recommendations. A special feature of the Water Convention that distinguishes it from many other framework-type instruments is that its objectives are achieved primarily through the conclusion by the Parties to the Convention of separate bilateral and multilateral agreements with respect to specific transboundary waters.

UNECE ENVIRONMENTAL CONVENTIONS: THE FRAMEWORK TO ADVANCE TRANSBOUNDARY WATER COOPERATION

While the Water Convention is the key instrument for developing cooperation on the management and protection of transboundary waters, the other UNECE environmental Conventions build a comprehensive framework that **complements and supports** the provisions of the Water Convention in this area. Primarily the Espoo Convention, the Industrial Accidents Convention, and the Aarhus Convention, greatly contribute in the pursuit of the goals of the Water Convention, strengthening transboundary water cooperation in the UNECE region and in specific transboundary basins.

In the area of transboundary water cooperation one can identify a common normative framework in three UNECE environmental Conventions — the Water Convention, the Espoo Convention and the Industrial Accidents Convention. This common normative framework is based on several key principles and obligations: i.e., the no-harm rule; the equitable and reasonable utilization principle (enshrined in the Water Convention and corroborated by the principle of sustainability in the Espoo and Industrial Accidents Conventions), the principle of cooperation and the principle of the peaceful settlement of disputes.

In these UNECE Conventions, the general obligation to prevent, control and reduce transboundary impact (so-called no-harm rule) is expressed in terms of "due diligence", as opposed to absolute obligations. Its due diligence nature is determined by the duty to take "all appropriate measures" aimed at prevention, control and reduction of transboundary impact. The concept of "appropriateness" of the measures required involves a significant amount of relativity and presumes that measures should be proportionate to the capacity of the Party concerned, as well as to the nature and degree of the risk of occurrence of transboundary impact in the light of the specific circumstances.

The three Conventions under consideration have inherently the same definitions of "transboundary impact" and apply the same approach to defining its threshold. The Water Convention uses the expression "significant adverse effect", which provides an abstract standard of guidance for the assessment of the acceptable threshold of harm. The concrete assessment of the "significance" threshold depends on the specific situation in the catchment area, including the specific circumstances pertaining to the Riparian Parties involved. The Espoo Convention (by defining the list of activities that are likely to cause significant adverse transboundary impact) and the Industrial Accidents Convention (by defining the quantities of hazardous substances) provide useful parameters for the determination of the respective thresholds.

The principle of equitable and reasonable utilization, provided for in the Water Convention and generally recognized as part of international customary law, is particularly relevant in cases where there is a "conflict of uses" between riparians on a transboundary watercourse. Practical implementation of this principle requires a case-by-case assessment, mutual exchange of data and information on a basin, as well as consultations and cooperation.

Another key obligation — the obligation of cooperation — is instrumental to full compliance with the obligation of prevention, control and reduction of transboundary impact and the principle of equitable and reasonable use.

UNECE ENVIRONMENTAL CONVENTIONS: COOPERATION FRAMEWORK TO ADDRESS SPECIFIC PROBLEMS

The UNECE environmental instruments themselves do not offer ready-made solutions to specific problems; rather, their implementation ensures the continuous cooperation of States under common legal frameworks, towards agreed objectives, and with support from their institutional mechanisms. Such cooperation ultimately leads to finding solutions to specific problems at the local, national and transboundary levels.

With regard to the regulation of **water quantity and water quality issues**, the UNECE Water Convention takes an integrated and cross-sectoral approach — a concept which is strongly corroborated also by other UNECE environmental Conventions and protocols. The central aim of such an approach is to strengthen local, national and regional measures to prevent, control and reduce transboundary impacts and to ensure sustainable management of transboundary waters. An integrated approach to prevention, control and reduction of transboundary impact takes into account water quantity as well as water quality — the two being strongly interrelated — the environment in general, human health and socio-economic conditions, and includes the notion of managing shared waters in a reasonable and equitable manner. Under the principle of equitable and reasonable use, one of the core principles of the Water Convention, utilization of a water body that is incompatible with its preservation as a natural resource — i.e., which leads to the depletion of the resource — does not qualify as "equitable and reasonable". Although water-quantity issues are not specifically referred to in the Water Convention's text, they may cause transboundary impacts within the meaning of the Convention and therefore are areas where the Parties have to take appropriate measures to prevent, control and reduce transboundary impact.

On the issue of **drinking water supply and sanitation**, the legal framework provided by UNECE environmental instruments has at its heart a specific instrument on this topic, the Protocol on Water and Health to the Water Convention. The Protocol further develops the integrated approach to the management of transboundary waters and, more specifically, the obligation to set water-quality criteria and objectives. The Protocol is the first international agreement adopted specifically to ensure, by linking water management and health issues, the adequate supply of safe drinking water and adequate sanitation. The core obligations of the Parties to the Protocol — to set and implement targets with regard to the quality of drinking water, bathing water and wastewater, to establish and maintain national and/or local surveillance and early warning systems to prevent and respond to water-re-

lated disease, and to cooperate and assist each other in the implementation of the Protocol's provisions — serve to translate the human right to water into reality.

The UNECE instruments offer a sound framework for cooperation at the transboundary level on adaptation of water resources to **climate change**. The Water Convention includes the precautionary principle, which implies taking action even before adverse impacts are fully proven scientifically. The Convention facilitates transboundary cooperation on adaptation to climate change through its provisions and mechanisms for institutional cooperation. Also, the Espoo Convention may provide a framework for ensuring that activities proposed within the framework of a country's adaptation strategies do not cause significant adverse transboundary impacts in neighbouring countries. Its Protocol on Strategic Environmental Assessment introduces climate change considerations into the development of plans and programmes. The issue of climate change best illustrates the flexibility and responsiveness of UNECE environmental instruments. Several soft-law instruments (in particular, the *Guidance on Water and Adaptation to Climate Change*) have been developed and a number of specific projects are running under the umbrella of the Water Convention to assist countries in pursuing effective adaptation and to strengthen their capacity in this area.

The provisions of the UNECE environmental Conventions, in particular the Water Convention, provide a good framework for transboundary cooperation on **floods**. This includes the obligations to prevent and control transboundary impact; to exchange information; to develop contingency planning; to establish joint monitoring programmes; to inform of critical situations; to operate warning and alarm systems; and to notify and consult with each other when planning new activities which may cause significant transboundary impacts. Several soft-law instruments were developed under the auspices of the Water Convention to further specify the respective legal obligations of Parties, to promote exchange of good practices for flood prevention and to assist countries in the shift from the current perspective of mere "flood defence" to an integrated approach to flood management.

Groundwater management is addressed in several UNECE environmental instruments since groundwater abstractions — both from domestic and transboundary aquifers — cover a substantial share of the overall amount of water supplied to the population and to various economic sectors. The distinguishing features of groundwaters, in particular, the difficulty of their identification and their vulnerability in case of pollution, in connection with their non-renewable or less renewable character with respect to surface waters, call for specific regulatory attention to ensure proper and effective application of the UNECE environmental instruments, in particular the Water Convention, in this area. In particular, the due diligence standards making up the obligation of prevention, control and reduction of transboundary impact in relation to groundwaters are higher and more specific than those applicable to surface waters.

The UNECE environmental instruments provide for a wide range of measures aimed at conserving and restoring **ecosystems**. These include the establishment of water-quality objectives and criteria, development of concerted action programmes for the reduction of pollution, environmental impact assessment and strategic environmental assessment. The Espoo Convention and, indirectly, the Water Convention are also important instruments for the protection of the **marine environment**.

The UNECE environmental Conventions place a strong emphasis on institutional cooperation between their Parties in the framework of so-called **"specific" agreements and joint bodies** designed to support cooperation on the Convention's implementation and application, between two or more Parties. Such an emphasis reflects the framework nature of the Conventions, which establish basic regulatory, procedural and institutional parameters for bilateral and multilateral cooperative activities and measures, with a view to pursuing the main objectives of the Conventions. Specific agreements and joint bodies allow for adapting the provisions of a Convention to specific circumstances of bilateral and multilateral cooperative activities. The principles of "equality", "reciprocity" and "good faith", enshrined with some minor variations in the UNECE Conventions, are to be applied to bilateral and multilateral cooperation in the form of specific agreements. While other conventions strongly favour bilateral and multilateral agreements to achieve strengthened implementation, the Water Convention provides for the mandatory conclusion by Riparian Parties of transboundary water agreements and requires the establishment of joint bodies.

The UNECE environmental Conventions have different levels of detail with regard to the regulation of new projects and activities — so-called **"planned measures"**. Here, the procedures and mechanisms of the Espoo Convention provide a comprehensive procedural set for implementation of obligations under this and other UNECE environmental Conventions. The UNECE Conventions provide for the obligation of a Party planning an activity to notify the affected Parties and to consult on the potential effects of such activity. However, they leave the decision-making power with the Party planning the activity, which makes the final decision. As clearly enunciated in the Espoo Convention, the Party of origin shall ensure that in the final decision "due account" is taken of the outcome of the environmental impact assessment, comments received from the public of the affected Party and the outcome of the consultations between the Parties. Obligations to notify and consult on "planned measures" are applicable to a selected number of activities which may have a significant impact on the environment.

Efforts to develop joint programmes for **monitoring** the conditions of transboundary waters and to carry out joint assessments contribute to building trust among riparian countries and lead to the strengthening of transboundary water cooperation. In this area, the Water Convention obliges its Parties to establish programmes for monitoring the conditions of transboundary waters, therefore requiring countries to provide for effective monitoring systems for the national parts of transboundary basins. The Convention also imposes an obligation on Riparian Parties to establish and implement joint programmes for monitoring the conditions of transboundary waters, as well as to carry out joint or coordinated assessments of the conditions of transboundary waters. Countries may pursue a step-by-step approach in implementing these obligations, depending on available resources and human capacity.

The UNECE Conventions provide for the obligation to **exchange information**. Regular exchange of data and information on transboundary waters lays down the foundations for cooperation to ensure effective protection of such waters, management of water quality and quantity, as well as the prevention, control and reduction of transboundary impacts. Exchange of information under UNECE Conventions may take place in a variety of forms, in particular within the framework of the relevant specific agreements and/or through a joint body. The UNECE Conventions are rather specific with regard to the content of the information to be exchanged. In addition to the obligation to exchange reasonably available data, i.e., to ensure regular two-way flow of existing information, the obligation to exchange information also includes the obligation to provide information upon request. In line with the core obligation of cooperation "on the basis of equality and reciprocity", the obligation to exchange data under the Water Convention and to endeavour to provide information upon request exists for all Riparian Parties, whether situated upstream or downstream.

The Industrial Accidents Convention is the central framework for the prevention of **accidental pollution**, preparedness and response, including accidents on transboundary waters. In addition to the obligation to identify hazardous activities, the Industrial Accidents Convention includes obligations to ensure emergency preparedness, to establish an industrial accident notification system, to notify affected Parties in case of an industrial accident and to take adequate response measures. In the area of water management and transboundary water cooperation, these requirements are corroborated by the Water Convention's obligations to develop contingency planning for transboundary waters, to inform other Riparian Parties of critical situations, to set up coordinated or joint warning and alarm systems and to provide mutual assistance upon request. Joint activities of these two Conventions focus on the prevention of industrial accidents in transboundary river basins. Safe operation of **tailings management facilities** have been addressed by the two Conventions through soft-law guidelines on this issue.

With regard to the issue of hydropower, it is important to stress that the UNECE environmental Conventions do not prohibit building new **dams**, including large dams. There are dams all across the UNECE region, and new dams are being built in the countries participating in UNECE Conventions. The Conventions require that certain procedural steps are followed and certain obligations are implemented when a new dam is planned to be built or a major change in an existing dam is planned. The application of these requirements leads to better quality of decisions, improves environmental protection, enhances mutual understanding among riparians and contributes to the prevention of differences and disputes. The key obligation that international law imposes on States in this area is to take all necessary measures in order to maintain and protect water installations on international watercourses. Under the Water Convention, this obligation is covered by the core obligation to prevent, reduce and control transboundary impact.

With regard to the issue of **navigation** and the environment, the legal basis for cooperation is provided by UNECE legal instruments on inland water transport and on the environment.

Even though navigation is not specifically referred to in the Water Convention, its principles of reasonable and equitable utilization and of the prevention of significant transboundary impact provide the framework for balancing navigation with other uses of transboundary waters. Catchment-wide thinking and transboundary cooperation in the planning of navigation-related activities are increasingly called for.

The key instrument for the implementation of the rights to access to environmental information, **public participation** and access to justice in environmental matters is the Aarhus Convention. Adopted in 1998, it took into account the norms and experience of the other UNECE Conventions in advancing the role of the public in various areas of environmental protection. Nowadays the relevant provisions of preceding UNECE environmental Conventions are increasingly interpreted and applied in the light of the concepts and principles of the Aarhus Convention. This is true also with regard to public participation in water management and transboundary water cooperation.

On the issue of **civil liability**, the UNECE legal framework includes the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the Industrial Accidents Convention and the Water Convention. The Protocol, not yet in force, provides for a comprehensive regime for civil liability and for adequate and prompt compensation for damage resulting from transboundary effects of industrial accidents on transboundary waters.

All UNECE environmental Conventions contain provisions on **dispute settlement**. Although the Conventions explicitly mention negotiations and also provide for an "opt in" formula for compulsory arbitration or adjudication, their dispute settlement provisions reflect the freedom of Parties to choose the means of dispute settlement acceptable to them. It is important to emphasize that the tasks of the joint bodies for bilateral and multilateral cooperation, especially under the Water Convention, usually cover the widest range of prevention and joint management measures which contribute to conflict prevention and the avoidance of disputes.

UNECE ENVIRONMENTAL CONVENTIONS: READY TO HELP

By becoming a Party to a UNECE environmental Convention, a country becomes part of its institutional regime, based on the Meeting (or Conference) of the Parties, its Bureau, subsidiary bodies and the secretariat. Such institutional framework places great emphasis on implementation: it assists Parties through the exchange of experience, capacity-building and development of soft-law guidelines and recommendations.

Each UNECE environmental Convention has developed its own tools to assist implementation. Capacity-building seminars, awareness-raising trainings, pilot projects, advisory services and assistance programmes and guidance instruments tailored to specific subregions are set up under these Conventions.

Non-Parties to UNECE environmental Conventions, including in Central Asia, take part in many activities under the Conventions' umbrella and often become the beneficiaries of capacity-building activities and projects of the UNECE Conventions. However, non-Parties have a limited capacity to initiate a new area of work for the Convention, and do not participate in the decision-making process in the bodies of the Conventions.

UNECE ENVIRONMENTAL CONVENTIONS: FOR CENTRAL ASIA

The UNECE environmental Conventions have been implemented for more than a decade by other countries in the UNECE region. Their institutional infrastructure promotes region-wide and subregional cooperation, information sharing, exchange of experience and technical assistance, and provides help in accession and implementation. The collective body of experience, embodied in the Meetings/Conferences of the Parties and their subsidiary institutions, is a guarantee against biased interpretations of their provisions. The diversity of parties to the UNECE environmental instruments demonstrates their usefulness for all countries, regardless of the level of social and economic development or the availability and quality of water resources.

The central UNECE instrument for water management and transboundary water cooperation — the Water Convention — has been the basis for many bilateral and multilateral transboundary water agreements across the UNECE region and for the work of numerous joint bodies for transboundary water cooperation. It enshrines a balanced approach, based on equality and reciprocity, which offers benefits and places similar demands on upstream as well as downstream countries.

The UNECE environmental instruments are an authoritative and coherent legal framework — in other words, common "rules of the game" — which can be applied as an appropriate overarching legal framework for water management and transboundary water cooperation in Central Asia.

Central Asian countries are encouraged to use the UNECE environmental instruments and benefit from their tools and mechanisms. Central Asian States which are not Parties to respective instruments can, among others, invite awareness-raising missions and events to be organized by respective Conventions and protocols, participate in the capacity-building programmes and activities under UNECE environmental instruments, and attend meetings under these instruments. Diagnostic studies, assessment of national legislation and cost-benefit analyses can also be initiated as instruments to inform the decision-making processes when considering accession. Although UNECE environmental instruments represent a coherent framework, step-by-step accession to individual instruments is reasonable and practical, with accession to the whole system as a long-term goal. These efforts should be supported by capacity-building activities on international water law in Central Asian countries.

Introduction

The shrinking of the Aral Sea — one of the greatest man-made environmental disasters of the twentieth century — has affected the livelihoods and health of millions of people in Central Asia. The tragedy provided a shocking example of the disastrous consequences of the unsustainable use of water resources. Today, the efficient and sustainable management of water resources in the five countries of Central Asia — Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan — are very important for political, economic and environmental cooperation in this subregion and beyond. Unfortunately, in the past few decades, controversies over water and related energy issues have become a serious stumbling block hindering regional cooperation in Central Asia, as well as presenting numerous security challenges. Poor trust and difficult political situation often hinder the elaboration of rational, cooperative, mutually advantageous solutions to these problems. Moreover, the institutional and legal frameworks for water resources management established in the early 1990s face difficulties in addressing the growing differences over water release regimes and water distribution. The water quality aspects that have been neglected in the past are increasingly recognized as demanding regional solutions. Climate change impacts, as well as the economic recovery and potential increase of water intake by co-riparian Afghanistan, also loom on the horizon and call for improved cooperation on water in the subregion.

The Berlin Water Process launched by the Federal Republic of Germany at the first "Water Unites" Conference (1 April 2008, Berlin), became a new start in international efforts to find effective, long-term solutions to the complex problems related to the management of water resources in Central Asia. The process is an integral component of the European Union (EU) strategy for a new partnership with Central Asia. The Programme "Transboundary Water Management in Central Asia" (2009–2011), carried out by *Deutsche Gesellschaft für Internationale Zusammenarbeit* (German Agency for International Cooperation, or GIZ) on behalf of the German Federal Foreign Office, became the most extensive part of the Berlin Water Process.

The United Nations Economic Commission for Europe (UNECE) leads the implementation of the first area of the Programme — building capacity and strengthening institutional and legal frameworks for water management in Central Asia — through its "Regional Dialogue and Cooperation on Water Resources Management" Project. The Project supports the five Central Asian countries in analysing the effectiveness of the current institutions and legal frameworks for transboundary water cooperation and developing proposals for institutional and legal reform. These overall efforts to improve transboundary water cooperation in the subregion are supplemented by work to strengthen the understanding and application of international water law in Central Asia through capacity-building activities. The Project also improves the basis for informed decision-making by supporting Central Asian countries and regional organizations to strengthen water monitoring and data exchange.

In 2009–2011, the UNECE Regional Dialogue Project organized, at the national and regional levels, a number of capacity-building activities on international water law and expert meetings on the strengthening of legal and institutional frameworks for regional water cooperation in Central Asia. The scope of the capacity-building activities on international water law and transboundary water cooperation varied in order to respond to the needs and interests of requesting countries. Since UNECE is a custodian of several multilateral environmental agreements (MEAs), these activities focused on the legal framework provided by UNECE conventions and protocols in the area of water management and various aspects of transboundary water cooperation, and revealed a considerable interest among Central Asian countries in using them.

These activities also demonstrated that governmental authorities and other stakeholders in the countries of Central Asia are in need of strengthening their understanding on international water law and their awareness of the best practices for the management of transboundary waters. It was further observed that, although Central Asian countries, as UNECE member States, can benefit from participation in the UNECE instruments (and each Central Asian country does participate in at least one UNECE convention, with Kazakhstan being a Party to all five (see table 1)), the knowledge of UNECE environmental instruments and opportunities they provide is often limited in Central Asia. This often becomes an obstacle when a country considers ratification of or accession to such instruments. In addition, in relation to some UNECE instruments, in particularly the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and, to a lesser extent, the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention), insufficient understanding of their obligations sometimes results in misinterpretation of their key provisions and their inappropriate use in the regional political debates over the use of water resources.

TABLE 1. Status of ratification of UNECE environmental instruments in Central Asia[2]

TITLE OF THE INSTRUMENT	KAZAKHSTAN	KYRGYZSTAN	TAJIKISTAN	TURKMENISTAN	UZBEKISTAN
Convention on Long-range Transboundary Air Pollution (LRTAP Convention, 1979)	11.01.2001 accession	25.05.2000 accession	-	-	-
Eight protocols[3] to LRTAP Convention	-	-	-	-	-
Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention, 1991)	11.01.2001 accession	01.05.2001 accession	-	-	-
Protocol on Strategic Environmental Assessment to the Espoo Convention (2003)	-	-	-	-	-
Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention, 1992)	11.01.2001 accession	-	-	-	04.09.2007 accession
Protocol on Water and Health to the Water Convention (1999)	-	-	-	-	-
Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention, 1992)	11.01.2001 accession	-	-	-	-
Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the Water and Industrial Accidents Conventions (2003)	-	-	-	-	-
Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention, 1998)	11.01.2001 ratification	01.05.2001 accession	17.07.2001 accession	25.06.1999 accession	-
Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention (2003)	-	-	21.05.2003 signature	-	-

The publication has three major objectives: (a) promoting the understanding of UNECE environmental instruments; (b) supporting active and informed dialogue on the usefulness of these instruments for water management, transboundary water cooperation and environmental protection in Central Asia, and (c) facilitating decision-making processes concerning ratification of or accession to these instruments in the countries of Central Asia. To achieve these objectives this publication provides:

- An explanation of the provisions and obligations enshrined in the UNECE environmental Conventions and their Protocols;
- An explanation of how major issues of water management and transboundary water cooperation in Central Asia can be addressed through UNECE Conventions and Protocols;
- A description of synergies between the UNECE environmental instruments which represent a coherent legal framework for environmental protection and transboundary cooperation;
- Recommendations for enhancing the legal framework for regional water cooperation in Central Asia.

This publication is the first effort of this kind and does not cover the whole spectrum of water management and transboundary water cooperation issues in Central Asia. It is envisaged that this publication may: (a) be transformed, at a later stage, into a more comprehensive guidance to apply UNECE environmental instruments to water management and transboundary water cooperation in Central Asia on the basis of dialogue with Central Asian countries; and (b) serve as a starting point for further efforts to explore and promote synergies between UNECE environmental instruments in general, as well as in various fields, including water management and transboundary water cooperation, in particular.

Although the publication focuses on major issues relevant to water management and transboundary water cooperation in Central Asia, other countries may find it useful for their efforts to achieve a better understanding and application of UNECE environmental instruments.

As the authors were committed to providing user-friendly explanations of the provisions and obligations enshrined in UNECE Conventions and Protocols with regard to different but closely related procedural and substantive issues in the area of water management and transboundary water cooperation, some comments are repeated under the different sections of the text.

[2] Table 1 reflects the status of ratification as of August 2011.

[3] The 1984 Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP); the 1985 Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent; the 1988 Protocol concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes; the 1991 Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes; the 1994 Protocol on Further Reduction of Sulphur Emissions; the 1998 Protocol on Heavy Metals; the 1998 Protocol on Persistent Organic Pollutants; and the 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone.

TRANSBOUNDARY SURFACE WATERS IN CENTRAL ASIA

Chapter 1

WATER MANAGEMENT IN CENTRAL ASIA: Challenges and Needs

The collapse of the Soviet Union in 1991 resulted in the emergence of five sovereign States in Central Asia — the Republic of Kazakhstan, the Kyrgyz Republic, the Republic of Tajikistan, Turkmenistan and the Republic of Uzbekistan. As a result, the large rivers flowing through the territories of these countries have become transboundary rivers, with their catchment areas and existing water and energy infrastructure now located in the five new States.

THE ARAL SEA BASIN: FORMATION AND USE OF WATER RESOURCES

The most challenging situation regarding the management of transboundary water resources has emerged in the basins of the Amu Darya and Syr Darya Rivers — the largest rivers in Central Asia which start in the glaciers of mountains in the south-east part of the region and flow thousands of kilometres to the north-west up to the influx into the Aral Sea. Basins of both rivers form the Aral Sea Basin, covering the whole territory of Tajikistan and Uzbekistan, a major part of Turkmenistan, a significant part of Kyrgyzstan, the southern region of Kazakhstan and the northern part of Afghanistan, as well as a small area in northern Iran.

Some 63 per cent of the river flow of the Amu Darya is formed on the territory of Tajikistan and about 27 per cent of the flow forms in Afghanistan and Iran. Seventy-four per cent of the Syr Darya River Basin is formed within Kyrgyzstan. Around 87 per cent of the run-off in the Aral Sea Basin is formed on the territories of three countries — Tajikistan, Afghanistan and Kyrgyzstan — in the upper reaches of the Amu Darya and Syr Darya rivers.[4]

Water resources of these rivers are used mainly for irrigation of around 8 million hectares of agricultural lands in the downstream countries; more than 90 per cent of the river flow is taken for various uses from the water bodies, and the remaining amount of flow enters the Aral Sea. About 84 per cent of the total volume of water withdrawal in the Aral Sea Basin is used by the countries located in the arid zone of the lower reaches of the basin — namely, Kazakhstan, Turkmenistan and, predominantly, Uzbekistan.[5]

Agriculture, the main consumer of water in the Aral Sea Basin, has a great socio-economic importance in the region. More than half of the rapidly increasing population lives in the countryside and its well-being depends to a large extent on the availability of water during the growing season to maintain irrigated farming.

In general, the annual distribution of unregulated river flow of the Amu Darya and Syr Darya Rivers is very favourable for irrigation of agricultural crops during the growing season, which lasts in Central Asia from April till September. The spring-summer

[4] *Strengthening cooperation for rational and efficient use of water and energy resources in Central Asia* (United Nations publication, Sales № GV.E.04.04), p. 26. Available from http://www.unescap.org/esd/publications/energy/effuse/effuse_en.pdf.
[5] Ibid., tables 12 and 13, p. 36.

flooding, with maximal discharges in June, is a natural water regime for their basins, while the lowest discharges are observed in winter for January and February. However, the annual river flow for both the Amu Darya and Syr Darya Rivers can vary considerably from year to year, leading to droughts in dry years and floods in the high-water years, causing great damage to the economy of region.

The amount of water allocated for irrigation and water supply purposes in the upper reaches of the Amu Darya and Syr Darya Rivers is comparatively low, but the demand for water is growing. Water consumption in Afghanistan is still insignificant, but the implementation of plans to develop irrigated farming in the basins of the Amu Darya's tributaries will lead to the partial extraction of their river flows and is likely to reduce the volume of flow for the downstream countries.

For each Central Asian Republic, the agreed shares (quotas) of the flow it can use from the Amu Darya and Syr Darya Rivers were agreed a quarter of century ago by the central authorities in the former Soviet Union. These quotas still constitute the formal basis for water allocation between the new sovereign States.

A permanent increase in the use of the river flow of these rivers for irrigation in the second half of the twentieth century has led to a significant reduction of the volume of water reaching the Aral Sea, which, in turn, caused a sharp drop in its level. The shrinking of the Aral Sea has had disastrous social and economic consequences for the lives and health of people living in the area, and has caused irreparable damage to the environment and ecosystems of the region.

Hydropower is a strategic sector for the economies of upstream countries. The share of hydropower in the structure of internal production of electricity resources in Tajikistan significantly exceeds 90 per cent, i.e., almost the total amount of the electric power in the country is generated by the hydropower plants. The share of hydropower in electricity production of Kyrgyzstan is approximately 80 per cent.

INFRASTRUCTURE FOR THE REGULATION OF THE DISCHARGE REGIME AND USE OF THE FLOW

In order to reduce the fluctuations in the annual volume of the river flow for the Amu Darya and Syr Darya Rivers, as well as to optimize their use for irrigation purposes, dozens of dams and reservoirs were built in their upper reaches. These reservoirs, mostly multi-purpose ones, used for irrigation, hydropower and water supply, have significantly regulated the flow of the Amu Darya River and almost completely regulated the flow of the Syr Darya.

The reservoir of the Nurek Hydroelectric Power Plant (HPP) located in the Amu Darya River Basin, on its tributary, the Vakhsh River, in Tajikistan, has a great importance for the regulation of the river flow. The installed capacity of this HPP is 3,000 megawatts (MW), or about two-thirds of the total generating capacity of the country. The Toktogul reservoir in Kyrgyzstan on the Naryn River, a major tributary of the Syr Darya, plays a key role in the regulation of the river flow in the Syr Darya River Basin. This HPP has an installed capacity of 1,200 MW and is the main energy source for the country.

Kyrgyzstan and Tajikistan have no other significant fuel and energy resources, and are planning to capture more of their significant hydropower potential. It is estimated that over 90 per cent of the hydropower potential of Central Asia is concentrated on the territory of these countries in the upper reaches of the Amu Darya and Syr Darya Rivers. Tajikistan is currently discussing the reopening of the region's largest construction — the Rogun HPP on the Vakhsh River, with a planned capacity of 3,600 MW, which had been started back in Soviet times. In recent years, this issue had been complicating Tajikistan's relations with Uzbekistan, which has expressed serious concerns about this construction. A few other hydroelectric complexes are at the various stages of design and construction. Kyrgyzstan intends to build the Kambarata HPPs on the Naryn River to optimize the functioning of the Toktogul HPP. In the future, the development of hydropower facilities is also expected to take place on the tributaries of the Amu Darya River in Afghanistan.

CONFLICT OF INTERESTS IN THE TYPES OF AND REGIMES FOR THE USE OF TRANSBOUNDARY WATERCOURSES AND EMERGING CHALLENGES

In the Aral Sea Basin, the need for water for hydropower and for agricultural production occurs at different times of year. This leads to disagreements on the regulation of the river flow regime for transboundary rivers between upstream countries — with a strong dependence on hydropower — and downstream countries — with the largest share of irrigated farming. In summer, the downstream countries need high volumes of water from the transboundary rivers for farming, while the upstream countries in this period are interested in storing water in reservoirs in their territories for its subsequent use in winter for the generation of electric power.

In Soviet times, the regulation of river flow for the Amu Darya and Syr Darya Rivers was adapted to the needs of irrigated farming in the lower reaches; at the same time, a centralized energy supply in the autumn and winter seasons was provided from other regions of the Soviet Union to the Soviet republics located in the upper reaches of these rivers. Water releases for power generation at hydropower plants were reduced in autumn-winter and the water was accumulated in the reservoirs for subsequent release during the growing season. Surplus electric power produced by hydropower plants upstream during the growing season was transferred to other regions through the joint energy grid of Central Asia, which is currently not functioning.

Immediately after becoming sovereign States, the Central Asian countries replaced the old centralized management system for water and energy in the region by a joint management scheme based on intergovernmental cooperation. For this purpose, in 1992 they signed an *Agreement on cooperation in joint management, use and protection of water resources of inter-State sources*. This agreement is often interpreted as keeping in place the principles and volumes of inter-republic water allocations (quotas) of the Soviet period. The agreement does not refer to energy cooperation. In this situation, the upstream countries increased water releases to generate electricity from reservoirs in winter periods, arguing that this is a necessity to cover a deficit of energy.

In the Syr Darya River Basin, where the new relations were reflected in the regime of water releases from the Toktogul HPP reservoir, an attempt was made to establish a mechanism to compensate the upstream countries for their losses in electric power production at their HPPs due to the irrigation mode of the operation of reservoirs. For this purpose, Kazakhstan, Kyrgyzstan and Uzbekistan signed in 1998 the *Agreement on the use of water and energy resources in the Syr Darya Basin*. Tajikistan acceded to this Agreement a year later. However, the Agreement is presently not implemented.

Implementation of the large-scale plans for the development of hydropower in the upper reaches of the Amu Darya and Syr Darya Basins is likely to further aggravate contradictions between the upstream and downstream countries regarding the types of and regimes for water use for these rivers if no balance of interests, acceptable to all States, is found between demands for water for hydropower and for irrigation.

The development of mutually acceptable regimes for the regulation of the Amu Darya and Syr Darya flows should also take into account the fact that rehabilitation of the economy and improvement of the social and environmental conditions in Priaralie — the region surrounding the Aral Sea — require that a minimum amount of flow reaches the Aral Sea. A factor complicating this situation is an increase in the river flow fluctuations and expected decrease in river flow in the Aral Sea Basin influenced by climate change leading to the reduction of glaciers at the headwaters of the Amu Darya and Syr Darya Rivers. The reduction of available water resources, along with the growing demands for water, is likely to lead to greater competition for water between the States of Central Asia. At the same time, Afghanistan is likely to increase its use of the river flow of tributaries to the Amu Darya.

Many problems in the water sector in the Aral Sea Basin can be solved with an improved efficiency of water use, especially in irrigated farming, which uses about 90 per cent of the total volume of water consumption in the region. Enhancing the rational and efficient use of water for irrigation will lead to more available water in the lower reaches of rivers; as a result, more water will be left for discharging into the Aral Sea, as well as for users in other parts of the basin.

A more efficient use of electricity generated by hydropower, as well as improved opportunities to use hydropower in the summertime, are important additional factors to optimize the economic use of water in different sectors as well as for the water-supported ecosystems.

Currently, the absence of a coordinated policy regarding the use of transboundary water resources in the Aral Sea Basin leads to huge economic losses and deterioration of inter-State relations; it prevents restoration of the environment and ecosystems in Priaralie, and restricts the opportunities to develop integration processes in the region.

INSTITUTIONAL AND LEGAL FRAMEWORKS FOR COOPERATION

To date, the Central Asian region is using a well established, although not perfect, legal framework for inter-State cooperation in the management and use of transboundary water resources. From a legal point of view, it includes both binding instruments and numerous semi-formal arrangements and documents that are merely recommendations, which are commonly referred to as "soft-law" instruments. In terms of the geographic coverage, the international regulation of transboundary water cooperation operates as a two-tiered system, where, along with regional agreements of a general nature, there are also a number of bilateral agreements on practical issues relating to specific watercourses or areas of interaction.

It is widely acknowledged that the current legal framework for regional cooperation on water resources management in Central Asia has supported the establishment of the present system of regional organizations and played an important role in the early years after independence. However, now, the view is frequently expressed that it requires modernization, strengthening and the harmonization of the provisions of the various instruments. Moreover, key principles of integrated water resources management (IWRM), for example, the river basin approach, are not reflected in the existing agreements.[6] In addition, the legal framework does not properly establish the hierarchy and mechanisms for the coordination and collaboration of the existing institutions, does not clearly delineate their competence and does not pay sufficient attention to reporting procedures, decision-making processes, implementation and enforcement.

All Central Asian States participate in the Interstate Commission for Water Coordination of Central Asia (ICWC), established by a 1992 agreement as a collective body mainly for the regulation of the inter-State distribution of water resources in the Aral Sea Basin. Since the early 1990s, ICWC has faced the difficult task of trying to find mutually acceptable solutions for regulation of river flow and distribution of water resources in the region, at a time when the downstream States are seeking to preserve the irrigation regime of river flow for the Amu Darya and Syr Darya Rivers, while the upstream States consider such a regime as economically and socially disadvantageous. The present situation regarding the

[6] Despite the fact, that the basin water organizations "Amu Darya" and "Syr Darya" are sometimes considered as an attempt to introduce river basin management, they face difficulties to implement the basin principle of IWRM due to their limited subject-matter jurisdiction, as well as their limited geographical coverage.

regulation of the river flow regimes of these rivers seriously complicates the relations between Central Asian States.

ICWC has played an important role in the development of co-operation in the water sector in Central Asia by maintaining working relations between its national water management agencies for solving short-term and operational issues. However, it has had limited success in establishing an effective regional cooperation mechanism guaranteeing the observance of quotas for inter-State allocation of water resources of the Amu Darya and Syr Darya Rivers. ICWC also has had difficulties in developing solutions acceptable to all countries for replacing or improving the quota system. One reason may be that ICWC is an inter-agency body composed of the heads of water management organizations in the Central Asian States, which did not have the sufficient authority and the relevant influence on the ministries and departments of the States Parties to ensure the unconditional implementation of its decisions regarding the regulation of the flow regime of the Amu Darya and Syr Darya. Further, ICWC has no effective dispute settlement mechanisms available, which could be applied to the cases of non-compliance by the States with the agreements concerning the management of water and energy resources in the basins of these rivers.

Since 1999, ICWC and another regional cooperation body, the Interstate Commission for Sustainable Development (ICSD), are parts of the International Fund for Saving the Aral Sea (IFAS), a key regional organization in Central Asia. The leading role of IFAS follows from the fact that it is the only regional organization whose membership includes all five Central Asian States. Also, Heads of Central Asian States occupy the post of IFAS President on a rotational basis. Strategic directions for the IFAS are formulated by the Council of Heads of the five States in the region. Since 2009, IFAS has observer status at the United Nations General Assembly, which is a recognition of this organization as a cooperation partner in the region.

However, the mechanism of cooperation under the auspices of IFAS that includes several intergovernmental organizations insufficiently cooperating with each other is far from perfect in its present form, and has its limitations in the facilitation of solutions of the regional water and energy problems. The cooperation mechanism at present does not seem to establish the necessary conditions for the efficient development of policy cooperation of States concerned in the use of transboundary water resources. It should also be noted that the management of water and energy resources at the national level is carried out, in some cases, without proper consideration of the interests of other States within the transboundary river basin, which causes additional difficulties in formulating a coherent policy in this area.

A sub-optimal efficiency in the cooperation within the IFAS framework is a source of concern for the Heads of States in Central Asia, who, at their meeting in April 2009, expressed the intention to improve the organizational structure and the legal framework of IFAS, and noted especially the need to develop a mutually acceptable mechanism for integrated management of water resources and environmental protection in the Aral Sea Basin.

In Central Asia there are examples of the gradual development of constructive cooperation in the use of transboundary waters. Such cooperation takes place in the framework of relevant bilateral agreements and bilateral transboundary water commissions of Kazakhstan with China, Kyrgyzstan or Russia. A dynamic example of cooperation is found between Kazakhstan and Kyrgyzstan on the inter-State distribution of the river flow of the transboundary Chu and Talas Rivers. The two States have established the Chu-Talas Commission[7] as a mechanism for cooperation on the maintenance of several hydro-technical installations, which provide water supply according to an agreed schedule to the neighbouring areas in both countries. The cooperation on the Chu and Talas Rivers is developing, and the parties are gradually moving from co-operation on maintenance of water installations to the development and implementation of joint measures on the integrated management and protection of the water resources of the two river basins.

ENLARGEMENT OF COOPERATION ON THE BASIS OF AN INTEGRATED APPROACH

Although the issues of inter-State cooperation on the use of transboundary water resources and, primarily, the issues of water allocation, are at the forefront of inter-State relations in Central Asia, the need for broader, comprehensive inter-State cooperation on the protection and use of water resources is receiving growing recognition. Such cooperation has been initiated in the field of harmonization of approaches to water quality and ecosystem conservation, as well as in the field of adaptation to climate change.

In addition, Central Asian countries recognize the need to strengthen the regional water cooperation organizations and to improve the efficiency of the everyday mechanisms for cooperation, including exchange of information, monitoring and evaluation, accident prevention and preparedness. In Central Asia there is also a clear understanding of the need to improve water management at the national level, including the introduction of intersectoral coordination and the participation of water users, as well as other approaches of IWRM. The improvement of groundwater management at the national level and the development of joint approaches to transboundary aquifers are recognized as long-term objectives. Security of tailings management facilities and the safety and adequate maintenance of ageing hydro-technical facilities remains highly relevant for Central Asia.

For these reasons, this publication addresses a relatively broad range of issues which are relevant for the improvement of water management in Central Asia, as well as the approaches to address them developed under the UNECE environmental conventions.

[7] Commission of the Republic of Kazakhstan and the Kyrgyz Republic on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas.

Chapter 2

UNECE ENVIRONMENTAL CONVENTIONS:

A Sound Legal Framework for Water Management and Protection

2.1 An Introduction to the UNECE Environmental Conventions

UNECE was set up in 1947. It is one of five regional commissions of the United Nations. UNECE brings together 56 countries located in the EU, non-EU Western and Eastern Europe, South-Eastern Europe, Caucasus, Central Asia, and North America. All Central Asian countries are members of the UNECE (Kyrgyzstan, Turkmenistan and Uzbekistan – since 1993; Kazakhstan and Tajikistan – since 1994). Among other tasks, the UNECE establishes norms, standards and conventions to facilitate international cooperation within and outside the region.

UNECE is well known for its five environmental conventions, which were negotiated under the auspices of UNECE and for which UNECE serves as the secretariat:

- The Convention on Long-range Transboundary Air Pollution (LRTAP Convention, 1979);
- The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention, 1991);
- The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention, 1992);
- The Convention on the Transboundary Effects of Industrial Accidents (Industrial Accidents Convention, 1992);
- The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention, 1998).

By now, all five UNECE environmental Conventions have reached a "mature" status — participation in the Conventions covers the vast majority of UNECE member States, which are progressing in their implementation. A brief description of each Convention is presented below.

CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

Status

The LRTAP Convention was adopted in Geneva, Switzerland, on 13 November 1979 and entered into force on 16 March 1983. As of August 2011, it has 51 Parties. In Central Asia, Kazakhstan and Kyrgyzstan are Parties.

Major obligations

The aim of the Convention is to gradually reduce and prevent air pollution, including long-range transboundary air pollution. This is achieved by developing policies and strategies to combat the discharge of air pollutants through exchanges of information, consultation, research and monitoring.

Applicability beyond the UNECE region

The LRTAP Convention is open to UNECE member States only.

Protocols

The Convention has been extended by eight specific protocols, all of which are in force.

The Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) was adopted in Geneva, Switzerland, on 28 September 1984 and entered into force on 28 January 1988. As of August 2011, it has 43 Parties. It is an instrument for international cost-sharing on a monitoring programme, which forms the backbone for review and assessment of relevant air pollution in Europe in the light of agreements on emission reduction. EMEP has three main components: collection of emission data for sulphur dioxide (SO_2), nitrogen oxides (NO_x), particulate matter, ammonia, volatile organic compounds (VOCs) and other air pollutants; measurement of air and precipitation quality; and modelling of atmospheric dispersion.

The Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent was adopted in Helsinki, Finland, on 8 July 1985 and entered into force on 2 September 1987. As of August 2011, it has 25 Parties. As a result of the Protocol, substantial cuts in sulphur emissions have been recorded in Europe.

The Protocol concerning the Control of Emissions of Nitrogen Oxides or their Transboundary Fluxes was adopted in Sofia, Bulgaria, on 31 October 1988 and entered into force on 14 February 1991. As of August 2011, the Protocol has 34 Parties. This Protocol requires, as a first step, to freeze emissions of nitrogen oxides or their transboundary fluxes. The second step requires the application of an effects-based approach. Parties are obliged to make unleaded fuel sufficiently available.

The Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes was adopted in Geneva, Switzerland, on 18 November 1991 and entered into force on 29 September 1997. As of August 2011, the Protocol has 24 Parties. This Protocol specifies three options for emission reduction targets that have to be chosen upon signature or upon ratification: (a) 30 per cent reduction in emissions of VOCs by 1999 using a year between 1984 and 1990 as a basis; (b) the same reduction as for (a) within a Tropospheric Ozone Management Area (TOMA) specified in annex I to the Protocol and ensuring that by 1999 total national emissions do not exceed 1988 levels; and (c) finally, where emissions in 1988 did not exceed certain specified levels, Parties may opt for a stabilization at that level of emission by 1999.

The Protocol on Further Reduction of Sulphur Emissions was adopted in Oslo, Norway, on 14 June 1994 and entered into force on 5 August 1998. As of August 2011, the Protocol has 29 Parties. The Protocol aims at the gradual, step-wise reduction of sulphur deposition levels from current levels to below the critical loads beyond which significant harmful effects on specified sensitive elements of the environment may occur, and setting long-term targets for reductions in sulphur emissions. It also emphasizes energy savings.

The Protocol on Heavy Metals was adopted in Aarhus, Denmark, on 24 June 1998 and entered into force on 29 December 2003. As of August 2011, the Protocol has 30 Parties. It targets three particularly harmful metals: cadmium, lead and mercury. According to one of the basic obligations, Parties have to reduce their emissions for these three metals below their levels in 1990 (or an alternative year between 1985 and 1995). The Protocol aims to cut emissions from industrial sources (iron and steel industry, non-ferrous metal industry), combustion processes (power generation, road transport) and waste incineration. The Protocol requires Parties to phase out leaded petrol. It also introduces measures to lower heavy metal emissions from other products, such as mercury in batteries, and proposes the introduction of management measures for other mercury-containing products.

The Protocol on Persistent Organic Pollutants (Protocol on POPs) was adopted in Aarhus, Denmark, on 24 June 1998 and entered into force on 23 October 2003. As of August 2011, the Protocol has 31 Parties. It focuses on 16 substances that have been singled out according to agreed risk criteria. The substances comprise 11 pesticides, 2 industrial chemicals and 3 by-products/contaminants. The ultimate objective is to eliminate any discharges, emissions and losses of POPs. The Protocol bans the production and use of some products outright (aldrin, chlordane, chlordecone, dieldrin, endrin, hexabromobiphenyl, mirex and toxaphene). Others are scheduled for elimination at a later stage (dichlorodiphenyltrichloroethane (DDT), heptachlor, hexaclorobenzene, polychlorinated biphenyls (PCBs)). Finally, the Protocol severely restricts the use of DDT, hexachlorocyclohexane (HCH) (including lindane) and PCBs. It also obliges Parties to reduce their emissions of dioxins, furans, polycyclic aromatic hydrocarbons and hexachlorobenzene (HCB) below their levels in 1990 (or an alternative year between 1985 and 1995). For the incineration of municipal, hazardous and medical waste, it lays down specific limit values. On 18 December 2009, Parties to the Protocol amended it to include seven new substances. Furthermore, the Parties revised obligations for DDT, heptachlor, HCB and PCBs, as well as emission limit values from waste incineration. Parallel to this, with a view to facilitating the Protocol's ratification by countries with economies in transition, the Parties introduced flexibility for these countries regarding the time frames for the application of emission limit

values and best available techniques. These amendments have not yet entered into force for the Parties that adopted them.

The Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol) was adopted in Gothenburg, Sweden, on 30 November 1999 and entered into force on 17 May 2005. As of August 2011, the Protocol has 26 Parties. The Protocol sets emission ceilings for 2010 for four pollutants: SO_2, NO_x, VOCs and ammonia. These ceilings were negotiated on the basis of scientific assessments of pollution effects and abatement options. Parties whose emissions have a more severe environmental or health impact and whose emissions are relatively inexpensive to reduce have to make the biggest cuts. The Protocol also sets tight limit values for specific emission sources (e.g., combustion plant, electricity production, dry cleaning, cars and lorries) and requires best available techniques to be used to keep emissions down. VOC emissions from such products as paints or aerosols also have to be cut. Finally, farmers have to take specific measures to control ammonia emissions.

Currently, there is ongoing work to revise two Protocols under the LRTAP Convention, namely, the Gothenburg Protocol and the Protocol on Heavy Metals.

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CONVENTION ON ENVIRONMENTAL IMPACT ASSESSMENT IN A TRANSBOUNDARY CONTEXT

Status

The Espoo Convention was adopted in Espoo, Finland, on 25 February 1991. It entered into force on 10 September 1997 and as of August 2011 has 45 Parties. In Central Asia, Kazakhstan and Kyrgyzstan are Parties.

Major obligations

The Espoo Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of Parties to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. Appendix I to the Convention includes the list of activities that automatically require an application of the Convention if significant impacts may extend across the border. An agreement between Parties could include further activities, which would require transboundary environmental impact assessments (EIAs). Appendix III contains general criteria to assist in the determination of the environmental significance of activities not listed in appendix I.

The procedure has distinct stages, which include notifying the affected Parties, organizing participation and information flow, public participation, preparation and distribution of the EIA documentation, consultation between Parties, final decision and transmittal of the final decision. The decision-making power remains with the Party of origin. The Convention does not affect the protection of information the supply of which would be prejudicial to industrial and commercial secrecy or national security.

Applicability beyond the UNECE region

A first amendment to the Convention was adopted in 2001. Once in force, it will open the Convention to accession by States that are not members of the UNECE upon approval by the Meeting of the Parties to the Convention.

Protocol

The Protocol on Strategic Environmental Assessment was adopted by an extraordinary Meeting of the Parties to the Espoo Convention on 21 May 2003 during the "Environment for Europe" Ministerial Conference in Kyiv. The Protocol entered into force on 11 July 2010. As of August 2011, the Protocol has 23 Parties. The Protocol augments the Espoo Convention by ensuring that individual Parties integrate environmental assessment into their plans and programmes at early stages. Strategic environmental assessment (SEA) of plans and programmes is undertaken much earlier in the decision-making process than EIA. It is therefore seen as a key tool for sustainable development. The Protocol also requires that Parties endeavour to ensure that environmental concerns are integrated in the preparation of policies and legislation. The Protocol provides for extensive public participation in the decision-making process. UNECE member States — both Parties and non-Parties to the Espoo Convention — can participate in the Protocol. The Protocol is also open to United Nations Member States outside of the UNECE region upon approval by the Meeting of the Parties to the Convention serving as the Meeting of the Parties to the Protocol.

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CONVENTION ON THE PROTECTION AND USE OF TRANSBOUNDARY WATERCOURSES AND INTERNATIONAL LAKES

Status

The Water Convention was adopted in Helsinki, Finland, on 17 March 1992. The Convention entered into force on 6 October 1996 and as of August 2011 has 38 Parties. In Central Asia, Kazakhstan and Uzbekistan are Parties to the Convention.

Major obligations

The Convention is intended to strengthen measures for the protection and ecologically sound management of transboundary surface waters and groundwaters. The Convention promotes a holistic approach to water management taking into account the complex interrelationship between the hydrological cycle, land, flora and fauna, as well as their impacts on socio-economic conditions, based on the understanding that water resources are key for societies and ecosystems. The core obligations of the Water Convention include the obligation to prevent, control and reduce transboundary impacts, i.e., significant adverse effects on the environment and their socio-economic implications, the obligation to ensure reasonable and equitable use of transboundary waters and the obligation to cooperate in the use and management of such waters.

More specifically, the Convention includes two major categories of obligations. The first, more general, obligations apply to all Parties and, inter alia, include: licensing and monitoring wastewater discharge; application of best environmental practices to reduce pollution from nutrients and hazardous substances from agriculture and other sources; introduction of EIAs; monitoring; development of contingency plans; setting of water-quality objectives; and minimization of the risk of accidental water pollution. The second category of obligations is addressed to Parties sharing transboundary waters — so-called Riparian Parties. They are obliged to cooperate on the basis of equality and reciprocity, in particular by concluding specific bilateral or multilateral agreements, which provide for the establishment of joint bodies for transboundary water cooperation. The Convention encourages Parties to cooperate on the basis of catchment area.

Applicability beyond UNECE region

In 2003, the Water Convention was amended to allow accession by countries outside the UNECE region. Once the amendments enter into force, this will be of particular importance for countries that border the UNECE region, such as Afghanistan, China, the Islamic Republic of Iran, Mongolia and the Democratic People's Republic of Korea.

Protocols

The Protocol on Water and Health was adopted in London on 17 June 1999 and came into force on 4 August 2005. As of August 2011, the Protocol has 24 Parties. The main aim of the Protocol is to protect human health and well-being by better water management, including the protection of water ecosystems, and by preventing, controlling and reducing water-related diseases. It is the first international agreement of its kind adopted specifically to attain an adequate supply of safe drinking water and adequate sanitation for everyone, and effectively protect water used as a source of drinking water. Countries from the UNECE region — irrespective of whether or not they are a Party to the Water Convention — can join the Protocol.

The Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters was adopted in Kyiv, Ukraine, on 21 May 2003. The Protocol is a joint instrument under the Water and Industrial Accidents Conventions. The Protocol provides for a comprehensive regime for civil liability and for adequate and prompt compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters. The Protocol has not entered into force.

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CONVENTION ON THE TRANSBOUNDARY EFFECTS OF INDUSTRIAL ACCIDENTS

Status

The Convention was adopted in Helsinki, Finland, on 17 March 1992 and entered into force on 19 April 2000. As of August 2011 it has 40 Parties. In Central Asia, Kazakhstan is a Party.

Major obligations

The Industrial Accidents Convention aims at the prevention of, preparedness for and response to industrial accidents capable of causing transboundary effects, including the effects of such accidents caused by natural disasters. It fosters international cooperation concerning mutual assistance, research and development, and exchange of information and exchange of technology in the area of prevention of, preparedness for and response to industrial accidents.

The Industrial Accidents Convention obliges its Parties to develop and implement policies and strategies for reducing the risks of industrial accidents and improving preventive, preparedness and response measures, including restoration measures. Parties are obliged to identify hazardous activities capable of causing transboundary effects, assess the risks of hazardous activities, and notify affected Parties of them. The Parties are to ensure the preparation and implementation of on-site and off-site contingency plans for hazardous activities and public participation in procedures for setting-up prevention and preparedness measures. In the event of an industrial accident, coordination of response within a country and between countries includes efficient notification and mutual assistance through joint work of response forces, as well as joint work on modelling. The UNECE Industrial Accident Notification System functions under the Convention.

Applicability beyond the UNECE region

The Convention is open to UNECE member States only.

Protocol

The Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters was adopted in Kyiv, Ukraine, on 21 May 2003. The Protocol is a joint instrument under the Water and Industrial Accidents Conventions. The Protocol provides for a comprehensive regime for civil liability and for adequate and prompt compensation for damage caused by the transboundary effects of industrial accidents on transboundary waters. The Protocol has not entered into force.

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CONVENTION ON ACCESS TO INFORMATION, PUBLIC PARTICIPATION IN DECISION-MAKING AND ACCESS TO JUSTICE IN ENVIRONMENTAL MATTERS

Status

The Aarhus Convention was adopted on 25 June 1998 in Aarhus, Denmark, at the Fourth "Environment for Europe" Ministerial Conference. The Convention entered into force on 30 October 2001 and as of August 2011 has 44 Parties, including the EU. In Central Asia, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan are Parties.

Major obligations

The Aarhus Convention stands on three "pillars": access to information, public participation and access to justice in environmental matters. The Aarhus Convention grants the public rights and imposes on Parties and public authorities obligations regarding access to information and public participation. It backs up these rights with access-to-justice provisions. The Convention also requires Parties to promote its principles in international decision-making processes and within the framework of international organizations.

Applicability beyond the UNECE region

Pursuant to article 19, paragraph 3, of the Aarhus Convention, any State that is a Member of the United Nations may accede to the Convention upon approval by the Meeting of the Parties. At its fourth session (2011), the Meeting of the Parties adopted decision IV/5 on accession to the Convention by States from outside the UNECE region. The decision lays down a simplified procedure for approval by the Meeting of the Parties of accession by non-UNECE member States.

Protocol

The Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention was adopted at the extraordinary meeting of the Parties held on 21 May 2003 in Kyiv, Ukraine, in the framework of the Fifth "Environment for Europe" Ministerial Conference. The Protocol entered into force on 8 October 2009. As of August 2011 it has 27 Parties. It is the first legally binding international instrument on pollutant release and transfer registers (PRTRs). Its objective is to enhance public access to information through the establishment of coherent, nationwide PRTRs, providing inventories of pollution from industrial sites and other sources. Although regulating information on pollution, rather than regulating pollution directly, the Protocol is expected to exert a significant downward pressure on pollution levels. Pursuant to the Protocol, any State that is a Member of the United Nations and regional economic integration organizations may accede to the Protocol.

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ECOLOGY, HEALTH

2.2 UNECE Environmental Conventions and International Law

UNECE ENVIRONMENTAL CONVENTIONS: PROMOTING COOPERATION IN THE UNECE REGION AND BEYOND

All five UNECE environmental Conventions have played and continue to play an important role in catalysing cooperation between various parts of the UNECE region. The geopolitical changes of the late 1980s and early 1990s, including the emergence of new independent States after the collapse of the Soviet Union and the break-up of Yugoslavia, as well as the substantial expansion of the EU, made the UNECE Conventions needed and important instruments for transboundary cooperation and harmonization on environmental issues. For the water resources in the UNECE region, the new borders transformed many formerly national rivers, lakes and groundwaters into transboundary ones, which therefore required new regulatory approaches, frameworks and mechanisms for their management, use and protection. The 1992 Water Convention provided the basis for such new frameworks.[8]

Among these UNECE Conventions, the *Water Convention represents the legal framework most targeted at and relevant for the management and protection of transboundary waters*. The Water Convention builds on international customary law, a number of soft-law instruments in the area of international water law developed by the Institute of International Law and the International Law Association, the work of the International Law Commission (ILC) on the Draft Articles on the Law of Non-Navigational Uses of International Watercourses[9] and many non-binding instruments developed under the auspices of UNECE in earlier years.[10] While the Water Convention is the key instrument for developing cooperation on the management and protection of transboundary waters, the other UNECE Conventions build a comprehensive framework that *complements and supports* the provisions of the Water Convention in this area. In particular, the Espoo Convention, the Industrial Accidents Convention and the Aarhus Convention greatly contribute in the pursuit of the goals of the Water Convention, strengthening transboundary water cooperation in the UNECE region and in specific transboundary basins, and also influencing the development of the legal regime under the Water Convention.

The linkages between the Water Convention and other UNECE instruments exist in different forms — from direct cooperation in formulating policies, to the joint provision of operational and technical support at the country level. For example, the close collaboration between the Water Convention and the Industrial Accidents Convention has resulted in the adoption of a new Protocol on Civil Liability as a supplementary instrument to both Conventions, as well as in a range of joint meetings, guidelines, and recommendations aimed at the prevention of accidental water pollution.[11]

Both in the area of transboundary water cooperation and in overall cooperation on environmental issues, having reached a "mature" age — both in terms of the nearly UNECE-wide participation as well as in the level of development of their legal regimes — UNECE environmental Conventions increasingly benefit from the close normative interface among them. In other words, for the growing number of States Parties to all, or nearly all, UNECE Conventions, the *Conventions may now function as an integral normative setting*, therefore contributing to stronger environmental protection at national and transboundary levels.

As authoritatively stated in legal literature, the proper implementation and interpretation of the various provisions of a convention is made significantly easier through reference to "kindred" conventions, which contain a number of corresponding obligations. In certain cases, general commitments under one convention can be better understood and implemented by reference to another, more specific instrument. In this way, the obligations of the Water Convention concerning public information (article 16) should be viewed through the prism of the Aarhus Convention. The same applies to the Espoo Convention and its Protocol on Strategic Environmental Assessment, and to the Industrial Accidents Convention, which have many references to public participation.[12] That is how the obvious synergies between the UNECE Conventions create a cohesive legal framework for environmental protection for the entire UNECE region in general and for the sustainable management of transboundary river basins in particular.

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[8] The Water Convention has played a crucial role in supporting the establishment and strengthening of cooperation and serving as a model for a number of multilateral and bilateral agreements. Among them are the 1994 Convention on Cooperation for the Protection and Sustainable Use of the Danube River and the 2002 Framework Agreement on the Sava River Basin, which build on the Convention's provisions in a more specific subregional context. Other examples are bilateral treaties on transboundary waters, such as between Estonia and the Russian Federation, between Kazakhstan and the Russian Federation, between the Russian Federation and Ukraine, between Belarus and Ukraine, between Belarus and the Russian Federation and between the Republic of Moldova and Ukraine, etc.

[9] The Draft Articles were finalized and adopted by the ILC in 1994, therefore two years after the adoption of the Water Convention. The 1994 ILC Draft Articles later constituted the basis for the negotiations in the United Nations General Assembly which led to the adoption in 1997 of the United Nations Convention on the Law of the Non-navigational Uses of International Watercourses.

[10] Earlier UNECE instruments include the Declaration of Policy on Water-pollution Control (1966); the Declaration of Policy on Prevention and Control of Water Pollution, including Transboundary Pollution (1980); the Decision on International Cooperation on Shared Water Resources (1982); the Declaration of Policy on the Rational Use of Water (1984); the Principles Regarding Cooperation in the Field of Transboundary Waters (1987); the Charter on Groundwater Management (1989); and the Code of Conduct on Accidental Pollution of Transboundary Inland Waters (1990).

[11] Patricia Wouters and Sergei Vinogradov, "Analysing the ECE Water Convention: What Lessons for the Regional Management of Transboundary Water Resources?", in *Yearbook of International Co-operation on Environment and Development 2003–04*, Olav Schram Stokke and Øystein B. Thommessen (eds.) (London, Earthscan Publications, 2003), pp. 55–63. See also, Safety Guidelines and Good Practices for Pipelines (ECE/CP.TEIA/2006/11–ECE/MP.WAT/2006/8) (available online at http://live.unece.org/fileadmin/DAM/env/documents/2006/teia/ECE_CP.TEIA_2006_11%20E.pdf) and Safety Guidelines and Good Practices for Tailings Management Facilities (ECE/CP.TEIA/2008/9– ECE/MP.WAT/WG.1/2008/5) (available online at http://live.unece.org/fileadmin/DAM/env/documents/2008/TEIA/ECE_CP_TEIA_2008_9E.pdf).

[12] Patricia Wouters and Sergei Vinogradov, supra note 11, p. 60.

Presently, the UNECE environmental instruments are *regional* instruments with States Parties coming from the UNECE region only. However, some UNECE instruments may reach a global scope, insofar as they are open to universal participation. Namely, the Aarhus Convention and its Protocol on Pollutant Release and Transfer Registers are also open to accession by non-UNECE countries. For the Aarhus Convention, such accession is subject to approval of the Meeting of the Parties.[13]

In the same direction, the Espoo Convention, in 2001, and the Water Convention, in 2003, have been *amended to allow for accession by non-UNECE countries* upon approval by the respective Meeting of the Parties. The Protocol on Strategic Environmental Assessment to the Espoo Convention has been open from the very beginning to accession by non-UNECE States upon the approval by the Meeting of the Parties to the Convention serving as the Meeting of the Parties to the Protocol.

Apart from the above formal steps, the Water and Espoo Conventions are increasingly involving States outside of the UNECE region, especially countries bordering UNECE States and/or sharing waters with UNECE States, in their activities, in order to make them aware of the cooperation framework under the Conventions in point. The involvement of non-UNECE States is a priority under the Water Convention and part of its programme of work. Non-UNECE countries are regularly invited and participate in activities under the Convention. This is in particular true for countries bordering the UNECE region, such as Afghanistan, the Islamic Republic of Iran and Mongolia: in 2010–2011, these three countries took part in the development of the *Second Assessment of Transboundary Rivers, Lakes and Groundwaters in the UNECE Region*, providing their comments and inputs with regard to the status of transboundary waters they share with UNECE countries. Mongolia is also regularly represented in meetings under the Espoo Convention.

UNECE CONVENTIONS: PART AND PARCEL OF INTERNATIONAL LAW

The UNECE Conventions have been developed by UNECE member States, in most cases — originally for the UNECE region. At the same time, they *are based on the rules and principles of international law and constitute an integral part thereof*. With regard to the Water Convention, most commonly issues arise concerning its relationship with the 1997 United Nations Convention on the Law of Non-navigational Uses of International Watercourses (1997 United Nations Convention), even though the latter is not yet in force.

In 2000, the relationship between these two Conventions was the object of a specific study[14] under the former Task Force on Legal and Administrative Aspects of the Water Convention. The study concluded that both Conventions address the same subject matter and their respective provisions are mutually compatible. The provisions of the Water Convention are generally more specific. They set out more precise guidance and advanced standards of conduct, particularly with regard to prevention, control and reduction of transboundary impact. At the same time, more extensive guidance may be found in the 1997 United Nations Convention concerning the principle of equitable and reasonable utilization and procedures to be applied in case of planned measures. The added value of the Water Convention lies in the institutional framework it sets up in order to assist the Parties in complying with its provisions and in further developing them, on the one hand, and in the mandatory character of institutional cooperation between Riparian Parties, on the other – none of these features being present in the 1997 United Nations Convention.

Being part and parcel of international law, UNECE environmental Conventions *have influenced* the development of other international law instruments at both the regional and global levels. For example, the Water Convention provided an important background for development of the EU Water Framework Directive, which includes reference to the Water Convention. Another example relates to the Espoo Convention, which inspired Parties to the Framework Convention for the Protection of the Marine Environment of the Caspian Sea (Tehran Convention) to start working on the Protocol on Environmental Impact Assessment in a Transboundary Context to the Tehran Convention.

Consistent with their nature as *framework instruments*, the majority of UNECE Conventions lay down general principles, obligations and requirements for their Parties that have been further developed and made concrete through the adoption of subsequent protocols, as well as soft-law instruments in the form of guidelines and recommendations. A special feature of the Water Convention, which distinguishes it from many other framework-type instruments is that its objectives are achieved primarily through the conclusion by the Parties to the Convention of bilateral and multilateral agreements with respect to specific transboundary waters. Specific bilateral and multilateral agreements are also encouraged by the Espoo and the Industrial Accidents Conventions, though, differently from the Water Convention, the conclusion of bilateral and multilateral agreements is not mandatory under these Conventions.

Last but not least, all UNECE environmental instruments provide a *"floor", not a "ceiling"*: they establish minimum standards to be achieved but do not prevent any Party from adopting measures which go further.

THE COMMON NORMATIVE FRAMEWORK ON TRANSBOUNDARY WATER COOPERATION

In the area of transboundary water cooperation one can identify a *common normative framework* in three of the UNECE environmental Conventions — i.e., the Water Convention, the Espoo Convention and the Industrial Accidents Convention. This common normative framework is based on a number of key principles and obligations: the no-harm rule; the equitable and reasonable utilization principle (enshrined in the Water Convention

[13] The Meeting of the Parties to the Aarhus Convention at its fourth session (2011) adopted a decision on accession to the Convention by States from outside the UNECE region. The decision guides non-UNECE States to take simple procedural steps for the approval by the Meeting of the Parties.

[14] Attila Tanzi (2000), *Comparing two United Nations Conventions on Water: The Relationship between the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes and the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses*, report of the UNECE Task Force on Legal and Administrative Aspects (Geneva), available online at http://live.unece.org/index.php?id=12621.

and corroborated by the principle of sustainability in the Espoo and Industrial Accidents Conventions); the principle of cooperation; and the principle of the peaceful settlement of disputes. Such identification of the common normative framework in the area of transboundary water cooperation is, however, without prejudice to the obligations of individual States Parties to only some of these Conventions

The *general obligation to prevent, control and reduce transboundary impact* (the so-called no-harm rule) is the key obligation under these three UNECE Conventions, which have largely similar wording in this respect. The Water Convention obliges Parties to "take all appropriate measures to prevent, control and reduce any transboundary impact" (article 2, para. 1). Under the Espoo Convention, "the Parties shall, either individually or jointly, take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities" (article 2, para. 1). The Industrial Accidents Convention requests Parties to "take appropriate measures and cooperate within the framework of this Convention, to protect human beings and the environment against industrial accidents by preventing such accidents as far as possible, by reducing their frequency and severity and by mitigating their effects" (article 3, para. 1).

As it appears in the above citations, the general obligation to prevent, control and reduce transboundary impact is been expressed in terms of *due diligence*, as opposed to absolute obligations, as explained in detail in the Guide to Implementing the Water Convention. The due diligence nature of an obligation of prevention is determined by the duty to take *"all appropriate measures"* aimed at the prevention in point. In order to distinguish in practical terms a due diligence obligation of prevention from an absolute obligation of prevention, one is to consider that, in the latter case, a State Party would be held responsible for breach of the obligation of prevention whenever transboundary impact occurs in relation to an activity carried out on its territory. On the other hand, for an obligation of due diligence to be considered as having been breached, the mere occurrence of transboundary impact would not in itself be sufficient. In order for a State to be internationally responsible for breach of a due diligence obligation of prevention, next to the occurrence of transboundary impact, it would be necessary that the State on whose territory the activity was carried out which caused such an impact could not prove to have adopted "all the appropriate measures" of prevention. If transboundary impact occurs despite all appropriate measures having being taken, the origin State, rather than becoming internationally responsible for breach of an international obligation, will have to comply with the ancillary obligation to take all appropriate measures — individually and jointly with the victim State — to control and reduce such impact.[15]

The due diligence nature of the obligation of prevention, control and reduction of transboundary impact and the concept of "appropriateness" of the measures required involves a significant amount of relativity as to both the contents and time frame of the action which is to be taken by Parties. Such relativity would be proportionate to the capacity of the Party concerned, as well as to the nature and degree of the risk of occurrence of transboundary impact in the light of the specific circumstances. This is to say that, on the one hand, the higher the risk of a major impact — such as that of a flooding from failure of a dam, or of serious toxic pollution from failure in an industrial plant — the greater the care due (i.e., the appropriate measures to be taken). On the other hand, the higher the degree of scientific, technological, economic and administrative development, and capacity of the State Party, the higher the standards of care expected and required of it.[16] However, the Conventions in point require each Party to start with due care the process of planning and adoption of "all the appropriate measures" for achieving the result eventually required by their relevant provisions, right from the time of completion of the ratification, or accession, process.

Of direct relevance to the understanding of the due diligence nature of the obligation of prevention, control and reduction of transboundary impact is the recent judgment of the International Court of Justice (ICJ) on the *Pulp Mills Case*: "… it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works".[17]

The notion of *"transboundary impact"/"significant adverse effect"* is obviously at the heart of the obligation to prevent, control and reduce transboundary impact. The three Conventions under consideration have inherently the same definitions of transboundary impact and apply the same approach to defining its threshold.

The **Water Convention** defines *"transboundary impact"* as:

> Any significant adverse effect on the environment resulting from a change in the conditions of transboundary waters caused by a human activity, the physical origin of which is situated wholly or in part within an area under the jurisdiction of a Party, within an area under the jurisdiction of another Party. Such effects on the environment include effects on human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; they also include effects on the cultural heritage or socio-economic conditions resulting from alterations to those factors (article 1, para. 2).

This definition follows a holistic approach, taking into account the complex interrelationship between the hydrological cycle, land, flora and fauna and social and economic factors,

[15] Guide to Implementing the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, adopted by the fifth session of the Meeting of the Parties to Water Convention (2009), (ECE/MP.WAT/2009/L.2), annex, paras. 62–63. The Guide is available online at http://live.unece.org/fileadmin/DAM/env/documents/2009/Wat/mp_wat/ECE_mp.wat_2009_L2_%20E.pdf.
[16] Ibid., paras. 64–66.
[17] *Case concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment of 20 April 2010, para. 204.

based on the understanding that water resources are key for societies and ecosystems. This is in line with the principles of IWRM. Also, the Water Convention uses the expression "significant adverse effect" which provides an abstract standard of guidance for the assessment of the acceptable threshold of harm. The expression "significant adverse effect" reflects the international general principle of "good neighbourliness", which sets out the duty to overlook minor, insignificant, inconveniences deriving from activities in neighbouring countries. There can be said to be "significant adverse effect" when there is a real impairment of a significant use of the water body or of its environment by a riparian. The concrete assessment of the "significance threshold" of the adverse effect making up the transboundary impact depends on the specific situation in the catchment area, including the specific circumstances pertaining to the Riparian Parties involved, on a case-by-case basis. The same adverse effect may be considered "significant" in one catchment area, but not in another, according to the different clean-up capacity available, or to the kind of uses affected and to the alternative uses available in each relevant catchment area.[18]

In the **Espoo Convention**, the respective obligation is formulated as an obligation to prevent, reduce and control "significant adverse transboundary environmental impact" from proposed activities (article 2, para. 1). The Espoo Convention uses the same holistic approach and defines "impact" as "any effect caused by a proposed activity on the environment including human health and safety, flora, fauna, soil, air, water, climate, landscape and historical monuments or other physical structures or the interaction among these factors; it also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors" (article 1, para. vii). The Convention includes a separate definition of "transboundary impact", which means "any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another Party" (article 1, para. viii). It is important to stress that the Espoo Convention provides useful parameters for the determination of the "significant" threshold. Firstly, appendix I provides for a list of activities that are likely to cause significant adverse transboundary impact. Secondly, appendix III sets out the "general criteria to assist in the determination of the environmental significance of activities not listed in appendix I". Appendix IV is also of assistance in providing for an inquiry procedure on the question of whether a proposed activity listed in appendix I is likely to have a significant transboundary impact.

In the **Industrial Accidents Convention** the obligation of prevention is formulated as a general obligation of Parties to take appropriate measures to prevent hazardous accidents by reducing their frequency and severity and by mitigating their effects (article 3, para. 1). The Convention sets out definitions of its terms in its article 1. By "effects" the Convention means "any direct or indirect, immediate or delayed adverse consequences caused by an industrial accident on, inter alia: (i) human beings, flora and fauna; (ii) soil, water, air and landscape; (iii) the interaction between the factors in (i) and (ii); (iv) material assets and cultural heritage, including historical monuments". The Convention defines "hazardous activity" as an "activity in which one or more hazardous substances are present or may be present in quantities at or in excess of the threshold quantities listed in annex I … and which is capable of causing transboundary effects". It defines "transboundary effects" as "serious effects within the jurisdiction of a Party as a result of an industrial accident occurring within the jurisdiction of another Party". The term "serious" in the Industrial Accidents Convention has a similar intention as the term "significant" used in the Water and Espoo Conventions: i.e., to allow overlooking minor, insignificant inconveniences deriving from activities in neighbouring countries. When Parties do not agree as to whether an activity is hazardous and is capable of causing transboundary effects that are "serious" or "significant", they may refer to an inquiry procedure according to annex II of the Convention.

The second pillar of the normative framework is to be found in the *the principle of equitable and reasonable utilization* (Water Convention, article 2, para. 2 (c)). This principle is generally recognized to be part of customary international law, as evidenced by international agreements, non-binding instruments, decisions of courts and tribunals, and in the writings of publicists.[19] The most authoritative recognition of the customary character of the principle in point can be found in the ICJ judgment rendered in 1997 in the *Case concerning the Gabčíkovo-Nagymaros Project* on the Danube River.[20] There, the Court referred to the watercourse State's "basic right to an equitable and reasonable sharing of the resources of an international watercourse".[21] The universal acceptance of equitable and reasonable utilization as a principal binding rule in the field of transboundary water resources has also been enhanced by its codification in articles 5, 6 and 10 of the 1997 United Nations Convention.[22]

The principle of equitable and reasonable use is particularly relevant in cases where there is a conflict of uses, or simply of claims about future uses, of a transboundary watercourse, between riparian States. Practical implementation of the principle under consideration requires a case-by-case assessment to be made in conformity with the Convention, mutual exchange of data and information on the basin and country-specific factors, as well as consultations, hence cooperation. In order to identify the relevant factors on which to exchange data and information and on which to hold consultations, ar-

[18] Guide to Implementing the Convention, supra note 15, paras. 79–82.

[19] Commentary to Draft Articles on the Law of the Non-navigational Uses of International Watercourses, in Report of the International Law Commission on the work of its forty-sixth session, Official Records of the General Assembly, forty-ninth session, Supplement No. 10 (A/49/10), reprinted in *Yearbook of the International Law Commission*, 1994, vol. II (part two), pp. 88 ff. The commentary concluded that:

> A survey of all available evidence of general practice of States, accepted as law, in respect of the non-navigational uses of international watercourses — including treaty provisions, positions taken by States in specific disputes, decisions of international courts and tribunals, statements of law prepared by intergovernmental and non-governmental bodies, the views of learned commentators and decisions of municipal courts in cognate cases — reveals that there is overwhelming support for the doctrine of equitable utilization as a general rule of law for the determination of the rights and obligations of States in this field. (p. 98).

[20] *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, I.C.J. Reports, 1997.

[21] Ibid., para. 78.

[22] Guide to Implementing the Convention, supra note 15, para. 100.

ticle 6, paragraph 1, of the 1997 United Nations Convention provides useful guidance. It identifies a non-exhaustive list of factors and circumstances that should be taken into account when balancing the interests of riparians.[23] Such factors relate to the physical characteristics of the resource, the population dependent on the waters, existing and potential uses, the impact of such uses and the availability of alternative uses or the adoption of more efficient practices. According to the principle in point, no use or category of uses enjoys inherent priority. However, article 10, paragraph 2, of the 1997 United Nations Convention provides that, "special regard" be given to vital human needs.[24]

The fact that a use of a watercourse causes transboundary impact may not necessarily imply that it is inequitable. According to the specific circumstances of each given case, such a use may be assessed as equitable nonetheless. This would require that all appropriate measures, not only to prevent, but also to control and reduce the transboundary impact have been taken, including exchange of data and information, as well as consultations and other forms of cooperation with the affected States. The equitable and lawful nature of a given use might also depend on whether, through such forms of cooperation, all parties involved have negotiated mutually agreeable adjustments. However, not every transboundary impact would be negotiable. Agreement would not preclude the inequitable, therefore illegal, nature of a use that would be unsustainable, such as a use that would irreversibly affect the environment to the extent of impairing present or future vital human needs of the people living along the basin, or beyond.[25]

The latter consideration shows that the principle of equitable and reasonable use should be read in conjunction with the *principle of sustainability* (referred to in the Water Convention, article 2, para. 5 (c)), preambular paragraphs of the Industrial Accidents Convention and preambular paragraphs of and appendix III to the Espoo Convention). As stated in the Water Convention, this principle requires that "water resources shall be managed so that the needs of the present generation are met without compromising the ability of future generations to meet their own needs" (article 2, para. 5 (c)). This is fully in line with the contemporary developments of international customary water law according to which the principle of equitable use incorporates that of sustainable development. That is to say that a utilization of the watercourse providing maximum benefit to the riparian States in a manner incompatible with its preservation as a natural resource could not be qualified as "equitable and reasonable". This accounts for the fact that the principle in point does not apply only to water quantity and distribution issues, but also to water quality problems.[26]

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[23] Article 6, paragraph 1, reads:

> Utilization of an international watercourse in an equitable and reasonable manner within the meaning of article 5 requires taking into account all relevant factors and circumstances, including: (a) geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character; (b) the social and economic needs of the watercourse States concerned; (c) the population dependent on the watercourse in each watercourse State; (d) the effects of the use or uses of the watercourses in one watercourse State on other watercourse States; (e) existing and potential uses of the watercourse; (f) conservation, protection, development and economy of use of the water resources of the watercourse and the costs of measures taken to that effect; (g) the availability of alternatives, of comparable value, to a particular planned or existing use.

[24] Guide to Implementing the Convention, supra note 15, paragraphs 106–108.

[25] Ibid., para. 110.

[26] Ibid., para. 102.

The third key principle of the common normative framework under consideration is the one of *cooperation*. The customary legal force of the general international law obligation of cooperation in the field of environmental protection is substantiated by a number of authoritative instruments, such as Principle 24 of the Stockholm Declaration, Principle 7 of the Rio Declaration, article 4 of the Draft articles on international liability for injurious consequences arising out of acts not prohibited by international law of the International Law Commission (2001), as well as article 8, paragraph 1, of the 1997 United Nations Convention.

The obligation to cooperate is present in the Water, Espoo and Industrial Accidents Conventions. They all acknowledge that prevention, control and reduction of transboundary impact can only be achieved through cooperation between States. In other words, cooperation is instrumental to full compliance with the other two pivotal obligations in question — i.e., those to prevent, control and reduce transboundary impact and to ensure equitable and reasonable use of transboundary waters.

On this score, the **Water Convention** provides that:

> The Riparian Parties shall cooperate on the basis of equality and reciprocity, in particular through bilateral and multilateral agreements, in order to develop harmonized policies, programmes and strategies covering the relevant catchment areas, or parts thereof, aimed at the prevention, control and reduction of transboundary impact and aimed at the protection of the environment of transboundary waters or the environment influenced by such waters, including the marine environment. (article 2, para. 6)

Similarly, under the **Industrial Accidents Convention**:

> The Parties shall, taking into account efforts already made at national and international levels, take appropriate measures and cooperate within the framework of this Convention, to protect human beings and the environment against industrial accidents by preventing such accidents as far as possible, by reducing their frequency and severity and by mitigating their effects…." (article 3, para. 1)

The **Espoo Convention** obliges Parties to take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities "either individually or jointly", therefore requiring States to cooperate (article 2, para. 1).

The normative contents of the general obligation of cooperation is specified and articulated through an extensive number of subsequent provisions in the Conventions. For example, for the Water Convention (articles 9–15), cooperation takes the form, inter alia, of consultations, establishment of joint bodies, joint monitoring and assessment, exchange of information, warning and mutual assistance. Such forms of cooperation may be applied to the special circumstances pertaining to each specific transboundary water, through bilateral and multilateral agreements among Riparian Parties.[27] Under the **Industrial Accidents Convention**, the forms of cooperation would include exchange of information, consultation, notification in case of accident, mutual assistance, etc. In the **Espoo Convention**, the obligation of cooperation is further specified through the obligations to notify and to hold consultations on the proposed activities.

"Equality" (Water Convention, article 2, para. 6, and article 9, para. 1; Espoo Convention, appendix VI) and "reciprocity" (Water Convention, article 2, para. 6 and article 9, para. 1; Espoo Convention, appendix VI; and Industrial Accidents Convention, preamble) are recognized as key principles pertaining to the obligation of cooperation. This implies that cooperation should not be limited to a purely formal procedure of exchange of views, but that each Party should conduct itself in good faith.[28]

The common normative framework under consideration also includes the *obligation of peaceful settlement of disputes* (Water Convention, article 22; Espoo Convention, article 15; Industrial Accidents Convention, article 21), in line with the general principle to that effect as codified in article 2, paragraph 3, and article 33 of the United Nations Charter. Indeed, this general obligation covers any inter-State dispute irrespective of its subject matter or its gravity, as clearly enunciated in the Manila Declaration on the Peaceful Settlement of International Disputes (Manila Declaration), adopted in 1982 by the United Nations General Assembly.[29] Disputes in the area of transboundary water cooperation and other areas of transboundary relations provide no exception to this rule.

Although the Aarhus Convention and its Protocol on PRTRs do not strictly speaking belong to the common normative framework in the area of transboundary water cooperation as identified in the Water Convention, the Espoo Convention and the Industrial Accidents Convention, their provisions on access to environmental information, public participation in decision-making and access to justice in environmental matters have a cross-cutting character, apply to the area of water management and transboundary water cooperation (see section 3.16) and may contribute significantly to the implementation of other Conventions and the functioning of the abovementioned common normative framework.

THE INSTITUTIONAL FRAMEWORK TO FOSTER AND DEVELOP COOPERATION

The added value of all the UNECE environmental Conventions lies in their institutional frameworks, which are set up in order to assist Parties in complying with their provisions and in further developing them. At the heart of the *institutional*

[27] Ibid., para. 138.
[28] Ibid., para. 139.
[29] General Assembly resolution 37/10.
[30] Under the LRTAP Convention, the highest body composed of representatives of the Parties is called the "Executive Body".
[31] The only exception is the Protocol on Water and Health. It is serviced by a joint secretariat hosted by UNECE and the World Health Organization Regional Office for Europe.

framework of the UNECE environmental Conventions and Protocols is the Meeting of the Parties (MOP) or Conference of the Parties (COP),[30] which holds its sessions on a regular basis, usually every two or three years. The MOPs/COPs of all the Conventions and Protocols have established Bureaux to guide daily activities and adopt strategic, policy and budgetary decisions between the sessions. They have also established a number of subsidiary bodies, primarily in the form of working or expert groups and task forces, to tackle issues that require concrete actions in particular areas. Each of these subsidiary bodies usually operates under the leadership of a Party or several Parties and meets and produces reports periodically. The MOPs/COPs and their subsidiary bodies are serviced by the secretariats of the respective Conventions. The secretariats are based at UNECE in Geneva, as the secretariat functions under the UNECE Conventions and Protocols are vested with the UNECE Executive Secretary.[31] Under the different Conventions, each Party usually appoints a national focal point with the aim of maintaining permanent relations between the bodies and activities of a Convention and its national competent authorities. Some Conventions, e.g., the Industrial Accidents Convention, require Parties to designate their competent authorities and to establish points of contact for the purpose of industrial accident notifications. For some Conventions, implementation is also supported by programme centres or collaborative centres. For example, since 2000, the International Water Assessment Centre (IWAC) acts as a collaborative centre of the Water Convention and supports its activities in several thematic areas.

Therefore, in becoming a Party to a UNECE Convention and/or Protocol, a State does not simply become the holder of new rights and obligations. Most importantly, it joins in an institutional regime based on the MOP/COP, its Bureau, its subsidiary bodies and the secretariat. Such an institutional framework assists Parties in the implementation and progressive development of the provisions of a Convention, including through soft-law guidelines and recommendations, as well as through the elaboration of specific protocols. It provides a *collective forum* conducive to bilateral and multilateral cooperation, where experience and good practices are shared. Parties may take part in and initiate new activities of the subsidiary bodies. These subsidiary bodies and the secretariat may handle requests of the Parties regarding clarification of technical, legal, institutional, economic and financial issues related to the implementation of the relevant instrument. In other words, a Party is not left alone to implement a Convention or a Protocol: its needs and expectations may be brought to the attention of all Parties sitting in the MOP/COP, which would provide for assistance, together with its subsidiary bodies, facilitating compliance and cooperation.

UNECE ENVIRONMENTAL CONVENTIONS AND INTERNATIONAL LAW
Key Messages

- UNECE Conventions play an important role in fostering environmental cooperation in the UNECE region, especially on transboundary issues.
- While originally catering only to States from the UNECE region, UNECE Conventions and Protocols are increasingly opening up to non-UNECE countries, therefore creating new perspectives for cooperation at the global level.
- A main added value of the UNECE Conventions lies in their institutional frameworks set up in order to assist Parties in complying with the Conventions' provisions and in further developing them.
- The Water Convention is the key instrument for developing cooperation on the management and protection of transboundary waters. At the same time, the other environmental Conventions build a comprehensive and coherent legal framework for environmental protection that complements and supports the provisions of the Water Convention in this area.
- In the area of transboundary water cooperation, one can identify the common normative framework enshrined in three UNECE Conventions — the Water Convention, the Espoo Convention and the Industrial Accidents Convention. This framework is based on several key principles and obligations: the obligation to prevent, control and reduce significant transboundary impact; the equitable and reasonable utilization principle corroborated by the principle of sustainability; the principle of cooperation; and the principle of the peaceful settlement of disputes.
- The Aarhus Convention and its Protocol on PRTRs can contribute significantly to the implementation of other UNECE Conventions and the functioning of the abovementioned common normative framework in the area of transboundary water cooperation.

Chapter 3

UNECE ENVIRONMENTAL CONVENTIONS:

How they Address Key issues of Water Management in Central Asia

3.1 Water Quantity and Water Quality

In the field of water management, the Central Asian region has to tackle very specific water quantity and water quality issues. Water allocation among countries of the Aral Sea Basin is an issue of serious concern for the populations and economies of these countries, and is a central factor in the relations between them. Central Asian countries are still guided by the water allocation schemes for the Amu Darya and Syr Darya Rivers developed during Soviet times, as their 1992 Agreement on cooperation in joint management, use and protection of water resources of inter-State sources is commonly interpreted as reconfirming Soviet water allocation quotas. At the same time, upstream countries of Central Asia advocate a revision of these water allocation rules — attempts that meet with opposition downstream. As long as no effective solutions responding to upstream as well as downstream needs are in place, the population of the region bears the negative consequences, in particular during dry years/cold winters. Besides the Aral Sea Basin, water quantity issues are high on the agenda in the basins of the Ili River (shared by China and Kazakhstan) and the Irtysh River (shared by China, Kazakhstan and the Russian Federation).

Cooperation on water quality issues receives much less attention in Central Asia, although the pressures on water resources by municipal sewage treatment, non-sewered areas, run-off from agriculture, old industrial installations, illegal wastewater discharges, illegal disposal of household and industrial wastes in river basins, tailings dams and dangerous landfills, are high.[32] Poor water quality is a threat to health in downstream regions. There is a need for an improved management of water resources with regard to quantity as well as quality. In particular in the light of the potential effects of climate change, it is important to improve water use as well as energy efficiency. Integrated management of water resources, taking into account national as well as transboundary implications, is key for the future of the region.

INTEGRATED APPROACH TO WATER QUALITY AND WATER QUANTITY

An integrated and cross-sectoral approach to address water-quality and water-quantity problems is key to the protection of transboundary waters from pollution and overuse. As stipulated by the **Water Convention**, and clearly articulated in the Guide to Implementing the Convention, an integrated and cross-sectoral approach requires Parties to strengthen local, national and regional measures to prevent, control and reduce transboundary impact in transboundary river basins and to ensure sustainable management of transboundary waters (article 1, para. 2; and article 2, paras. 1, 2 and 5 (c)). An integrated approach to prevention, control and reduction of transboundary impact takes into account water quantity as well as water quality, the environment in general, human health and socio-economic conditions (article 2, para. 6). The Water Convention further stipulates the requirement to manage shared waters in a reasonable and equitable manner (article 2, para. 2 (c)) and calls for action guided by the precautionary principle (article 2, paras. 5 (a) and (b)).

[32] See *Our Waters: Joining Hands Across Borders: First Assessment of Transboundary Rivers, Lakes and Groundwaters*, (United Nations publication, Sales № E.07.II.E.19), available from http://live.unece.org/env/water/publications/pub76.html.

The principle of reasonable and equitable use (article 2, para. 2 (c)) should be read in conjunction with article 2, paragraph 5 (c), according to which "water resources shall be managed so that the needs of the present generation are met without compromising the ability of future generations to meet their own needs". This is fully in line with the contemporary developments of international customary water law according to which the principle of equitable use incorporates that of sustainable development. In other words, the utilization of a watercourse providing maximum benefit to the riparian States in a manner incompatible with its preservation as a natural resource could not be qualified as "equitable and reasonable".[33]

More specific provisions to address water-quality and water-quantity problems are embedded in article 3, paragraphs 1 (a) to (g), of the Water Convention. Although the wording of these provisions may suggest that only water-quality issues are addressed, one should keep in mind that quantity and quality strongly interrelate. Thus, the Convention includes both water quality and water quantity issues in its scope of application. Even if water quantity issues are less specifically referred to in the Convention's text, they may cause transboundary impact within the meaning of the Convention and therefore are areas where the Parties have to take appropriate measures to prevent, control and reduce any transboundary impact (article 2, para. 1). It should also be emphasized that, pursuant to article 2, paragraph 8, the Parties have the right "individually or jointly to adopt and implement more stringent measures than those set down in the Convention". This means that agreements or other arrangements between the Riparian Parties may lay down specific obligations as to water-quantity aspects and the coordinated use of water for various human purposes, or the requirements of aquatic life, for example, related to the minimum flow of water.

A number of provisions of the Water Convention that address water-quality and water-quantity issues have been taken up and developed under the **Protocol on Water and Health** which applies further the Convention's integrated approach to the protection of water resources (in particular the sources of drinking water).

When implementing an integrated approach, account should also be taken of the relevant provisions of the **Espoo Convention and its Protocol on Strategic Environmental Assessment**, as EIA of proposed activities as well as SEA of plans and programmes are among the practical tools which have an important role in the efforts to improve water quality and maintain or regulate water quantity.

IMPACT FROM URBAN SOURCES

A basic provision of the **Water Convention** (article 3, para. 1) is the prevention, control and reduction of *pollution at source*, inter alia, through low- and non-waste technology.[34] As concerns water issues, such technology includes the control of pollutants within industrial processes and agricultural practices, the selective collection and treatment of industrial and agricultural wastewater allowing the recycling of water, manure and wastes and the recovery of valuable substances, where appropriate; and the substitution of potentially hazardous chemicals in industry, agriculture, trade and service.[35]

Licensing of wastewater discharges by competent authorities and the monitoring of these discharges (article 3, paras. 1 (b) and (c)) are further core provisions. Monitoring wastewater discharges is to be understood as a task of competent governmental bodies (such as monitoring agencies); however,

[33] Guide to Implementing the Convention, supra note 15, para. 102.
[34] In the 1980s, low- and non-waste technology was one of the focus area of the UNECE environmental programme; see *Compendium on low- and non-waste technology* (ECE/ENVA/36), available at http://www.p2pays.org/ref/43/42394.pdf. Concerning the groundwork for the Water Convention, the 1991 "Recommendations to ECE Governments on Waste-Water Management", UNECE (1991) (available from http://live.unece.org/fileadmin/DAM/env/water/documents/Reco_Waste-Water%20Managment.pdf), provided examples of such technology in the field of water management.
[35] "Recommendations to ECE Governments on Waste-Water Management".

under specific agreement with the competent governmental body, it can also be performed by the operator of the installation (self-monitoring) as it is the case with many big industrial installations in Western Europe.

The provision of the Water Convention that "limits for wastewater discharges stated in permits are based on the best available technology for discharges of hazardous substances" (article 3, para. 1 (c)) plays a particular role with regard to the issue of licensing wastewater discharges. Moreover, article 3, paragraph 1 (f), extends the application of *best available technologies* to the treatment of nutrients arising from industrial and municipal sources. The term "best available technology" is specifically defined in annex I to the Convention and means "the latest stage of development of processes, facilities and methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste…." When determining what the applicable best available technology would look like, both technical aspects and economic considerations should be taken into account in order to see whether the best available technology is reasonably affordable. The Water Convention also recognizes that best available technology for a particular process will change with time in the light of technological advances, scientific knowledge and economic and social factors.

In some cases, the application of the best available technology may not be sufficient to provide adequate protection of water quality. Therefore, the Water Convention provides that "stricter requirements, even leading to prohibition in individual cases" shall be imposed on Parties "when the quality of the receiving water or the ecosystem so requires" (article 3, para. 1 (d)). This subparagraph speaks about the prohibition of wastewater discharges in individual cases; one case is the prohibition of wastewater infiltration into aquifers. Article 3, paragraph 2, points to the "total or partial prohibition of the production and use of [hazardous] substances" as another *stricter requirement* to prevent, control and reduce the input of hazardous substances from point- and non-point sources. In deciding on whether the quality of the receiving water or ecosystem necessitates stricter requirements, use should be made of the provisions in article 3, paragraph 1 (h), on EIA and other means of assessment, and the provisions in article 3, paragraph 2, on water-quality criteria and objectives. Account should also be taken of the fact that the concentration of a substance in the receiving water depends on the amount of the emitted substance and the current flow rate, which may alter due to the hydrological regime, man-made water use and the operation of water construction works such as dams and reservoirs. Thus, the "stringency" of requirements on the polluter can also be made dependent on the actual hydrological regime. Given the potential impact of climate change on transboundary waters, which may lead to a decrease of the water flow, "more stringent requirements" for pollution prevention, control and reduction in the long term may be derived from climate change scenarios.

Water-quality and quantity aspects also refer to *municipal wastewater treatment installations*, which should comply with the Water Convention's requirement that "At least biological treatment or equivalent processes are applied to municipal wastewater, where necessary in a step-by-step approach" (article 3, paragraph 1 (e)). By this provision, the Water Convention recognizes that the economic implications of applying biological treatment to all municipal wastewater might require a step-by-step approach, taking into account, inter alia, the size of the pollution source (i.e., population equivalent), the flow rate and the water volume in recipient waters, the ecological and chemical status of the receiving waters and, last but not least, the economic potential of a country to combat pollution. "Equivalent processes" in the meaning of this paragraph can be, for instance, wastewater treatment in artificial wetlands or in decomposition ponds for small settlements. As a more stringent measure, nitrogen and phosphorus removal may be needed (tertiary treatment), if the status of the waters in the recipients so requires. Useful guidance has also been developed as part of measures to protect inland waters against eutrophication.[36]

Apart from article 3, water-quantity and water-quality aspects are also addressed in article 9, paragraph 2, of the Water Convention, with its obligations for joint bodies to elaborate joint monitoring programmes concerning water quality and quantity; to draw up inventories and exchange information on the pollution sources; to elaborate emission limits for wastewater and evaluate the effectiveness of control programmes; to elaborate joint water-quality objectives and criteria; to propose relevant measures for maintaining and, where necessary, improving the existing water quality; and to develop concerted action programmes for the reduction of pollution loads from point sources (e.g., municipal and industrial sources) as well as diffuse sources (particularly from agriculture).

The Water Convention's **Protocol on Water and Health** adds specific obligations as to municipal wastewater treatment and requires, for example, the setting of target and target dates regarding the reduction of discharges of untreated wastewater, the increase in the performance of sanitation systems as well as the disposal or reuse of sewage sludge, and the quality of wastewater used for irrigation purposes (article 6, para. 2).

The **Protocol on Strategic Environmental Assessment** to the Espoo Convention sets out obligation for States to evaluate environmental, including health, effects of certain plans and programmes. These include plans and programmes for town planning and land use (article 4, para. 2). These plans and programmes often involve decision-making on such topics as location, technology and size of facilities and activities which can have impact on water quality. For these plans and programmes Parties have to carry out an SEA procedure, which means that effects on water quality will also be evaluated. The purpose of this procedure is to ensure that environmental considerations, in this case the impact on water quality, are integrated into decision-making at the start of development planning. SEA is also required for plans which set the framework for future development of wastewater treatment plants, provided that an EIA is required under national legislation.

[36] "Recommendations to ECE Governments on the Protection of Inland Waters against Eutrophication", UNECE (1992), available at: http://live.unece.org/fileadmin/DAM/env/water/documents/Reco_The%20Protect.%20of%20Inland%20Waters.pdf.

Activities in appendix I to the **Espoo Convention** (as amended)[37] include "Wastewater treatment plants with a capacity exceeding 150,000 population equivalent", which means that if activity of this type is likely to cause significant adverse transboundary impact a transboundary EIA procedure is required.

IMPACT FROM AGRICULTURE

The prevention of water pollution from agriculture is addressed in article 3, paragraph 1 (g), of the **Water Convention**, which requires that "appropriate measures and best environmental practices are developed and implemented for the reduction of inputs of nutrients and hazardous substances from diffuse sources, especially where the main sources are from agriculture". To this effect, the Water Convention in its annex II provides "Guidelines for developing best environmental practices". The Guidelines recognize "… that best environmental practices for a particular source will change with time in the light of technological advances, economic and social factors, as well as in the light of changes in scientific knowledge and understanding".

The 1995 "Guidelines on the prevention and control of water pollution from fertilizers and pesticides in agriculture"[38] provide the ground for developing a new policy in agriculture to combine the application of strict legal and regulatory measures and appropriate economic instruments with voluntary actions to pursue good agricultural practice. The Guidelines also encourage farmers to apply less intensive agricultural methods. They also call for a better coordination and ultimate integration of agricultural policy with environmental policy, land use planning and economic policy, which is still a major challenge in many parts of the UNECE region.

The prevention, control and reduction of water pollution from diffuse sources is also addressed in article 9, paragraph 2 (f), of the Water Convention on bilateral and multilateral cooperation. Under this paragraph, joint bodies for transboundary water cooperation are entrusted "to develop concerted action programmes for the reduction of pollution loads from both point sources (e.g. municipal and industrial sources) and diffuse sources (particularly from agriculture)". Another best environmental practice promoted under the Water Convention is the protection and enhancement of ecosystem services to support water management, including to reduce pollution from agriculture (see section 3.6).

The impact of agriculture on water quantity, e.g., through water withdrawals or in case of poor water efficiency in agriculture, is regulated primarily by the Water Convention's key obligations, i.e., of prevention, control and reduction of transboundary impact and of equitable and reasonable use.

The **Protocol on Strategic Environmental Assessment** to the Espoo Convention requires that plans and programmes prepared for agriculture, country planning and land use are subject to an SEA procedure (article 2, para. 2). Parties have to evaluate environmental, including health, effects of such plans and programmes, meaning that also impacts of agriculture on water quality and quantity have to be evaluated.

WATER-QUALITY OBJECTIVES

The Water Convention stipulates that "… each Party shall define, where appropriate, water-quality objectives … for the purpose of preventing, controlling and reducing transboundary impact" (article 3, para. 3).

Water-quality objectives (also referred to as "chemical and ecological objectives" under the EU Water Framework Directive or "targets" under the Protocol on Water and Health) need to be developed because water in river basins is used at the same time for multiple purposes, whereas water-quality criteria only refer to a single form of water use in a river basin.[39] Water-quality objectives are the result of a negotiation process among stakeholders, including economic/financial considerations, and they are accompanied by a time frame for compliance (see examples in box 1).

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[37] Appendix I to Espoo Convention as amended by Decision III/7 on the second amendment to the Espoo Convention (MP.EIA/2004/8), not yet in force.

[38] "Guidelines on the prevention and control of water pollution from fertilizers and pesticides in agriculture", UNECE (1995), available from http://live.unece.org/fileadmin/DAM/env/water/publications/documents/Library/Old_documents_found_library/ECE_CEP_10_eng.pdf.

[39] Water-quality criteria represent minimum concentration levels for oxygen and maximum concentration levels for substances in water that do not harm a specific single form of water use (e.g., drinking water use, use of water for livestock watering, water use for irrigation or for recreational purposes, use of water by aquatic life). These are the results of scientific work (e.g., the outcome of laboratory toxicity tests, usually lowered by a safety factor of 10 to 1,000 to account for uncertainties). In principle, they are relevant for all countries, although adaptations are sometimes necessary to account for specific country's water use patterns and/or prevailing human behaviour. A prominent example of water-quality criteria is the work conducted under the auspices of the World Health Organization related to the quality requirements of drinking water.

Box 1. Examples of water-quality objectives[40]

Examples of water-quality objectives may include:

- To protect, enhance and restore a given percentage of surface water bodies with the aim of achieving good surface water status by a certain date
- To protect, enhance and restore a given percentage of groundwater bodies, and ensure a balance between abstraction and recharge of groundwater, with the aim of achieving good groundwater status by a certain date
- To protect and enhance a given percentage of artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status by a certain date
- To provide access to a given percentage of the population to improved sanitation systems by a certain date
- To terminate the discharge of untreated urban wastewaters into natural water bodies from a given number of wastewater treatment plants by a certain date
- Norms for the reuse of wastewater from treatment plants for irrigation purposes and the reuse of sludge in agriculture in place by a certain date
- To identify and map a given percentage of particularly contaminated sites (pesticides, oil products, or certain hazardous chemicals) by a certain date.

Shortly after the adoption of the Water Convention, which includes in its annex III "Guidelines for developing water-quality objectives and criteria", the then-Signatories felt the need to develop more specific guidance and drew up the 1993 "Recommendations to ECE Governments on Water-Quality Criteria and Objectives".[41] EU member States, when drawing up the Water Framework Directive, have further developed the concept of water-quality objectives, including obligations as to compliance with water-quality and ecological objectives. The **Protocol on Water and Health** to the Water Convention requires Parties to set water-quality objectives (referred to as targets), inter alia, for water quality in surface and groundwaters.

WATER QUALITY AND WATER QUANTITY
Key Messages

- The UNECE Water Convention takes an integrated approach to the prevention, control and reduction of transboundary impact, which takes into account both water quantity and water quality, the environment in general, human health and socio-economic conditions.
- Under the principle of equitable and reasonable utilization — one of the core principles of the Water Convention — a utilization of a water body that is incompatible with its preservation as a natural resource, i.e., which leads to the depletion of the resource, does not qualify as "equitable and reasonable".
- While the Water Convention sets out a number of measures to be taken by Parties to improve the state of transboundary waters, Parties are entitled to adopt and implement, individually or jointly, more stringent measures than those set down in the Convention.
- At the same time, all measures required under the Water Convention, including the application of best environmental practices, the use of best available technologies and the setting of water quality objectives, allow taking into account different environmental conditions and technical and financial capacities, and can be implemented through a step-by-step approach.
- One of the key obligations of the Water Convention — to set out water quality objectives and criteria — is becoming a highly practical tool in the protection of water quality, as well as a legal obligation under other international instruments.

[40] These examples were developed based on the EU Water Framework Directive and the experience of implementation of the Protocol on Water and Health in the Republic of Moldova.

[41] "Recommendations to ECE Governments on Water-Quality Criteria and Objectives", UNECE (1993), available from http://live.unece.org/fileadmin/DAM/env/water/documents/Reco_Water-Quality%20Criteria&Obj..pdf.


МЕДИЦИНАЛЫҚ ЖӘРДЕМ

3.2 Drinking Water Supply and Sanitation

According to figures compiled by the Regional Office for Europe of the World Health Organization (WHO/Europe), 120 million people in the pan-European region, which includes the five Central Asian countries, do currently not have access to safe drinking water. Even more lack access to sanitation, resulting in water-related diseases like diarrhoeal diseases, typhoid fever and hepatitis A. On average, 330,000 cases of water-related disease are reported every year.[42] Inadequate sanitation, improper wastewater treatment, unsafe disposal methods for chemicals and fertilizers and pesticides that leak into sources of water supply can all seriously threaten human health. Extreme weather events such as floods, heat and cold waves and increased water scarcity are other serious health threats.

The situation in the countries of Central Asia, especially in the rural and remote areas, is rather worrying. To date, almost 30 per cent of schools and 20 per cent of preschool children's establishments in Kyrgyzstan have no access to piped water, and 70 per cent and 40 per cent, respectively, are not connected to centralized sanitation systems. According to the Regional Centres of State Sanitary Surveillance, 206 water supply systems (19.1 per cent) do not meet sanitary standards and lack adequate sanitary protection zones, water treatment facilities or decontamination plants. Over 5,000 standpipes (17.3 per cent) across the country are out of order.[43] Interruptions in the daily water delivery and the general physical depreciation of the water supply networks result in emergency situations and contribute to drinking-water contamination with microbial and chemical agents. All these circumstances together cause a high rate of morbidity among the public, including children, from acute enteric infections and parasitic diseases.

In Uzbekistan, average water supply system efficiency is only 63 per cent, and in a number of regions this figure ranges from 42 to 62 per cent due to various technical and organizational problems, such as obsolete equipment, missing water flow meters and insufficient reliable data and analysis. At the same time, a significant decrease in per capita drinking water consumption was achieved in rural areas (from 180.5 litres per day (l/day) per capita in 1996 to 114.8 l/day per capita in 2004) and in urban areas (from 549 l/day to 325.7 l/day) due to the introduction of water metering and water pricing. Many people have to use water from wells and irrigation canals. In most cases, this water does not meet sanitary requirements (especially in the summer). About one third of Uzbekistan's population consumes drinking water that does not meet the national requirements. The monitoring data reveal the non-conformity of tap water quality to the accepted standards by its chemical and bacteriological composition.[44]

The UNECE-WHO/Europe Protocol on Water and Health is the first international agreement adopted specifically to ensure, by linking water management and health issues, the adequate supply of safe drinking water and adequate sanitation.

With this Protocol, the *integrated approach* to the management of transboundary waters adopted in article 2, paragraph 6, of the Water Convention and the obligation that "water-quality criteria and objectives shall … take into account water-quality requirements (raw water for drinking purpose, irrigation, etc.)" (annex III to the Water Convention) were further developed. The protection of human health and well-being is put into the context of sustainable development and linked to the improvement of water management and the protection of water ecosystems (see article 1; article 4, para. 2 (c); and article 5 (j) of the Protocol). Moreover, the Protocol lays down that "water has social, economic and environmental values and should therefore be managed so as to realize the most acceptable and sustainable combination of those values" (article 5 (g)).

The Protocol is an important tool in the implementation of water-related *Millennium Development Goals* (MDGs). Moreover, with its obligation that "…the Parties shall pursue the aims of … access to drinking water for everyone [and] … provision of sanitation for everyone within a framework of integrated water-management systems aimed at sustainable use of water resources, ambient water quality which does not endanger human health …", the Protocol goes far beyond the MDGs commitment to halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation.

[42] Facts and figures from the WHO/Europe website, available at http://www.euro.who.int/en/what-we-do/health-topics/environmental-health/water-and-sanitation/facts-and-figures.

[43] See "Action plan to achieve the water-related Millennium Development Goals: setting targets and target dates under the Protocol on Water and Health to achieve sustainable water management, safe drinking water supply and adequate sanitation in the Republic of Kyrgyzstan" (2009), available from http://unece.org/env/documents/2010/wat/NPD/NPD_Annex_V_Kyrgyzstan_E.pdf.

[44] See *Second Environmental Performance Review of Uzbekistan*, (United Nations publication, Sales № E.10.II.E.8), chapter 6. The publication is available from http://live.unece.org/publications/environment/epr/epr_uzbekistan.html.

The recognition in July 2010 by the United Nations General Assembly and, two months later, by the United Nations Human Rights Council, *that access to water and sanitation is a human right* has significant implications.[45] It entitles everyone to water and sanitation which is available, accessible, affordable, acceptable and safe. It obliges Governments to take concrete steps towards ensuring access to safe water and sanitation for all. The challenge now is to translate the right to water and sanitation into reality (see box 2). The Protocol on Water and Health illustrates and embodies the close linkages between human rights, health, environmental protection and sustainable development. The obligations of the Protocol serve to ensure practical implementation of the right to water and sanitation.

Box 2. The human right to water in practice

The human right to water includes the following elements:

AVAILABILITY: Under human rights law, there must be a sufficient number of water and sanitation facilities and water must be available continuously and in a sufficient quantity to meet personal and domestic needs, which includes drinking, bathing, hygiene, cooking and washing clothes and dishes. Determining the required amount of water and number of toilets will depend on a local assessment of community and individual needs.

ACCESSIBILITY: Water and sanitation facilities must be physically accessible within the vicinity of each household, school, health institution, public building and workplace. Accessibility requires taking account of the special needs of those with reduced mobility, including persons with disabilities and elderly people.

AFFORDABILITY: Water and sanitation and water facilities and services must be affordable to all people in a way which does not limit people's ability to afford other essential basic services. The affordability of water and sanitation includes construction, connection, maintenance, treatment and delivery of services. Water and sanitation services do not need to be free of charge for everyone, but solutions must be found to ensure that those living in poverty are able to access these services despite their limited capacity to pay.

ACCEPTABILITY: Sanitation facilities must be constructed in a way which ensures privacy and which ensures separation of male and female toilets in most cultures. Water should be of an acceptable taste, colour and odour.

QUALITY/SAFETY: Sanitation facilities must be hygienically and physically safe to use. Water also must be of such a quality so that it poses no risk to human health.

The Protocol on Water and Health is operative on all key components of the basic human right to water and sanitation:

- The Protocol supports the **progressive approach** to the realization of human right to water and sanitation through the obligation to "pursue the aims of … access to drinking water for everyone and … provision of sanitation to everyone" (article 6, para. 1).
- The Protocol requires Parties to ensure "adequate supplies of wholesome drinking water which is free from any micro-organisms, parasites and substances which, owing to their numbers or concentration, constitute a potential danger to human health" (article 4) thereby linking to the component of "**safety**" expressed in the basic human right to water.
- As to the **means for achieving** the basic human right to water and sanitation, the obligation to set targets and target dates in a number of areas linked to the whole water and health nexus — in particular, covering access to water and sanitation, quality of drinking water and performance of water supply and sanitation services — to publish such targets and to regularly review progress, is in line with the requirements to adopt and implement national water and sanitation strategies and plans of action addressing the whole population which reflect human rights obligations.
- As for **monitoring**, the Protocol requires Parties to establish and maintain arrangements, including, legal and institutional arrangements, for monitoring and promoting the achievement of targets and, where necessary, enforcing the standards and levels of performance for which targets are set. It also provides for the establishment of a compliance review procedure, in order to facilitate, promote and aim to secure compliance with the obligations under the Protocol.

[45] General Assembly resolution 64/292 of 28 July 2010 on the human right to water and sanitation and Human Rights Council resolution 15/9 of 30 September 2010 on human rights and access to safe drinking water and sanitation.

To achieve water and sanitation for all, special attention needs to be paid to equitable access to water and sanitation by addressing geographical differences in services provided, discrimination or exclusion in access to services by vulnerable and marginalized groups and their financial affordability for users. Promoting the application of *measures to achieve and maintain "equitable access to water"* is an important activity under the Protocol on Water and Health. Examples of such measures include solidarity or social funds, rural development funds, solidarity taxes or charges on water, cross-subsidies, equitable tariffs, cost-sharing arrangements, reduced pricing for certain categories of users, water arrears funds, procedures to avoid water disconnections, water standpipes, reduced flow devices and water facilities for travellers and homeless people, etc. Close cooperation is established in this area with the Office of the United Nations High Commissioner for Human Rights and the Special Rapporteur on the human right to safe drinking water and sanitation.

The provision of safe and acceptable drinking water of sufficient quantity is also a challenge in rural or sparsely populated areas serviced by *small-scale water supplies*, serving, depending on national standards, between 50 (and sometimes even less) and 5,000 persons or supplying 10 to 1,000 cubic metres of water per day. Experience has shown that small-scale water supplies are more vulnerable to breakdown and contamination than larger utilities, and that they require particular political attention due to their administrative, managerial or resourcing specifics (see box 3).

Box 3. Small-scale water supplies

All over the pan-European region, small-scale water supplies prevail in rural areas, including individual farms or settlements, hamlets and villages. Water supplies serving the communities in areas surrounding major towns and cities are often beyond the reach of municipal services.

Small-scale water supplies typically receive less political attention. Managers and operators of small, community managed or public supplies are rarely organized in professional networks or lobby groups that act as a mouthpiece for their interests. Therefore, financial and political support, both locally and nationally, is harder to leverage, resulting in limited and inconsistent provision of resources.

In order to improve the situation of small-scale water supplies, it is crucial to create an enabling environment in which decision makers are aware of the special requirements and challenges of such supplies, and where required guidance is provided. Authorities involved in drinking-water issues need to be attentive to the characteristics, importance and challenges with respect to small-scale water supplies in order to appropriately appreciate their relevance, and promote the improvement of their situation.

For more information please consult the UNECE-WHO/Europe 2010 publication, *Small-scale water supplies in the pan-European region: Background — Challenges — Improvements* at http://unece.org/env/water/publications/documents/Small_scale_supplies_e.pdf.

The Protocol on Water and Health mostly works through *three core provisions*.

The first core provision requires the setting of firm targets in areas covering the entire water cycle, as well as the dates by which such targets will be achieved. Targets should address issues related to the quality of drinking water, wastewater and bathing water; problems related to water supply and sanitation; the reduction of water-related disease; the management of water resources; the control and clean-up of pollution; and the availability of information to the public (see article 6, para. 2). Parties must regularly assess progress made towards reaching these targets and demonstrate if such progress has helped to prevent, control or reduce water-related disease. Moreover, Parties have to publish the results of that assessment and have to report every three years to the Meeting of the Parties to the Protocol on implementation and progress achieved.

To facilitate the implementation of these provisions, the Parties to the Protocol have developed *Guidelines on the setting of targets, evaluation of progress and reporting.*[46] The Guidelines illustrate the steps that need to be taken and the aspects to be considered when setting targets, implementing relevant measures and assessing and reporting on the progress achieved. The Guidelines are based on existing good practices and the experience of the Protocol's Parties.

The second core provision of the Protocol relates to surveillance: the Parties have to establish and maintain comprehensive national and/or local surveillance and early warning systems to prevent and respond to water-related disease, along with contingency and outbreak response plans (article 8). The surveillance and early warning systems, contingency plans and response capacities are required to be in place within three years of becoming a Party. It should be noted that the "surveillance and early warning systems, contingency plans and response capacities in relation to water-related disease may be combined with those in relation to other matters" (article 8, para. 2). Explanations and examples of measures in this area can be found in the 2010 policy guidance on water-related disease surveillance[47] and 2010 technical guidance for setting up, implementing and assessing surveillance systems of water-related disease[48] developed by the Parties to the Protocol.

Box 4. Setting of targets in the Republic of Moldova

The *Guidelines on the setting of targets, evaluation of progress and reporting* were taken into account by the Minister of Environment and the Minister of Health of the Republic of Moldova in their joint "Order on the Approval of the List of Targets to Implement the Protocol on Water and Health" (2010).

The Order provides, inter alia, the following targets:

- Achieve compliance with all the existing chemical and microbiological drinking-water quality standards by 2015 in 95 per cent of schools and by 2020 in all schools;
- Set up water safety plans by 2015 for all cities and by 2020 for settlements with a population exceeding 5,000 people;
- Maintain a zero level of incidence of cholera and typhoid;
- Have two regional associations of enterprises for collective and other systems of water supply and sanitation in place in 2015, and three additional associations in 2020;
- Terminate the discharge of untreated urban wastewaters into natural water bodies in two cities by 2015 and in two additional cities by 2017;
- River Basin Management Plans in place in 2015 for the Prut River Basin and in 2017 for the Dniester River Basin.

The Order also provides for measures to this effect, for example:

- Installation of water filtration systems in 300 schools;
- Awareness-raising and other campaigns to strengthen health and apply hygienic rules;
- Development and adoption of a Regulation on Surface Water Monitoring and Classification;
- Development of a "National Programme on Water Resources Monitoring".

Specific targets to respond to extreme weather events and large-scale emergency situations were also set.

[46] United Nations publications, Sales № E. 10.II.E.12; available from http://live.unece.org/fileadmin/DAM/env/water/publications/documents/guidelines_target_setting.pdf.
[47] The policy guidance (ECE/MP.WH/2010/L.2–EUDHP/1003944/4.2/1/4, annex) was adopted by the Second Meeting of the Parties to the Protocol in 2010; the policy guidance is available from http://live.unece.org/fileadmin/DAM/env/documents/2010/wat/MP_WH/wh/ece_mp_wh_2010_L2_E.pdf.
[48] The technical guidance (ECE/MP.WH/2010/L.3–EUDHP/1003944/4.2/1/5, annex) was adopted by the Second Meeting of the Parties to the Protocol in 2010; the technical guidance is available from http://live.unece.org/fileadmin/DAM/env/documents/2010/wat/MP_WH/wh/ece_mp_wh_2010_L3_E.pdf.

The third core provision of the Protocol, which is of particular interest to countries in Eastern Europe, the Caucasus and Central Asia, is the requirement to provide international support for national action (article 11, para. 1 (b), and article 14). When cooperating and assisting each other in the implementation of the Protocol, Parties shall, in particular, consider how they can best help to promote, inter alia, the preparation of water-management plans and of schemes for improving water supply and sanitation. Assistance can also be rendered for the improved formulation and effective execution of such plans, schemes and projects. Among others, article 14 also refers to assistance in the setting up of systems for surveillance and early warning systems, contingency plans and response capacities in relation to water-related disease as well as in the education and training of key professional and technical staff. This provision has led to the establishment in 2007 of the Protocol's Ad Hoc Project Facilitation Mechanism[49] (for more information on the Mechanism see chapter 5). In the framework of the Mechanism, for example, Switzerland provided funding for the target-setting project in the Republic of Moldova (see box 4).

As *groundwaters* play an important role for drinking-water supply, the Protocol devotes much attention to the protection and use of this source of drinking water (see section 3.5). The operation of water supply and wastewater facilities in cases of *extreme weather events* (e.g., flash floods, droughts, heat waves, cold spells and windstorms) is also addressed in the framework of the Protocol (see section 3.3).

As concerns drinking-water supply and the protection of sources of drinking water, the preventive role of the **Espoo Convention and its Protocol on Strategic Environmental Assessment** should be stressed, especially in connection with groundwater abstraction activities and artificial groundwater recharge (see section 3.5). The application of EIA and SEA in other sectors than groundwater may have an important role in the prevention of the pollution of the sources of drinking water. These include, for instance, waste-disposal installations, integrated chemical installations, mining, processing of metal ores and large diameter oil pipelines.

The Aarhus Convention's **Protocol on Pollutant Release and Transfer Registers** sets forth a specific regime for reporting on wastewater transfers. Such transfers include wastewater transported via sewers, containers or tank trucks. Facilities that release wastewater directly to a water body, whether first treated at the facility or not, also fall under the Protocol on PRTRs and will have to report this release. The Protocol also requires diffuse sources, e.g., agriculture, to be reported.

DRINKING-WATER SUPPLY AND SANITATION
Key Messages

- The Protocol on Water and Health aims to ensure, by linking water management and health issues, the adequate supply of safe drinking water and adequate sanitation. The protection of human health and well-being is put into the context of sustainable development and linked to the improvement of water management and the protection of water ecosystems. The Protocol is a practical tool to achieve the water-related MDGs.
- The recognition that access to water and sanitation is a human right entitles everyone to water and sanitation which is available, accessible, affordable, acceptable and safe and obliges Governments to take concrete steps towards ensuring access to safe water and sanitation for all. The Protocol is instrumental in making the human right to water and sanitation a reality.
- The Protocol requires Parties to set and implement targets on access to water and sanitation and the reduction of water-related diseases, as well as to establish surveillance and early warning systems to prevent and respond to water-related disease.
- The Ad Hoc Project Facilitation Mechanism under the Protocol aims to mainstream international support to national action to implement the Protocol.

[49] For more information on the mechanism, see http://live.unece.org/env/water/meetings/documents_ahpfm.html.

3.3 Climate Change

Nearly all the countries in the UNECE region, and beyond, are expected to be negatively affected by climate change impacts ranging from increased frequency and intensity of floods and droughts, greater water scarcity, intensified erosion and sedimentation, reductions in glaciers and snow cover, to sea level rise and damage to water quality and ecosystems. Moreover, climate change impacts on water resources will have cascading effects on human health and many parts of the economy and society, as various sectors directly depend on water, such as agriculture, energy and hydropower, navigation, health, tourism.

Many river basins that are already stressed due to non-climatic drivers are likely to become more stressed because of their vulnerability to climate change. Of particular relevance is the vulnerability to climate change of costly water infrastructures (e.g., flood defence structures, water supply and sanitation infrastructure), which have to serve for decades but were designed on the assumption of stationary climatic conditions. Moreover, policy tools such as land use planning are based on stable "old" climate scenarios, which did not take into account variability and change.

Central Asia, with its vast arid and semi-arid areas, is among the regions that are most sensitive to climate variability and long-term change, mostly owing to the expected reduction in water availability due to glacier melting.[50,51] Climate change is projected to lead to high temperatures and drought and to reduced water availability, hydropower potential and, in general, crop productivity.

Glaciers have a stabilizing effect on stream-flow and contribute to water flow during the important irrigation season after the melting of snow. Several studies have concluded that the glacial systems of the Central Asian mountains are decreasing in size and volume due to climate change. In the short term, this is leading to an increased water flow, while decreased volumes of glaciers will in the longer term lead to lower flows, as well as a changed water-flow regime, with earlier spring flow peaks that will have a negative effect on the availability of water during the irrigation season.

Climate change impacts are already visible now. There has been a general warming trend in Central Asia on the order of +1 C°–2 C° since the beginning of the twentieth century that might have a strong potential impact on the regional temperature and precipitation regimes and also on natural ecosystems, agricultural crops and human health. It is predicted that average temperatures will increase by 2 C° (up to 4 C°) by 2050 in the region, which would lead to a significant increase of the number of people experiencing water stress. Because the rainfall in the region is already low, severe water stresses, leading to further desertification, are expected, with rises in surface air temperature and depletion of soil moisture, as well as increasing frequency of droughts and reduced agricultural productivity.

The impacts of climate change can have obvious security implications: namely, a growing potential for conflict arising from competition over dwindling water resources and the risk of countries taking unilateral measures with possible negative effects on other riparian countries. In addition to the uncertainty over climate change impacts, countries are faced with uncertainty about their neighbours' reactions. Transboundary cooperation can help to reduce this double uncertainty — it is necessary to prevent negative impacts of unilateral measures and to support the coordination of adaptation measures at the river-basin level.

Transboundary cooperation can broaden our knowledge base, enlarge the range of measures available for prevention, preparedness and recovery, and so help to find better and more cost-effective solutions. Although the text of the Water Convention, drawn up in the early 1990s, does not specifically mention climate change, the **Water Convention** offers a sound framework for cooperation at the transboundary level on adaptation. For example, the Parties are required to follow the precautionary principle (article 2, para. 5 (a)), which implies in the case of climate change taking action even before adverse impacts are fully proven scientifically.

Recognizing the importance of joint climate change adaptation in transboundary basins, in 2009 the Meeting of the Parties to the Convention adopted the *Guidance on Water and Adaptation to Climate Change*. The Guidance explains step by step how to develop and implement an adaptation strategy in the transboundary context. It provides advice on how to assess impacts of climate change on water quantity and quality, how to perform risk assessment, including health risks, how to gauge vulnerability and how to design and implement appropriate adaptation strategies. In addition, in

[50] See *Guidance on Water and Adaptation to Climate Change* (United Nations publications, Sales № 09.II.E.14); available from http://live.unece.org/fileadmin/DAM/env/water/publications/documents/Guidance_water_climate.pdf.

[51] European Environment Agency, *Impacts of Europe's changing climate — 2008 indicator-based assessment* (Report № 4/2008); available from http://www.eea.europa.eu/publications/eea_report_2008_4.

2010 the *Guidance on Water Supply and Sanitation in Extreme Weather Events*[52] was developed under the Water Convention's Protocol on Water and Health.

TRANSBOUNDARY COOPERATION ON ADAPTATION TO CLIMATE CHANGE IN WATER MANAGEMENT

When planning adaptation across boundaries, *riparian countries should focus on preventing transboundary impacts, sharing benefits and risks in an equitable and reasonable manner and cooperating on the basis of equality and reciprocity*. By considering costs and benefits on a basin scale, new options for adaptation open up that can prove more cost-effective. Countries' differing capacities also need to be taken into account.

Transboundary cooperation should in the first place *prevent, control and reduce transboundary impacts, when designing and implementing adaptation strategies and measures*. The principle of reasonable and equitable use should also be at the basis of any decision on adaptation measures within a transboundary basin. The **Water Convention** includes this principle (article 2, para. 2 (c)) and further obliges Parties to prevent, control and reduce transboundary impacts (article 2, para. 1) including those related to adaptation to or mitigation of climate change. In this way, the Convention ensures that unilateral measures, including plans and programmes, do not have unintended effects in riparian countries, and in particular that they do not increase their vulnerability.

Also the **Espoo Convention** may provide a framework for ensuring that activities related to national adaptation strategies do not cause significant adverse transboundary impacts in neighbouring countries, since it stipulates that an EIA procedure be undertaken for an activity planned by one Party that is likely to have a significant transboundary impact in the territory of another Party.

As concluded by the Intergovernmental Panel on Climate Change (IPCC), consideration of climate change impacts at the planning stage is key to boosting adaptive capacity.[53] On this score, the **Protocol on Strategic Environmental Assessment**, drawn up under the Espoo Convention, can also be considered an effective tool for climate change adaptation and mitigation, by introducing climate change considerations into development of plans and programmes and by enabling environmentally sound decision-making. It ensures that climate change issues are considered already at the start of development planning, when the chances for making significant decisions that also consider the environmental aspects still exist.

The Protocol on Strategic Environmental Assessment requires that:

> A strategic environmental assessment shall be carried out for plans and programmes which are prepared for agriculture, forestry, fisheries, energy, … regional development, waste management, water management, … tourism, town and country planning or land use, and which set the framework for future development consent for projects listed in annex I and any other project listed in annex II that requires an environmental impact assessment under national legislation. (article 4, para. 2)

Annex I includes large dams and reservoirs and groundwater abstraction activities in cases where the annual volume of water to be abstracted amounts to 10 million cubic metres or more. Annex II refers, for example, to projects for the restructuring of rural land holdings; projects for the use of uncultivated land or semi-natural areas for intensive agricultural purposes; water management projects for agriculture, including irrigation and land drainage projects; and initial afforestation and deforestation for the purposes of conversion to another type of land use.

It is important to note that *transboundary cooperation can also help to enable more efficient and effective adaptation,* since some measures that support adaptation in one country can be more effective or cheaper if they are taken in another country. Sustainable flood management is an example, where programmes and measures in upstream countries to keep floodwaters in such natural retention areas as forests and wetlands may reduce flooding in the downstream country. Moreover, transboundary cooperation on adaptation can widen the knowledge/information base and enlarge the set of available measures for prevention, preparedness and recovery, and thereby help to find better and more cost-effective solutions. In this regard, the Water Convention includes provisions for consultations (article 10), common research and development (article 12) and joint monitoring and assessment (article 11), setting the basis for riparian countries to cooperate in the development of adaptation strategies.

Ensuring that data and information are readily available is crucial for making climate projections and identifying vulnerable groups and regions. So sharing information, including that from early warning systems, between countries and sectors is essential for effective and efficient climate change adaptation. The Water Convention obliges Parties to exchange information about the current (and expected) conditions of transboundary waters as well as about the measures planned to prevent, control and reduce transboundary impact (article 13). By sharing information, countries and sectors can extend and deepen their understanding of climate change effects, improve their models, and better assess the vulnerabilities connected to climate change, especially in a transboundary basin. Information exchange, or even better, joint information collection, is therefore imperative to build the knowledge base needed to face the effects of climate change. Early warning systems (article 14) are essential for preparedness for extreme weather events and should be developed at the transboundary level to allow for the effective sharing of information. Riparian countries should work on common scenarios and models to develop a joint understanding of possible impacts.

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[52] UNECE and WHO/Europe, *Guidance on Water Supply and Sanitation in Extreme Weather Events* (WHO/Europe, Copenhagen, 2010); the Guidance is available from http://live.unece.org/fileadmin/DAM/env/water/whmop2/WHO_Guidance_EWE_Final_draft_web_opt.pdf.

[53] "One way of increasing adaptive capacity is by introducing the consideration of climate change impacts in development planning, for example, by including adaptation measures in land-use planning and infrastructure design", IPCC, "Summary for Policymakers", in *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M. L. Parry, O. F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, eds., (Cambridge, United Kingdom, Cambridge University Press, 2007), p. 20.

Box 5. Some core elements of transboundary water agreements related to adaptation to climate change

Transboundary waters agreements should address large variations in water availability, and deriving water quality, and how to handle them. For instance, specifying water allocations to be delivered from upstream to downstream countries in percentage figures compared to the overall flow rather than in total numbers could permit more flexible reaction to flow variability as a consequence of climate change.

In addition, when negotiating transboundary agreements, countries should also take into account extreme hydrological events, such as floods and droughts, as well as man-made floods, arising from the operation of dams and reservoirs for energy production in winter-time.

Special provisions that address temporal and spatial redistribution of water resources in transboundary waters should be included in transboundary water agreements.

Obligations to notify and consult in cases of reduced water availability should be included in the agreement, as required by the Water Convention.

Joint bodies for transboundary water cooperation with a wide scope, competence and jurisdiction are very important for making transboundary agreements "climate proof". These joint bodies can provide a means for solving possible water conflicts and for negotiating water allocations in the face of changing climatic conditions, thus removing the need to rely entirely on inflexible rules on resource sharing.

Conflict resolution mechanisms, such as compulsory fact-finding, conciliation, negotiation, inquiry or arbitration, can provide a means to solve conflicts between concerned parties.

In some cases, broadening the scope of cooperation beyond water allows concessions to be made by each party on some issues in exchange for gains on matters they perceive to be of similar importance. For example, concurrent discussion on several related issues such as water and energy or food exchange can allow trade-offs on several issues. Such trade-offs should, however, be fully in line with international law.

At the transboundary level, common objectives and goals should be defined and major planned measures discussed. *Joint bodies* are the proper forums for developing adaptation strategies — from agreeing to their objectives to evaluating measures for the whole basin. In this regard, the Water Convention requires Parties to enter into bilateral or multilateral agreements and to establish institutions for cooperation and management of transboundary waters, such as joint bodies which provide a good forum for transboundary adaptation (article 9). The implementation of the measures agreed upon usually lies with the countries involved. Making bilateral or multilateral agreements "climate proof" is an important challenge for riparians and for the joint bodies (see box 5).

Several joint bodies have started to work on climate change adaptation (e.g., in the Danube, Meuse, Sava and Rhine Basins). For example, riparian countries of the Rhine formed an expert group for climate change and applied a common multi-model methodology for the entire Rhine catchment in order to assess future climate change impacts. In Central Asia, in the Chu and Talas Basins, the Chu-Talas Commission has established a Working Group on annual water resources allocation that provides expert support to develop procedures for coordinating the regimes of water reservoirs and revising such regimes and limits depending on the actual water level and the needs of the water users.[54]

STRENGTHENING CAPACITY FOR ADAPTATION TO CLIMATE CHANGE IN TRANSBOUNDARY BASINS

However, numerous barriers complicate effective climate change adaptation. For example, adequate financial means to implement adaptation measures are an important precondition for success; however, *very limited funding* is often available in the countries of Eastern Europe, the Caucasus and Central Asia. In addition, there is a *lack of capacity (including human resources)* for adaptation, and policymakers are still not used to uncertainty and risk considerations when taking decisions related to water management, water supply and sanitation in the face of changing climatic conditions. In such situations characterized by high uncertainty *win-win, low-regret and no-regret measures* should be chosen as a priority.

Knowledge and experience need to be exchanged to enhance the capacity of countries to adapt. In order to support countries in their efforts to develop adaptation strategies and measures in transboundary basins a *programme of pilot projects on adaptation to climate change in transboundary basins* has been established under the Water Convention.[55] The programme also aims to create positive examples demonstrating the benefits of and possible mechanisms for transboundary cooperation in adaptation planning and im-

[54] See http://www.chutalascommission.org/.
[55] See http://live.unece.org/env/water/water_climate_activ.html.

plementation. One of the pilot projects is implemented in the Chu and Talas Basins (Kazakhstan and Kyrgyzstan) with support of the United Nations Development Programme, UNECE and the Organization for Security and Cooperation in Europe. The project aims to increase the adaptive capacity of both basin countries and of the Chu-Talas Commission to ongoing and future climate change impacts to ensure coordination of adaptation actions in the Chu and Talas Basins and to help to prevent possible negative effects on regional security. Other ongoing pilot projects are implemented in the Dniester, Neman, Sava, Danube, Rhine and Meuse river basins, as well as in the Daursky Biosphere Reserve. Exchange of experience between the pilot projects is ensured through a **platform** which includes regular meetings as well as a web-based platform.

CLIMATE CHANGE AND HUMAN HEALTH

The **Protocol on Water and Health** to the Water Convention also represents an instrument for effective climate change adaptation, in particular with regard to reducing impacts of climate change on human health through water. Parties to the Protocol are required to establish national and local targets in a number of areas addressing the whole water-and-health nexus (article 6). Climate change impacts should be taken into account when setting targets. At the same time, the target-setting process offers a useful tool for planning adaptation to climate change, as it requires the establishment of an intersectoral coordination mechanism, broad participation, an analysis of gaps, development of scenarios and prioritization of measures based on development choices.

Many other provisions of the Protocol are also highly relevant to adaptation to climate change. For example, the Protocol requires international cooperation to establish joint or coordinated systems for surveillance of water-related disease and early warning systems, contingency plans and response capacities, as well as mutual assistance to respond to outbreaks and incidents of water-related disease, especially those caused by extreme weather events (articles 8, 11 and 12).

Extreme weather events in particular affect the capacity and operations of existing water and sanitation infrastructures and services, and thereby threaten the protection such services offer to human health and the environment. Water supply and sanitation are crucial determinants of health, especially during emergencies; but failing or compromised water and sanitation services may in themselves pose a risk, a sometimes irreversible source of contamination, whose impact goes beyond local and national borders. Therefore, water and sanitation are key components of any adaptation strategy aimed at preserving human health.

Parties to the Protocol on Water and Health recognized the need to ensure that water supply and sanitation services are prepared for the widely anticipated consequences of floods and droughts, as well as other climate change impacts. At the second session of the Meeting of the Parties (2010), they adopted the *Guidance on Water Supply and Sanitation in Extreme Weather Events*. The Guidance is intended to provide an overview on why and how adaptation policies should consider the vulnerability of and new risk elements for health and environment arising from water services management during adverse weather episodes (see box 6 on practical application of the Guidance). It recalls the basic scientific findings, provides advice on communication issues, addresses the vulnerability of coastal areas and bathing waters, discusses the impact on human health, places extreme weather events in the context of water safety plans and formulates advice for adaptation measures for water supply and sanitation services during such events.

Box 6. Practical application of the Guidance on Water Supply and Sanitation in Extreme Weather Events

The recommendations of the Guidance were, for example, taken into account by the Ministers of Environment and Health of the Republic of Moldova in their joint "Order on the Approval of the List of Targets and Target Dates to Implement the Protocol on Water and Health" (Order No. 91/704, 20 October 2010).

For extreme hydrological and meteorological events, this Order provides the target that operators of collective systems of water supply and sanitation that are able to respond to extreme weather events and large-scale emergency situations shall be in place by 2015 in two, and by 2020 in three more, major settlements. Measures to this effect include that the operators of public systems of water supply and sanitation in the cities of Chisinau, Balti, Cahul, Ungheni and Orhei should be supplied with modern equipment and materials for an immediate response and mitigation of the effects of extreme weather events and other emergency situations. Also, the development of a strategy on water management in extreme situations is foreseen as one of the measures.

From the point of view of transboundary water cooperation and the work on joint bodies, it is important to understand that the Guidance's recommendations on communication in extreme weather events may also apply in a transboundary context. For example, a communication strategy, based on a multidisciplinary approach, should be part of the disaster risk management and adaptation plans for extreme weather events in the entire (transboundary) river basin. Moreover, the recommendations on "adaptation measures for water utilities in extreme events" and the "adaptation measures for drainage, sewerage and wastewater treatment" provide important messages for transboundary river basins and the work of joint bodies.

The **Protocol on Strategic Environmental Assessment** to the Espoo Convention also places a strong emphasis on the consideration of health, as it requires that the health effects of plans and programmes be assessed and taken into due account, and ensures that health authorities have a say in development planning.

CLIMATE CHANGE
Key Messages

- Transboundary cooperation is both necessary and beneficial in adapting to climate change. In transboundary basins risks and challenges are shared and therefore solutions need to be coordinated. The UNECE Water Convention offers a framework for cooperation on adaptation to climate change in transboundary basins.

- When planning adaptation across boundaries, riparian countries should focus on preventing transboundary impacts, sharing benefits and risks in an equitable and reasonable manner and cooperating on the basis of equality and reciprocity. Other requirements of the Water Convention — on consultations, common research and development and joint monitoring and assessment — are instrumental to this end.

- Adaptation to climate change in transboundary basins is one of the key directions of work under the Water Convention. Its Parties adopted a detailed *Guidance on Water and Adaptation to Climate Change* to outline steps for effective adaptation strategies in transboundary basins. A programme of pilot projects on adaptation to climate change has been launched to facilitate exchange of experience between transboundary basins.

- Transboundary water agreements should take into account the impacts of climate change. Joint bodies for transboundary water cooperation with a wide scope, competence and jurisdiction are instrumental for "climate proof" transboundary water management.

- The Protocol on Water and Health is an important instrument for effective climate change adaptation, in particular with regard to reducing the impacts of climate change on human health through water, due to its provisions on target setting, joint or coordinated systems for surveillance of water-related disease and contingency plans, as well as on mutual assistance to respond to outbreaks and incidents of water-related disease. The *Guidance on Water Supply and Sanitation in Extreme Weather Events* was developed by Parties to the Protocol.

- The Espoo Convention and its Protocol on Strategic Environmental Assessment provide important tools to ensure that impacts of climate change are taken into account at the early stages of decision-making processes. Strategic environment assessment can be an effective tool for climate change adaptation and mitigation, by introducing climate change considerations into development planning.

3.4 Floods

Floods are natural phenomena that are necessary for the survival and health of ecosystems. Flood-plains have historically attracted socio-economic development and continue to support high densities of human population. This is particularly important where land resources suitable for human development are scarce. Especially in arid and semi-arid areas, flood waters represent a vital water resource. Floods can, however, also lead to wide-spread damage, health problems and the loss of human life. This is especially the case where development activities in the river channel and the adjacent flood-plain have been pursued without taking into account the associated risks.[56] Since the beginning of this century, more than 3 million people were adversely affected in the UNECE region by floods, almost 2 million in Eastern Europe alone, exposing people to various health hazards, and causing deaths, the displacement of people and large economic losses.

The costs of damages caused by floods have increased rapidly. This is mostly attributed to socio-economic factors, such as increases in population and urbanization in flood-prone areas, and to such unfavourable results of land use practices as deforestation and loss of wetlands. On the other hand, floods are natural phenomena that can also bring benefits: seasonal flood-plain inundation is essential to maintaining healthy rivers, depositing silts and fertile organic material and sustaining wetlands.

The Central Asian subregion is also highly disaster prone. Water-related disasters, including floods, mudflow and the collapse of "artificial" lakes formed due to geological processes in high altitudes, have caused and are likely to continue to cause serious impacts. In Kyrgyzstan, for example, 95 per cent of the settlements are located along rivers, which are prone to severe floods or mudflow events. Over 330 so-called "high-mountain" lakes, which have a significant risk of collapse, are located in the most upstream parts of these rivers. About 70 catastrophic breakdowns of these lakes occurred since 1952, leading to flooding of downstream territories, loss of life and property and damage to the environment. In August 2010, for example, torrential rain led to ever-increasing water levels, overflows and finally break-ups of high-mountain lakes in the Ukok River Basin (located in the Naryn oblast), causing damage to villages, agricultural land, production facilities and dams.[57] The frequency of similar events is high also in mainly mountainous Tajikistan.

In other Central Asian countries, similar flood risks exist, and flooding of downstream areas may occur after heavy rainfall and melting of snow. This was, for example, the case in the Almaty Oblast in Kazakhstan in mid-March 2010, where the breaking of the dam at the Kysyl-Agash reservoir led to casualties in the downstream settlements and material damage. Hydropower generation and inadequate management of reservoirs may also cause a significant impact on the hydrological regime and lead to so-called man-made floods due to water releases in emergency situations or during operation of reservoirs for energy production in the winter-time.

Sustainable flood management is a central issue of the joint work under the **Water Convention**, which addresses this phenomenon in a number of provisions. One of the key obligations under the Convention is to "… take all appropriate measures to prevent, control and reduce transboundary impact" (article 2, para. 1). In addition, the Convention requires that "… contingency planning is developed" (article 3, para. 1 (j)), and lays down that "… the Riparian Parties shall establish and implement joint programmes for monitoring the conditions of transboundary waters, including floods and ice drifts, as well as transboundary impact" (article 11, para. 1). Moreover, the Water Convention requires that "The Riparian Parties shall without delay inform each other about any critical situation that may have transboundary impact" (article 14). In order to improve flood and other forecasting and notification in critical situations: "The Riparian Parties shall set up, where appropriate, and operate coordinated or joint communication, warning and alarm systems with the aim of obtaining and transmitting information" (article 14).

Flood management and the reduction of adverse impacts on human health and the environment are also an integral part of the work under the **Protocol on Water and Health** to the Water Convention, as "water-related disease" under this Protocol "… means any significant adverse effects on human health, such as death, disability, illness or disorders, caused directly or indirectly by the condition, or changes in the quantity or quality, of any waters" (article 2, para. 1).

Moreover, by defining its scope of application, the **Industrial Accidents Convention** indirectly refers to floods — being a natural phenomenon — by stating: "This Conven-

[56] *Transboundary Flood Risk Management: Experiences from the UNECE Region* (United Nations publication, Sales № 09.II.E.15); available from http://live.unece.org/fileadmin/DAM/env/water/mop5/Transboundary_Flood_Risk_Managment.pdf.

[57] Presentation by the Kyrgyz Ministry of Emergency Situations, "Disaster Risk Reduction in Kyrgyzstan on mudflow and flood situations", for the United Nations Economic and Social Commission for Asia and the Pacific Regional Workshop on ICT Applications for Disaster Risk Reduction and Sustainable Economic Development (28–30 September 2010, Astana, Kazakhstan); text of the presentation available from http://www.unescap.org/idd/events/2010_Reg-ICT-DRR/index.asp.

tion shall apply to the prevention of, preparedness for and response to industrial accidents capable of causing transboundary effects, including the effects of such accidents caused by natural disasters …." (article 2, para. 1). As concerns flood management, there is also a need to take into account the principles of the **Espoo Convention and its Protocol on Strategic Environmental Assessment.** The Protocol requires Parties to carry out SEA in order to better integrate environmental and health considerations into the preparation of flood action plans and programmes. The Espoo Convention provides for an obligation to notify and involve in an EIA procedure any Party that might be affected by the potential significant transboundary environmental impact of planned large dams and reservoirs (appendix I in conjunction with article 3). This also applies to any major changes to existing activities (article 1, para. 1 (v)). This requirement can, for instance, be triggered by significant alteration of a river's flow regime by a flood protection activity.

In 2000, the Parties to the Water Convention, recognizing the need for developing further guidance on floods, adopted the *UNECE Guidelines on Sustainable Flood Prevention*.[58] These Guidelines recommend measures and best practices to prevent, control and reduce the adverse impact of flood events on human health and safety, on valuable goods and property and on the aquatic and terrestrial environment. For the first time, an internationally agreed soft-law instrument calls for a change of paradigm by stating that: "One must shift from defensive action against hazards to management of the risk" (para. 6), and "flood protection is never absolute … only a certain level of protection against flooding can be guaranteed. The concept of residual risk should therefore be explained to the public." (para. 18).

The basic principles set out in the Guidelines include the principle that: "Flood prevention should cover the entire catchment area of watercourses; this also applies to transboundary waters and their catchment areas. Flood prevention has also to be based on the precautionary principle" (para. 13 (c)). It also includes the principle that: "Structural measures will remain important elements of flood prevention and protection. However, these measures should primarily focus on the protection of human health and safety, and valuable goods and property. Requirements of nature conservation and landscape management should be taken into account" (para. 13 (d)).

Good practices for flood prevention and protection include the retention of water on the ground, which should have priority over swift water run-off. It also includes land use,

[58] Guidelines on Sustainable Flood Prevention (MP.WAT/2000/7, annex), available from http://live.unece.org/fileadmin/DAM/env/water/publications/documents/guidelinesfloode.pdf.

zoning and risk assessment; structural measures; early warning and forecast systems; and awareness-raising, education and training. With regard to the latter area of activities, the Guidelines, inter alia, provide specific recommendations to policymakers, to governmental authorities, to municipal and local authorities and to the media — which should help to provide flood information and avoid sensationalist reporting — as well as to citizens and the public at large.

Nowadays, an integrated approach to flood management — one that recognizes both the opportunities provided by flood-plains for socio-economic activities and that manages the associated risks — is being implemented in many UNECE countries. Experiences gained and the lessons learned from the most recent flood events, particularly those related to transboundary waters, have been summarized by UNECE and the World Meteorological Organization in the study *Transboundary Flood Risk Management: Experiences from the UNECE Region (2009)*.[59] The study illustrates that cooperation on transboundary flood risk management enables sharing and redistributing risks and resources. In some cases, measures can be more effective if taken in the downstream or upstream country. Existing joint bodies and transboundary agreements provide the best framework for developing and agreeing on joint flood management plans. However, both formal institutional and political, as well as technical, cooperation and capacity are important. Good transboundary communication and cross-border sharing of hydrometeorological data is essential.

To assist riparian States in *developing either a general bilateral or multilateral normative instrument on transboundary water issues or a flood-specific one*, the Parties to the Water Convention adopted the *Model Provisions on Transboundary Flood Management*[60] in order to address transboundary flood prevention, protection and mitigation and enhance preparedness therefore. These Model Provisions (see box 7) may need to be adapted by the riparian States according to their specific needs. On the other hand, States may adopt further provisions dealing with these matters in more detail, or opt for more stringent measures.

The Model Provisions are accompanied by extensive commentaries to explain the rationale behind each provision, provide examples of applications, and give further sources of information. Provision 1 is a declaratory statement covering the whole Model Provisions, reflecting the most fundamental principle — to take "all appropriate measures" to prevent, mitigate and protect against flood risks in transboundary basins — and also defining the term "flood risks".

Box 7. Model Provisions on Transboundary Flood Management

(reproduced without commentaries)

PROVISION 1

1. The Riparian Parties shall take all appropriate measures to prevent, mitigate and protect against flood risks in transboundary river basins. Flood risks are the probability of flood occurrence combined with its possible adverse impact.

2. Each Party shall refrain from taking action or adopting measures which may, directly or indirectly, result in a transfer of flood risks to other riparian States or generate flood risks in such other riparian States.

PROVISION 2

The Parties shall jointly develop a long-term flood management strategy and measures covering the transboundary river basin. Their cooperation shall include:

(A) Monitoring/data collection, exchange of hydrological and meteorological data, and development of a forecasting model covering the whole river basin or of a linkage between the Parties' respective forecasting models;

(B) Preparation of surveys, studies (including cost-benefit or cost-effectiveness analysis), flood-plain maps, flood risk assessments and flood risk maps, taking due account of local knowledge, and exchange of relevant national data and documentation;

(C) Development of a comprehensive flood action plan or a set of coordinated flood action plans addressing prevention, protection, preparedness and response and providing for common objectives, joint action, contingency plans, information policy, flood-plain management and, where appropriate, flood control works and financing mechanisms;

(D) Raising awareness and providing access to information, public participation and access to justice.

– continued on page 52 –

[59] Supra note 56.
[60] The full text of the Model Provisions is available in an annex to the publication, *Transboundary Flood Risk Management: Experiences from the UNECE Region*, supra note 56.

PROVISION 3

1. The Parties shall without delay inform each other about any critical situation likely to cause flooding in the other Parties' territory. The Riparian Parties shall set up and operate coordinated or joint communication, warning and alarm systems with the aim of obtaining and transmitting information, or adjust existing systems. These systems shall operate on the basis of compatible data transmission and processing procedures and facilities to be agreed upon by the Riparian Parties. The Riparian Parties shall designate competent authorities and points of contact at all appropriate levels and inform each other thereof.

2. Whenever one Party ascertains the existence of a situation causing or likely to cause flooding in the other Parties' territory or in the process of flooding the other Parties' territory, it shall:

   (a) Immediately convey this information to the competent authorities and points of contact of the other Parties following the agreed-on procedure. Such information shall contain, inter alia, the available data on precipitation, run-off and water level;

   (b) Adopt, to the extent possible, all appropriate emergency measures to prevent or mitigate the adverse impact of the flood in the other Parties' territory;

   (c) Consult the other Parties without delay in order to arrive at common remedial action.

PROVISION 4

1. The Parties shall strive to incorporate environmental requirements into their flood management strategy. In particular, they shall take, to the extent possible, all appropriate measures to maintain, improve and/or restore the natural function of the watercourse and the natural potential of the water resources; protect and restore water-related ecosystems; ensure that flow management takes into account the natural flow of solid matter; enhance interactions between river, groundwater and alluvial areas; and conserve, protect and reactivate alluvial areas as natural flood-plains.

2. The Parties shall also promote, to the extent possible, measures to maintain, improve and restore the retention capacity of small watercourses, wetlands, forests, soils and grasslands throughout the river basin. To this end, they shall pursue an active policy against deforestation; support good agricultural practice; and promote schemes for payment for ecosystem services, where appropriate.

PROVISION 5

Each Party shall consult the other Party/Parties for every project which might cause, directly or due to accumulation with existing projects and activities, a significant change in the flow regime or the hydromorphological characteristics of the watercourse or of the alluvial areas which is likely to increase flood risk.

As far as Provision 1, paragraph 2 is concerned, national flood protection measures should always take into account their possible impact on other riparian States. The term "generate flood risks" is intended to include man-made floods.

In line with the requirements of the Water Convention, the 2000 Kazakh-Kyrgyz bilateral agreement on the Chu and Talas Basins[61] includes the obligations that "the Parties shall undertake joint measures to protect the water facilities of inter-State use and the territories within their areas of influence from adverse effects of floods, mudflows and other natural phenomena" (article 7), and that "in case of emergency at the water facilities of inter-State use caused by natural phenomena and technical reasons, the Parties shall notify each other and undertake joint actions to prevent, mitigate and remove consequences of emergencies" (article 8).

Another important reference is the work of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) Committee on Disaster Risk Reduction. This Committee, in response to disasters in Central Asia and East and North-East Asia, works on enhancing regional cooperation on natural hazards, including floods.[62]

[61] Agreement between the Government of the Republic of Kazakhstan and the Government of Kyrgyz Republic on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas (2000).
[62] See http://www.unescap.org/idd/events/2010_Reg-ICT-DRR/index.asp.

TRANSBOUNDARY FLOOD MANAGEMENT

Key Messages

- The provisions of UNECE environmental Conventions — in particular, the obligations to prevent and control transboundary impact, to exchange information, to develop contingency planning, to establish joint monitoring programmes, to inform each other of critical situations, to operate warning and alarm systems and to notify and consult each other when planning new activities which may cause significant transboundary impact — serve as a good framework for transboundary cooperation on floods.
- The Water Convention's Guidelines on Sustainable Flood Prevention, as well as the Model Provisions on Transboundary Flood Management, provide specific guidance to support transboundary cooperation in this area.
- A shift from the limited, current perspective of mere "flood defence" to an integrated approach to flood management is increasingly called for.
- Flood risk management should cover the entire catchment area, including in transboundary basins. Cooperation through transboundary agreements and joint bodies is essential for this purpose. Different perceptions of the problems among riparian countries are best overcome through communication, joint monitoring and data exchange.
- Planning new activities in any basin should take into account the flood risks.
- Awareness-raising, public information and public participation are crucial for flood preparedness, response and recovery.

3.5 Transboundary Groundwaters

Groundwaters are usually understood as all waters that are below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil. Groundwaters include both shallow groundwaters, as well as deep groundwaters, whether confined or unconfined.

In many countries of the UNECE region, groundwater abstractions — both from domestic and transboundary aquifers — cover a substantial share of the overall amount of water supplied to the population and to various economic sectors. In some regions, particularly nearby population centres, overuse and pollution of aquifers are major concerns.[63]

In Central Asia, at least 45 transboundary aquifers[64] have been identified up to now, which are mostly used for drinking-water purposes, and in some other cases for irrigational, industrial and recreational (in spas) purposes. However, there is a large variation in the use of extracted groundwater from transboundary aquifers for drinking purposes: from less than 25 per cent (e.g., in the Birata-Urgench aquifer shared by Turkmenistan and Uzbekistan, and in the Dalverzin aquifer shared by Uzbekistan and Tajikistan) to almost 100 per cent (e.g., in Kazakhstan's part of the Zaisk aquifer shared with China).[65] Transboundary cooperation on groundwaters is weakly developed in the region. Data on transboundary groundwaters is not exchanged, and in some of the Central Asian countries knowledge in this area is at a relatively low level.

In many cases, transboundary aquifers contribute to the base flow in the associated transboundary rivers. Due to the predominant geology (alluvial aquifers), there is a strong interdependence of groundwaters and rivers pointing to the need to understand their interaction better and to protect the ecosystems of the associated surface waters; an example being the groundwaters in the Chu Basin. Human activities in the region might have an impact on the quantity as well as the quality of transboundary groundwater. The alluvial aquifers may be at risk of pollution from agricultural and industrial activities in the transboundary river basins in Central Asia. Furthermore, inefficient irrigation systems and mismanagement of irrigation water diversions have resulted in elevated salinity levels in soil and water and in overall environmental degradation, which may also adversely affect groundwaters. However, recent monitoring data from these groundwater bodies is very scarce and in some cases no monitoring activities are currently performed.

The low attention paid to groundwater in overall water management in Central Asia is partly explained by the responsibility for aquifer resources and their identification lying with the agencies for geology and mineral resources. It may also reflect a low awareness about the role played by groundwater resources, even though groundwater is locally very important in some areas. In Kazakhstan, positively, a comprehensive review of transboundary aquifers has been carried out.[66]

The **UNECE Water Convention** *applies to any groundwaters* "which mark, cross or are located on boundaries between two or more States" (article 1, para. 1). Any groundwaters that are intersected by State boundaries are to be considered as transboundary and are thus subject to the provisions of the Water Convention, even in cases where the recharge area of these groundwaters is not located in transboundary river basins. Given the integrated approach adopted in article 2, paragraph 6, the Convention also covers groundwaters exclusively located within the territory of one State, where these interact with transboundary surface waters (i.e., if the recharge area of the aquifer or parts thereof is located in a transboundary river basin). Conversely, the integrated approach also implies that surface waters located entirely in the territory of one State fall under the scope of application of the Convention, by virtue of its article 2, paragraph 6, if they are connected to an aquifer which is intersected by State boundaries. The Convention also applies to transboundary groundwaters both in confined and unconfined aquifers.[67]

The distinguishing features of groundwaters, in particular, the difficulty of their identification, their vulnerability in case of pollution, which cannot easily be mitigated or reduced, in connection with their non-renewable or less renewable character with respect to surface waters, call for special regulatory attention for the proper and effective application of the Convention's legal regime in this area. In particular, the due-diligence standards making up the *obligation of preven-*

[63] *First Assessment of Transboundary Rivers, Lakes and Groundwaters*, supra note 32.
[64] *Second Assessment of Transboundary Rivers, Lakes and Groundwaters in the UNECE Region*, (ECE/MP.WAT/33), available from http://www.unece.org/index.php?id=26343&L=0.
[65] *First Assessment of Transboundary Rivers, Lakes and Groundwaters*, supra note 32; and *Second Assessment of Transboundary Rivers, Lakes and Groundwaters*, supra note 64.
[66] *Second Assessment*, supra note 64, chapter 5: Central Asia.
[67] "Application of the UNECE Water Convention to groundwater: explicatory recognition of the existing UNECE regulatory language" (LB/2011/INF.2), available from http://live.unece.org/fileadmin/DAM/env/documents/2011/wat/AC/LB_2011_Inf-2_E.pdf.

tion, control and reduction of transboundary impact (article 2, paragraph 1) in relation to groundwaters are higher and more specific than those applicable to surface waters.

The *principle of cooperation* under the Convention is strongly connected with the *integrated approach* to water management according to the concept of a catchment area stated in the Convention (article 2, para. 6). In the case of related groundwaters, this requires that cooperation take into account the interaction of related groundwaters with surface waters. Accordingly, riparian States, once they have identified and assigned related groundwaters to the relevant river catchment area or catchment areas, should consider and manage surface waters and related groundwater *in an integrated manner*.[68]

The key obligations of the Water Convention in respect of the institutional cooperation of riparian States — to enter into agreements or other arrangements and to establish joint bodies for transboundary water cooperation — equally apply to *institutional cooperation on transboundary groundwater* as much as to cooperation on transboundary surface waters. Currently, there are few agreements in the UNECE region addressing solely transboundary groundwaters, the most well known example being the "Convention on the Protection, Utilization, Recharge and Monitoring of the Franco-Swiss Genevois Aquifer"[69] — an aquifer-specific agreement. Also, only a few agreements concerning surface waters (e.g., the Convention on the Protection of the Rhine; the Agreement on Cooperation for the Protection and Sustainable Use of the Waters of the Spanish-Portuguese Hydrographical Basins; and the Framework Agreement on the Sava River Basin) contain specific provisions on groundwater. However, the growing recognition of the importance of groundwater calls for the development of appropriate legal and institutional frameworks for cooperation, and the practice in this area is constantly developing. For groundwaters related to transboundary rivers and lakes, the concept of integrated management of both surface and groundwaters implies that, instead of concluding specific agreements for groundwaters, bilateral and multilateral agreements dealing with surface waters should also contain some provisions granting to the relevant joint bodies effective attributions in the field of groundwaters. The joint bodies could then activate those provisions either directly of through appropriate working groups.

The Water Convention, particularly in its article 3, incorporates a number of *provisions that apply to groundwaters*, most prominently the obligation to develop and implement appropriate measures and best environmental practice to reduce inputs of nutrients and hazardous substances from diffuse sources (article 3, para. 1 (g)). This obligation is not limited to agriculture, which is specifically highlighted in this paragraph. Diffuse inputs may also arise from forestry and urban areas and from such line sources as transport ways.

Particular attention should be given to the requirement that "additional specific measures are taken to prevent the pollution of groundwaters" (article 3, para. 1 (k)). Those *additional measures* are to be understood as measures that are not covered by the previous subparagraphs (such as, for example, the licensing of groundwater abstraction and monitoring the quality and quantity of water abstracted (article 3, para. 1 (b)), the prohibition against discharging wastewater into aquifers (article 3, paras. 1 (c) and (d)) and the control of diffuse pollution of groundwaters from agriculture (article 3, para. 1 (g)). Additional specific measures usually include the establishment of protection zones around water intakes or in the entire recharge area, with varying degrees of protection, and the clean-up of polluted parts of groundwater aquifers used as sources of drinking water. A typical example of the latter is the rehabilitation of an aquifer (or parts thereof) polluted by

[68] "Basin States should consider the integrated management, including conjuctive use with surface waters, of their international groundwater at the request of any of them", International Law Association, the "Seoul Rules on International Groundwaters" (1986), article 4. See also article 11 of the Framework Agreement on the Sava River Basin: "The Parties agree to cooperate on management of the waters of the Sava River Basin in a sustainable manner, which includes integrated management of surface and groundwater resources …."

[69] Available from http://live.unece.org/fileadmin/DAM/env/water/meetings/legal_board/2010/annexes_groundwater_paper/2008Franko-Swiss-Aquifer-English.pdf.

leakages from industrial installations, such as petrochemical and chemical enterprises or tailings management facilities.

Additional specific measures may also include water-quantity aspects to prevent or counteract (e.g., by artificial recharge) the overuse of groundwater resources, which causes or may cause transboundary impact. This refers both to existing groundwater abstractions and recharge schemes and planned projects. In the latter case, it is important to consult the **Espoo Convention**, as "groundwater abstraction activities or artificial groundwater recharge schemes where the annual volume of water to be abstracted or recharged amounts to 10 million cubic metres or more" requires the application of EIA and other procedures under that Convention, in particular on notification and consultations, in cases where the proposed activities are likely to cause a significant adverse transboundary impact (Espoo Convention, appendix I, para. 12). In addition, the Espoo Convention's **Protocol on Strategic Environmental Assessment** includes "groundwater abstraction activities in cases where the annual volume of water to be abstracted amounts to 10 million cubic metres or more" in its annex I, which means that an SEA shall be carried out for plans and programmes that set the framework for future development consent for projects involving such activities. Moreover, "groundwater abstraction or artificial groundwater recharge, as far as not included in annex I" are part of annex II to the Protocol, meaning that SEA is required for plans and programmes which set the framework for future development consent for projects involving such activities in case such activities require an EIA under national legislation. This provision allows taking into account that the acceptable amount of abstraction is highly dependent of the hydrogeological conditions and therefore aquifer-specific.

Groundwater management is also addressed in the Water Convention's **Protocol on Water and Health**. The Protocol reconfirms the principle that:

> Water resources should, as far as possible, be managed in an integrated manner on the basis of catchment areas, with the aims of linking social and economic development to the protection of natural ecosystems and of relating water-resource management to regulatory measures concerning other environmental mediums. Such an integrated approach should apply across the whole of a catchment area, whether transboundary or not, including its associated coastal waters, the whole of a groundwater aquifer or the relevant parts of such a catchment area or groundwater aquifer. (article 5, para. (j))

The Protocol sets out the obligations for its Parties in the areas of water supply and sanitation that require respective action for the management and protection of groundwaters. In particular, "the Parties shall pursue the aims of … access to drinking water for everyone" and the Parties shall set targets and target dates regarding the "application of recognized good practice to the management of water supply and sanitation, including the protection of waters used as sources for drinking water" and regarding the "quality of waters which are used as sources for drinking water" (article 6, para. 1 (a) and paras. 2 (f) and (j)). This is highly relevant to groundwater, whether in domestic or transboundary aquifers, as they represent an important source of drinking water. Moreover, the Protocol includes an obligation to "develop water-management plans in transboundary, national and/or local contexts, preferably on the basis of catchment areas or groundwater aquifers" (article 6, para. 5 (b).

TRANSBOUNDARY GROUNDWATERS
Key Messages

- The UNECE Water Convention and its obligations fully apply to transboundary groundwater. The Water Convention promotes an integrated approach to the management of surface and groundwaters. Moreover, the specificity and particular vulnerability of groundwaters should be taken into account when developing measures on their management and protection.
- The obligations under the Protocol on Water and Health are of particular relevance for the management and protection of groundwaters which represent an important source of drinking water.
- The Water Convention requires Riparian Parties to cooperate on transboundary groundwater management on the basis of agreements and through joint bodies. The Convention allows both for groundwater-specific agreements, including aquifer-specific agreements, as well as for agreements which cover all transboundary waters and include specific provisions on groundwaters. In any case, the management of groundwaters and surface waters should be integrated.
- Groundwater abstraction activities and artificial groundwater recharge schemes of a specified large volume are included in the Espoo Convention. Such proposed activities that are likely to cause a significant adverse transboundary impact require a notification by a Party of origin and further consultations under the Espoo Convention procedures.

3.6 Conservation and Restoration of Ecosystems

Central Asia forms an exceptional environmental area comprising the closed-drainage systems of the Caspian and Aral Basins as well as the basins of other terminal lakes, such as Lake Balkhash (in Kazakhstan, mainly fed by the transboundary Ili River with its source in China) as well as the Lakes Issyk-Kul, Son-Kul and Chatyr-Kul in Kyrgyzstan.

One distinctive feature of the Central Asian region is the vulnerability of its ecosystems. The development of irrigated agriculture in the Aral Sea Basin on a scale unprecedented in modern history overstrained the ecosystem and led to its serious decline in parts of the basin.

The resource-consumptive approach that evolved during the last century still largely dominates the water sector in Central Asian countries and insufficient consideration of the value of ecosystems has led to the destruction of their regulatory, supplying, and supporting functions. There is a continuing loss of biodiversity and biological resources in the Aral Sea region, as well as in parts of the Caspian Sea and Lake Balkhash.

The direct loss of biodiversity in the Aral Sea region is devastating in terms of species (including endemic) as well as water-dependent ecosystems. The deterioration is also serious for the population in the region, with important sectors such as fisheries lost and the unique tugai forests destroyed. The situation calls for urgent measures to conserve and restore ecosystems.[70,71,72] With the redistribution of water resources and drainage from irrigation systems new water-dependent ecosystems have been established. The Aydar Arnasay lake system in Kazakhstan and Uzbekistan of importance for migrating birds is one example.

The *conservation and, where necessary, the restoration of ecosystems* is a specific obligation under the **Water Convention**, where Parties have to take "all appropriate measures" (article 2, para. 2 (d)). Although the Convention deals with transboundary waters, the term "ecosystems" in this provision is not necessarily limited to transboundary ecosystems, nor does it exclude ecosystems other than aquatic and water-related ecosystems, such as forests, wetlands, grasslands and agricultural land. This arises, among others, from the *integrated approach* taken by the Convention (article 2, para. 6). However, existing practice in the application of this provision suggests a priority in dealing with measures that help to maintain and/or improve aquatic and water-related ecosystems.

An example of *measures* aimed, inter alia, at conserving and restoring ecosystems, is the establishment of water-quality criteria and objectives in line with article 3, paragraph 3, and annex III, subparagraphs (a) and (d), to the Convention (see also section 3.1). Another measure is the development of concerted action programmes for the reduction of pollution loads from both point sources (e.g., municipal and industrial sources) and diffuse sources (article 9, paragraph 2 (f)), which will have positive effects on the ecosystems of transboundary basins and the marine environment.

The "re-naturalization" of watercourses is another measure aimed at restoring ecosystems that have been affected by structural measures (e.g., dams and reservoirs for hydropower generation and irrigational water supply; dykes, straightening waterways and enforcing river banks), which have caused significant hydro-morphological changes in river basins and their ecosystems, such as the interruption of river and habitat continuity, the disconnection of rivers from adjacent wetlands/flood-plains, and change of the erosion process and sediment transport.

As concerns *aquatic ecosystems*, the *Guidelines on the ecosystem approach in water management* [73] provide useful recommendations to maintain and improve the conditions and functions of aquatic ecosystems.

It is important to note that *water quantity* is an essential element in securing the structure, function and species compositions in aquatic and water-related ecosystems. Therefore measures to enhance water quantity should also be established, and monitoring programmes should not only deal with measuring concentrations in water, but also look at the biological and microbiological composition of aquatic ecosystems and sediment quality.

[70] Global Water Partnership (GWP) for Central Asia and the Caucasus (2007), "Implementing the UN Millennium Development Goals in Central Asia and the South Caucasus: Goal 7: Ensure Environmental Sustainability — Conserving Ecosystems of Inland Water Bodies in Central Asia and the South Caucasus".
[71] Invitation to partnership on implementation of the Central Asian Sustainable Development Initiative (ECE/CEP/106/Rev.1), available from http://www.unece.org/env/efe/Kiev/proceedings/files.pdf/Item%207/7b/7bDocuments/ece.cep.106.rev.1.e.pdf.
[72] *Second Assessment of Transboundary Rivers, Lakes and Groundwaters,* supra note 64.
[73] UNECE (1992), *Protection of Water Resources and Aquatic Ecosystems*, Water Series No. 1 (United Nations publication, Sales № E.93.II.E.23); the Guidelines are available from http://live.unece.org/fileadmin/DAM/env/water/publications/documents/Part%20One_WaterSeries1.pdf.

As concerns such water-related ecosystems as forests, wetlands, grasslands, and agricultural land, the *Recommendations on payments for ecosystem services in integrated water resources management* (2007)[74] contains a set of measures to protect and enhance the services of these ecosystems. These services include water-quantity-related ecosystem services, such as flood protection and water regulation (run-off, infiltration, retention and storage), which are provided through forestation, conservation agriculture and flood-plain restoration. They also include water-quality-related services, such as curbing water pollution, which are provided through afforestation and forest management and protection, extensification of (agricultural) land use, integrated pest management, pollution quotas and conversion or restoration of natural land cover. Other water-quality-related services, such as water purification services, can be provided through wetlands' restoration or creation.

The main objective of the Recommendations is to provide guidance on the establishment and use of *payments for ecosystem services* (PES) to implement integrated water resources management through the promotion of the protection, restoration and sustainable use of water-related ecosystems at all levels, from local to transboundary.

While the demand for ecosystem services is continuously increasing in all parts of the UNECE region, the capacity of ecosystems to provide such services is hampered by their degradation. This situation has many causes — not just economic growth and demographic changes, but also the fact that the value of such environmental services is often not captured and therefore not included in decision-making. Such decisions tend to prefer investments in water-related infrastructure (e.g., dams for flood control or water filtration plants for drinking water) rather than improving the capacity of water-related ecosystems to, for example, mitigate floods and purify water.

The Swiss Nitrate Strategy may be a useful example of a PES scheme. In order to reduce the pollution of aquifers with nitrates, a PES scheme was established in Switzerland to change the management practice in agriculture beyond existing legal requirements and the existing recommendations of good agricultural practice. To achieve this more stringent goal, payments to farmers are being made ranging from €130 per hectare a year for measures in open cultures to €1,250 for enhancing a meadow's surface. The funding comes from the Federal Government, the Swiss Cantons and, last but not least, the water supplier, as all these parties profit from decreasing pollution levels in groundwaters as a source of drinking water. It goes without saying that economic analysis was an essential tool for decision-making regarding the establishment of this PES scheme and allowed a comparison of the costs and benefits of changes in water-related ecosystem services in an integrated manner.

In order to demonstrate the applicability of PES schemes to water management issues, to learn from practical experience and to promote PES schemes, the Parties to the Water Convention initiated a number of *pilot projects*, including a pilot project in the basin of the Chon-Aksuu River in the Issyk-Kul

[74] United Nations publications, Sales № E07.II.E.12, available from http://live.unece.org/fileadmin/DAM/env/water/publications/documents/PES_Recommendations_web.pdf.

Oblast in Kyrgyzstan[75] and a pilot project in Armenia in the upper part of the Hrazdan River up to the settlement of Qaghsi, including the right tributaries Marmarik and Tsaghkadzor.

While developing and promoting PES, it should be understood that such schemes should complement other approaches, such as command-and-control and structural measures, and not replace them.

The application of EIA and other assessments (Water Convention, article 3, para. 1(h)) is an important tool for the conservation of ecosystems, where relevant provisions of the Espoo Convention and its Protocol on SEA provide relevant guidance. As concerns the protection of ecosystems against adverse effects of human activities, the **Protocol on Strategic Environmental Assessment** provides, inter alia, that:

> A strategic environmental assessment shall be carried out for plans and programmes which are prepared for agriculture, forestry, fisheries, energy, industry including mining, transport, regional development, waste management, water management, telecommunications, tourism, town and country planning or land use, and which set the framework for future development consent for projects listed in annex I . . . (article 4, para. 2)

As part of the procedure, Parties have to prepare an environmental report which describes the current state of the environment, to evaluate the likely significant impacts on the environment and identify adequate measures to mitigate adverse impacts. Description of the current state of the environment allows for identification of the valuable ecosystems which can then be taken into due consideration in the planning process.

Article 4, paragraph 2, of the SEA Protocol, also covers "any other project listed in annex II that requires an environmental impact assessment under national legislation". Projects listed in annex II include, inter alia, projects for the restructuring of rural land holdings, initial afforestation for the purposes of conversion to another type of land use and flood-relief works. In cases where such projects require an EIA under national legislation, plans and programmes covering future projects in these areas would also require an SEA.

CONSERVATION AND RESTORATION OF ECOSYSTEMS
Key Messages

- Conservation and restoration of ecosystems is a specific obligation under the Water Convention, which requires Parties to take "all appropriate measures" to this end. The Convention's provisions are not limited to transboundary ecosystems.
- The Water Convention provides for wide range of measures aimed, inter alia, at conserving and restoring ecosystems. These include the establishment of water-quality objectives and criteria, development of concerted action programmes for the reduction of pollution, etc. Both water quality and water quantity are essential elements in securing the protection and conservation of ecosystems.
- Payments for ecosystem services are an innovative tool to protect and enhance the services provided by ecosystems.
- Other tools and measures — such as EIA and SEA — play an important role in the conservation of ecosystems. The relevant provisions of the Espoo Convention and its Protocol on SEA are instrumental in this respect.

[75] See Regional Environmental Centre for Central Asia (CAREC), Pilot Project in Central Asia on Payments for Ecosystem Services at http://carec.kz/en/programmes/env_management/847.

3.7 Protection of the Marine Environment

In Central Asia, the Caspian Sea is the sole water body legally defined as a "marine environment", through the 2003 Framework Convention for the Protection of the Marine Environment of the Caspian Sea.[76] Nearly 130 rivers, including such major transboundary rivers as the Volga, the Kura, the Terek, the Ural and the Sulak, flow into the Caspian Sea. These rivers form a critical part of the overall Caspian ecosystem, and the vast river system and extensive wetlands are the habitat of diverse flora and fauna. Transboundary waters are often heavily polluted with substances from mining, chemical industries, agriculture and sewage, and thus contribute to the impairment of the habitat of many species and the marine environment. Thousands of tons of petroleum hydrocarbons are discharged annually into the Caspian Sea by the Volga River alone.[77] Protection of the marine environment through reduction of pollution from transboundary rivers is therefore an important challenge.

The oil fields in the Caspian itself and the connected risks for serious pollution in case of accidents are another important concern. Given the rich biological diversity and vulnerability of the shallow northern Caspian, in the event of an accident, the environmental impact of oil pollution in this area could be far greater than in other parts of the sea. Another factor of concern is that the Caspian Sea coast is highly vulnerable to the rapid and destructive fluctuations in sea level.[78]

Under the **Water Convention**, transboundary waters (in this case, transboundary rivers), which flow directly into the sea, end at a straight line across their respective mouths between points on the low-water line of their banks (article 1, para. 1). As such, seawaters are excluded from the geographical scope of the Water Convention.

However, the key obligation under the Water Convention, i.e., the obligation to take all appropriate measures to prevent, control and reduce any transboundary impact (article 2, para. 2), does not only refer to the prevention, control and reduction of transboundary impact in the respective transboundary basins. As clarified by the obligation of cooperation (article 2, para. 6), "the Riparian Parties shall cooperate … in order to develop harmonized policies, programmes and strategies … aimed at the prevention, control and reduction of transboundary impact and aimed at the protection of the environment of transboundary waters *or the environment influenced by such waters, including the marine environment*" (emphasis added). Therefore, the Convention's core obligation of cooperation aims at the protection of the environment of transboundary waters, as a shared resource, as well as the marine environment.

In order to facilitate implementation of the obligation to cooperate in respect of the protection of the marine environment, the Water Convention envisages that in cases where a coastal State, being Party to the Convention, is directly and significantly affected by transboundary impact deriving from transboundary waters, the Riparian Parties can, if they all so agree, invite that coastal State to be involved in the activities of multilateral joint bodies established by Parties riparian to such transboundary waters (article 9, para. 3). Thus, the Water Convention opens the door for the affected coastal States to at least participate in the activities of the Riparian Parties, if not to become a party to specific transboundary waters agreements.

Since cooperation in the framework of joint bodies established under the Water Convention is also aimed, at the protection of the marine environment, the joint bodies established under the Convention "shall invite joint bodies established by coastal States to cooperate in order to harmonize their work" (article 9, para. 4).

In international practice, marine pollution through transboundary rivers is most commonly dealt with by a "family" of international instruments: regional seas conventions and additional protocols on land-based sources and activities. The latter often provide for the possibility of non-coastal States located within the catchment areas of transboundary rivers flowing into a regional sea to become a Party to such agreements.

In line with this practice, the 2003 **Framework Convention for the Protection of the Marine Environment of the Caspian Sea** serves as an overarching framework laying down the requirements for environmental protection in the Caspian Sea. Its Contracting Parties agreed to undertake water protection measures also in the basins of rivers that end up in the Caspian. The Framework Convention provides that:

> If the discharge from a watercourse, flowing through the territories of two or more Contracting Parties or forming a boundary between them, is likely to cause pollution of the Caspian Sea, the Contracting Parties shall cooperate in taking all appropriate measures to prevent, reduce and control such pollution, including, where appropriate, the establishment of joint bodies responsible for identifying and resolving potential pollution problems. (article 7, paragraph 3)

[76] The 2003 Framework Convention for the Protection of the Marine Environment of the Caspian Sea entered into force on 12 August 2006 for all the five littoral States: Azerbaijan, Islamic Republic of Iran, Kazakhstan, Russian Federation and Turkmenistan.
[77] Environment and Security (ENVSEC) Initiative, *Environment and Security: Transforming risks into cooperation — The case of the Eastern Caspian Region* (Belley, France, 2008), p. 43.
[78] Ibid., pp. 43–45, 62.

The Framework Convention does not specify the term "appropriate measures", nor does it describe the tasks of "joint bodies", as there are many international agreements, most noticeable the Water Convention, which do so. A new Protocol on Environmental Impact Assessment in a Transboundary Context to the Framework Convention is being negotiated by the Caspian States.

The **Espoo Convention and its Protocol on Strategic Environmental Assessment** also apply to the marine environment. Appendix I (amended)[79] to the Espoo Convention includes, for example, in its paragraph 15, the category of "Offshore hydrocarbon production. Extraction of petroleum and natural gas for commercial purposes where the amount extracted exceeds 500 metric tons/day in the case of petroleum and 500,000 cubic metres/day in the case of gas". In line with its provisions, the Espoo Convention has been widely applied to undersea pipelines, extraction of minerals from the seabed, trading ports, shipping channels and other marine activities. Its application to coastal wastewater treatment plants is also of particular importance to the marine environment. Further, the Espoo Convention covers nuclear power plants and pulp mills, both of which are frequently located in the coastal strip.

The Protocol on SEA covers plans and programmes that set the framework for this same range of activities, but also those in the fisheries sector. Further, where national legislation on EIA extends to such activities, the Protocol also requires SEA of plans and programmes that set the framework for other relevant activities, such as shipyards, ports, harbours, loading piers, marinas, wind-farms and the reclamation of land from the sea.

PROTECTION OF THE MARINE ENVIRONMENT

Key Messages

- Although the Water Convention does not include seawaters in its scope, its core obligation of cooperation also aims at protection of the marine environment.
- The Water Convention strongly encourages joint bodies established under the Convention to actively cooperate with coastal States and with joint bodies established for the protection of the marine environment.
- The Espoo Convention is an important instrument for the protection of the marine environment, and has been widely applied to undersea pipelines, extraction of minerals from the seabed, trading ports, shipping channels and other marine activities, as well as to coastal wastewater treatment plants.

[79] Appendix I to Espoo Convention as amended by Decision III/7, supra note 36; simply "Offshore hydrocarbon production" in the unamended text currently in force.

3.8 Specific Agreements and Institutional Mechanisms for Cooperation

Institutions for transboundary water cooperation and other cooperation mechanisms based on subregional, multilateral or bilateral agreements are not new to Central Asia. The mechanism for cooperation among five Central Asian countries under the framework of the IFAS, which was formed on the basis of several regional organizations[80] during the first years after the collapse of the Soviet Union, has facilitated the necessary consolidation of efforts of IFAS member States in their intention to jointly address the socio-economic, water and environmental problems in the Aral Sea Basin. However, the existing mechanism of cooperation under the auspices of IFAS is often criticized for its poor efficiency. The criticism frequently refers to (a) the lack of clear responsibilities of the central bodies of IFAS and of the regional commissions — ICWC and ICSD; (b) the overlapping mandates and competencies of the central bodies of IFAS — the Board and the Executive Committee — and of the regional commissions; (c) the lack of procedures for reporting and interaction between the central bodies of IFAS and the regional commissions; and (d) the insufficient coordination and collaboration among ministries and agencies involved in cooperation in the framework of IFAS in each member State, and other deficiencies.[81] An additional concern is that ICWC in particular is not set up to take into account all uses of water or the needs of water-dependent ecosystems.

At the bilateral level, cooperation in the framework of specific agreements exists e.g. between Kazakhstan and Kyrgyzstan, Turkmenistan and Uzbekistan, and also at some "outside borders" of Central Asia (Kazakhstan-Russian Federation, Kazakhstan-China, Turkmenistan-Islamic Republic of Iran). In the majority of these cases, joint institutions have been created. Several of these agreements could be developed further in order to better reflect the integrated approach to the management of water resources, and in many basins this process is ongoing. For example, the bilateral agreement between Kazakhstan and Kyrgyzstan only covers the joint management of dams and canals jointly used for water distribution in the Chu and Talas River Basins, but the two countries are considering broadening this cooperation.

For UNECE environmental Conventions, specific subregional, multilateral or bilateral agreements and joint institutional mechanisms for transboundary cooperation, including those for transboundary water cooperation, are key mechanisms of implementation. The Conventions not only provide legal and regulatory frameworks for the development of such specific agreements and institutional mechanisms, but also continuously analyse accumulated experience and promote exchange of knowledge and best practice. This body of experience and best practice could be a valuable tool for the development of new and the strengthening of existing agreements and institutional mechanisms in Central Asia.

[80] The Agreement on the status of the International Fund for Saving the Aral Sea (IFAS) and its organizations of 9 April 1999 had included ICWC and ICSD and their supporting units in the IFAS system.

[81] For the analysis of the current institutional and legal frameworks of IFAS, please see the discussion paper, "Strengthening the Institutional and Legal Frameworks of the International Fund for Saving the Aral Sea: Review and Proposals" (2010), available from http://live.unece.org/fileadmin/DAM/env/water/cadialogue/docs/Draft_Paper_united_FINAL_ENG.pdf.

UNECE Conventions place a strong emphasis on institutional cooperation between their Parties, both in the framework of their general institutional set-up (such as Meetings/Conferences of the Parties, Bureaux, working and expert groups and task forces, secretariat and other bodies), as well as in the framework of so-called "specific" agreements and joint bodies aimed to support cooperation on the implementation and application of the Conventions between two or several Parties.

Such emphasis on specific agreements and joint bodies or institutions reflects the framework nature of the Conventions, which establish basic regulatory, procedural and institutional parameters for bilateral and multilateral cooperative activities and measures, with a view to pursuing the main objectives of the Conventions. Specific agreements and joint bodies allow adapting the provisions of a Convention to specific circumstances of bilateral and multilateral cooperative activities. As ILC stressed, "optimal utilization, protection and development of a specific international watercourse is best achieved through an agreement tailored to the characteristics of that watercourse and to the needs of the States concerned".[82] As pointed out by the Espoo Convention, bilateral and multilateral agreements or other arrangements may include "additional requirements for the implementation of this Convention, taking into account the specific conditions of the subregion concerned" (appendix VI). Similarly, the Espoo and Industrial Accidents Conventions emphasize that Parties may take, by bilateral or multilateral agreement, more stringent measures than those required by the Conventions themselves (Espoo Convention, article 2, para. 9; Industrial Accidents Convention, article 24, para. 2).

While specific agreements and joint bodies are one of the key means of implementation of the general obligation of Parties to cooperate (see, e.g., article 2, para. 6, of the Water Convention or article 3, para. 1, of Industrial Accidents Convention), the absence of bilateral or multilateral agreements between the Parties does not relieve them from the obligation to fully implement and comply with the respective Convention.

The principles of *"equality", "reciprocity"* and *"good faith"*, enshrined with some minor variations, in the UNECE environmental Conventions (e.g., article 2, para. 6, and article 9, para. 1, of the Water Convention; appendix VI, para. 2 (b) of the Espoo Convention; and the preamble of the Industrial Accidents Convention), are important principles to be applied to bilateral and multilateral cooperation in the form of specific agreements. In particular, Parties are to be governed by such principles from the early stages of their cooperation, in particular at the negotiation stage of a specific agreement. They are required to accept in good faith all communications and contacts which could, by a broad comparison of interests and by reciprocal good will, provide them with the best conditions for concluding such agreements.

The **Water Convention** provides for the *obligation* of Riparian Parties to enter into agreements, or other arrangements, in order to define their mutual relations and conduct regarding the prevention, control and reduction of transboundary impact, and the obligation to establish joint bodies (article 9). The fact that article 9 provides that it is mandatory to enter into "agreements or other arrangements" distinguishes the Water Convention from other international instruments in this field and from other UNECE Conventions, and is considered to be an added value of the Water Convention. It is important to emphasize that the obligation to enter into agreements or other arrangements exists only for the Riparian Parties *with respect to other* Riparian Parties, i.e., the Convention does not create such an obligation for the Riparian Parties with respect to States which are not Parties to it.

Another important concept enshrined in the first sentence of article 9, paragraph 1, is that this particular obligation is meant to be complementary to cooperation agreements made by the Riparian Parties before the Convention entered into force for them. It urges the Riparian Parties to conclude agreements where these do not yet exist, and it does not require extinction of the existing ones. However, the Convention obliges the Riparian Parties to adapt existing agreements or other arrangements, "where necessary to eliminate the contradictions with the basic principles of this Convention". The reference to the "basic principles" of the Convention avoids the requirement to incorporate every single provision of the Convention in case there is a need to adapt existing agreements to it.

Article 9 includes three requirements in relation to the contents of agreements or other arrangements. First, the Riparian Parties shall specify the catchment area, or part(s) thereof, subject to cooperation. Secondly, the agreements or other arrangements shall embrace relevant issues covered by this Convention, as well as any other issues on which the Riparian Parties may deem it necessary to cooperate. Thirdly, such agreements or other arrangements shall provide for the establishment of joint bodies (article 9, para. 2).

This mandatory provision in relation to the establishment of joint bodies again distinguishes the Water Convention from basically all other international instruments in the field,[83] which either establish joint bodies themselves or mildly recommend institutional arrangements between riparian States. The rationale behind the obligation of establishing joint institutions is that "management of international watercourse systems through joint institutions [is] not only an increasingly common phenomenon, but also almost indispensable to optimum utilization and protection of international watercourse systems".[84] The implementation of the said obligation creates a mechanism to help the Riparian Parties to comply with the Water Convention, creating mutual advantages for the Riparian Parties involved and promoting further and more effective cooperation. Certainly, the obligation of the Riparian Parties to establish joint bodies in agreements or other arrangements does not mean that every new agreement or other arrangement between Riparian Parties is to establish a new joint body. The Riparian Parties may entrust existing joint bodies to carry out further cooperation under subsequent agreements or other arrangements.

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[82] See *Yearbook of the International Law Commission*, 1994, vol. II, (part two), p. 97.
[83] Except for the 2000 Revised Protocol on Shared Watercourses in the Southern African Development Community (SADC Protocol) — see its article 5, paragraph 3 (a).
[84] *Yearbook of the International Law Commission*, 1990, vol. II, (part two), p. 49.

Article 9, paragraph 2, of the Water Convention lists the tasks to be performed by a joint body. The list reflects the core set of tasks any joint body should be entitled to do and be responsible for performing. However, Riparian Parties remain free to adjust the priorities of their joint bodies according to their specific needs.

Under the **Espoo Convention**, Parties *may* continue existing or enter into new bilateral or multilateral agreements or other arrangements in order to implement their obligations under this Convention (article 8). Such agreements or other arrangements may be based on the elements listed in appendix VI "Elements for Bilateral and Multilateral Cooperation". These agreements are not a precondition for the application or ratification of the Convention, but should be seen as a way of achieving effective application.[85] The Convention's governing body has repeatedly encouraged the development of such agreements or arrangements, most recently by noting:

> A continuing need for bilateral and multilateral agreements or other arrangements, particularly to address differences between Parties in: the content of the notification; language; time frames; how to proceed when there is no response to a notification or if there is disagreement about the need for notification; the interpretation of various terms; and the requirement for post-project analysis.[86]

Although setting up bilateral and multilateral agreements or other arrangements is not an absolute requirement under the Espoo Convention, the Convention is rather detailed with regard to the recommended content of such agreements or arrangements. In particular, in such agreements Parties may provide for:

- Harmonization of their policies and measures for the protection of the environment in order to attain the greatest possible similarity in standards and methods related to the implementation of EIA;
- Developing, improving, and/or harmonizing methods for the identification, measurement, prediction and assessment of impacts, and for post-project analysis;
- The establishment of threshold levels and more specified criteria for defining the significance of transboundary impacts related to the location, nature or size of proposed activities, for which EIA, in accordance with the provisions of the Convention, is to be applied; and the establishment of critical loads of transboundary pollution;
- Undertaking, where appropriate, joint EIA, development of joint monitoring programmes, intercalibration of monitoring devices and harmonization of methodologies with a view to rendering the data and information obtained compatible; and other activities (appendix VI).

[85] *Guidance on the Practical Application of the Espoo Convention*, Environmental Series No. 8 (2006) (ECE/MP.EIA/8), chapter 5; available from http://live.unece.org/fileadmin/DAM/env/documents/2006/eia/ece.mp.eia.8.pdf.

[86] Decision V/3 of the Meeting of the Parties to Espoo Convention, reprinted in document ECE/MP.EIA/15, available from http://live.unece.org/env/eia/meetings/mop_5.html.

The non-exhaustive list of elements for bilateral and multilateral cooperation demonstrates the wide range of opportunities to strengthen and streamline cooperation in implementing the Convention through bilateral and multilateral agreements.

The Espoo Convention recommends the establishment of joint bodies to facilitate the application of the Convention. According to appendix VI, the Parties *may* set up, where appropriate, institutional arrangements or enlarge the mandate of existing institutional arrangements within the framework of bilateral and multilateral agreements in order to give full effect to the Convention. Joint bodies are given an important role throughout the Espoo Convention procedure. In particular, at a certain point of the notification procedure, the joint body, where one exists, may serve as a channel to furnish information by an affected Party at the request of the Party of origin for the preparation of the EIA documentation (article 3, para. 6). At a later stage of the preparation of the EIA documentation, the joint body may serve as a channel for the Party of origin to supply the affected Party, with the EIA documentation (article 4, para. 2). In addition, consultations on the basis of the EIA documentation may be conducted through an appropriate joint body (article 5).

Under the **Industrial Accidents Convention**, Parties *may*, in order to implement their obligations under this Convention, continue existing or enter into new bilateral or multilateral agreements or other arrangements (article 24, para. 1). The Convention, however, does not provide details on the content of such agreements and arrangements. With regard to the joint bodies, where they exist, the Convention provides them with a role in the consultations on the proposed or existing hazardous activities. In such procedures, joint bodies may serve as a two-way channel of information between an affected Party and a Party of origin, and as a forum for consultations concerning the transboundary effects of the hazardous activity in the event of an industrial accident, and measures to reduce or eliminate its effects (annex III).

In the area of the institutional cooperation, the Industrial Accidents Convention places an emphasis on the cooperation by the competent authorities, rather than cooperation through joint bodies. In addition, the Convention requires designation or establishment of points of contact for the purposes of the industrial accident notification (article 17).

The **Aarhus Convention** requires its Parties to promote the application of the principles of the Convention in international environmental decision-making processes and within the framework of international organizations in matters relating to the environment (article 3, para. 7). More guidance with regard to the application of this obligation can be drawn from the Almaty Guidelines on Promoting the Application of the Principles of the Aarhus Convention in International Forums, adopted in 2005.[87] The Almaty Guidelines refer to "international forums" meaning "any multilateral international environmental decision-making process, or any multilateral international organization when dealing with matters relating to the environment". Joint bodies for transboundary cooperation are within the scope of this definition and they can apply the progressive set of recommendations offered by the Guidelines. The reference in the Almaty Guidelines to "multilateral" international processes does not release Parties to the Convention from their general obligation under article 3, paragraph 7, to promote the application of the Convention's principles in bilateral decision-making processes.

Conclusion of specific agreements and the establishment of joint bodies have an enormous support in the *practice of States* in the UNECE region in the framework of the UNECE environmental Conventions. In the area of transboundary water cooperation, the Water Convention has played a crucial role in the region in supporting the establishment and strengthening of cooperation and serving as a model for a number of bilateral or multilateral agreements. Among them are the 1994 Convention on Cooperation for the Protection and Sustainable Use of the Danube River and the 1999 Convention on the Protection of the Rhine, which build on the Water Convention's provisions in a more specific subregional context. Other examples are the agreements on the rivers Meuse and Scheldt, as well as on the Estonian-Russian, Kazakh-Russian and Russian-Ukrainian transboundary waters. Some relatively recent transboundary water instruments include the multilateral 2002 Framework Agreement on the Sava River Basin and a number of bilateral treaties on transboundary waters. Reference to the Water Convention is also found in the EU WFD.[88]

International practice of transboundary water cooperation, also in the UNECE region, shows a wide range of existing joint bodies in terms of their mandates, powers, compositions and structures. There is no single model of cooperation that would be appropriate for all situations. This diversity is a major strength and is a consequence of the large variety of political and physical settings, the various origins and mandates of the institutions and the traditional and emerging problems they are required to address. At the same time, there are some features that are generally essential for the efficiency of joint bodies. These include: wide competence and multisectoral representation, which are required for an integrated approach to water resources management; clearly defined powers; and an organizational structure that allows developing and adopting decisions, as well as implementing them. Such principles also include effective mechanisms for the cooperation of a joint body with national authorities, clear reporting mechanisms, availability of financial means for implementation of joint programmes and for support of organizational structure and ensuring mechanisms for public participation and stakeholder involvement in the activity of a joint body. It is also important to aim at ensuring participation of all basin countries in a joint body.[89] In addition to cooperation within the entire transboundary basin(s), the conclusion of bilateral agreements and establishment of bilateral joint bodies is in many cases important for ensuring constructive cooperation on specific issues.

[87] Meeting of the Parties decision II/4, annex (ECE/MP.PP/2005/2/Add.5).
[88] 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.
[89] *River basin commissions and other institutions for transboundary water cooperation*, Capacity for Water Cooperation series (United Nations publication, Sales № E.09.II.E.16); available from http://live.unece.org/fileadmin/DAM/env/water/documents/CWC_publication_joint_bodies.pdf.

The provisions on transboundary EIA are often present in the bilateral and multilateral transboundary water agreements, in the general environmental cooperation agreements between States,[90] as well as, often in a general form, in regional seas agreements (such as the 1976 Convention for the Protection of the Mediterranean Sea against Pollution; the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area; and the 1992 Convention on the Protection of the Black Sea against Pollution). At the same time, there are a growing number of specific agreements on transboundary EIA, such as, e.g., between Estonia and Latvia (2007), between Estonia and Finland (2002), between Italy and Croatia (1998), between Poland and Lithuania (2004) and between Germany and Poland (2006), etc. An important step has been recently taken by the countries of South-Eastern Europe — Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Montenegro, Romania, Serbia, and the former Yugoslav Republic of Macedonia — which have signed the Multilateral agreement among the countries of South-Eastern Europe for implementation of the Convention on Environmental Impact Assessment in a Transboundary Context (Bucharest Agreement, 2008). The agreement entered into force in 2011.

The *Guidance on the Practical Application of the Espoo Convention*[91] includes a tentative list of the general contents of a bilateral or multilateral agreement. The list includes: area of application of the Convention; criteria for deciding what is a significant impact; naming people or organizations to act as contact points; setting up a joint body; notifying those who need to know; providing information and publicity; public participation (public hearings, information meetings, ensuring comments are passed on); consultation between the concerned parties; reaching a decision; post-project analysis; preventing disputes or settling them; arranging translations; and deciding who pays. The inclusion of these elements in agreements on transboundary EIA contributes to their efficiency in regulating cooperative activities in this area.

INSTITUTIONAL COOPERATION
Key Messages

- The UNECE environmental Conventions provide frameworks for cooperation which can be further developed through specific bilateral and multilateral agreements.
- The Water Convention obliges Riparian Parties to enter into transboundary water agreements and requires the establishment of joint bodies. Other UNECE Conventions strongly favour bilateral and multilateral cooperation to achieve strengthened implementation.
- Cooperation through specific multilateral and bilateral agreements and the establishment of joint bodies for transboundary water cooperation allows for tailoring cooperation to the needs and priorities of riparian countries and therefore is an important requirement for effective and sustainable management and use of transboundary waters. The existing body of States' practice is very rich, making it possible to identify best practices.
- States are also increasingly cooperating in developing bilateral and multilateral agreements on transboundary environmental impact assessment.

[90] Comparative review of "Transboundary EIA provisions and initiatives in selected Regional and Multilateral Environmental Agreements", as presented to the ninth meeting of the Working Group on Environmental Impact Assessment (2006); document available from http://live.unece.org/fileadmin/DAM/env/eia/documents/links_between_conventions/Transboundary%20EIA%20Review%20-%20Main.pdf.
[91] Supra note 85.


ARROUH DERYASY

3.9 Planned Measures

The rights and obligations of States in connection with planning an activity, project, or use with potential transboundary impact, including impact on transboundary waters, are among the most debated issues in many parts of the UNECE region and worldwide. This is also true for Central Asia, where planning of new activities, in particular the development of hydropower by upstream riparians, is being intensively debated on the regional political scene. In Central Asia, "planned measures" are also an area where UNECE Conventions, in particularly the Water and Espoo Conventions, are sometimes not fully understood.

UNECE environmental Conventions have different levels of detail with regard to the regulation of "planned measures". This area illustrates complementarities and synergies between the Conventions, since the procedures and mechanisms of the Espoo Convention provide a comprehensive procedural set for the implementation of the obligations under other UNECE Conventions.

"Planned measures" is a general term, usually meant to encompass new projects, uses and activities, as well as major changes to existing ones.[92] The most relevant issues with regard to "planned measures" include notification on planned measures and possible procedures in case of absence of notification, as well as procedures subsequent to notification such as consultations and final decision.

The principle that consultations should take place between neighbouring States to discuss issues of common interest is a principle of general customary law, on the basis of a well consolidated diplomatic and conventional practice concerning bilateral treaties of friendship and good-neighbourliness. International environmental protection adds a specific aspect to this general principle: i.e., the fact that each State has an obligation to consult its neighbour in case it envisages activities likely to cause transboundary impact. Principle 19 of the Rio Declaration provides that "States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental impact and shall consult with those States at an early stage and in good faith".[93] It is important to stress that the duty of notification does not imply a duty of prior consent. This is has been authoritatively pointed out in the *Lake Lanoux case* (1957),[94] in which the Arbitral Tribunal denied the existence of "a 'right of veto', which at the discretion of one State paralyses the exercise of the territorial jurisdiction of another".

The **Water Convention** makes no reference to the prior notification rule. This is due to the simple fact that the present rule can well be said to be absorbed by the far stronger obligation for the Riparian Parties, set out in article 9, paragraph 2, of this Convention, to enter into agreements establishing joint bodies, whose tasks include those "to serve as a forum for the exchange of information on existing and planned uses of water and related installations that are likely to cause transboundary impact", as well as "to participate in the implementation of environmental impact assessments relating to transboundary waters, in accordance with appropriate international regulations". In addition, article 10 of the Water Convention provides for a general duty of consultation between the Riparian Parties at the request of any Riparian Party. The scope of application of article 10 is a general one, in the sense that it is not just limited to cases of concrete activities likely to have transboundary impact. At the same time, its scope of application includes consultations on planned activities. Detailed procedural guidance for consultations on planned measures can be found in the Espoo Convention. In addition, procedures on planned measures with specific focus on international watercourses can be found in part III of the 1997 United Nations Convention on the Law of the Non-navigational Uses of International Watercourses.

The **Espoo Convention** elaborates a procedural framework to assist States in preventing differences and disputes with regard to proposed activities, as well as to encourage better decisions and higher protection of the environment. The Convention is regularly applied in numerous sectors: it is estimated that by 2011 there have been close to 800 cases of application in the UNECE region. In the water sector, the most common examples of application include hydroelectric power stations, navigation channels and inland ports. There are also numerous examples of the Espoo Convention's application in other sectors indirectly affecting transboundary waters, such as mining.

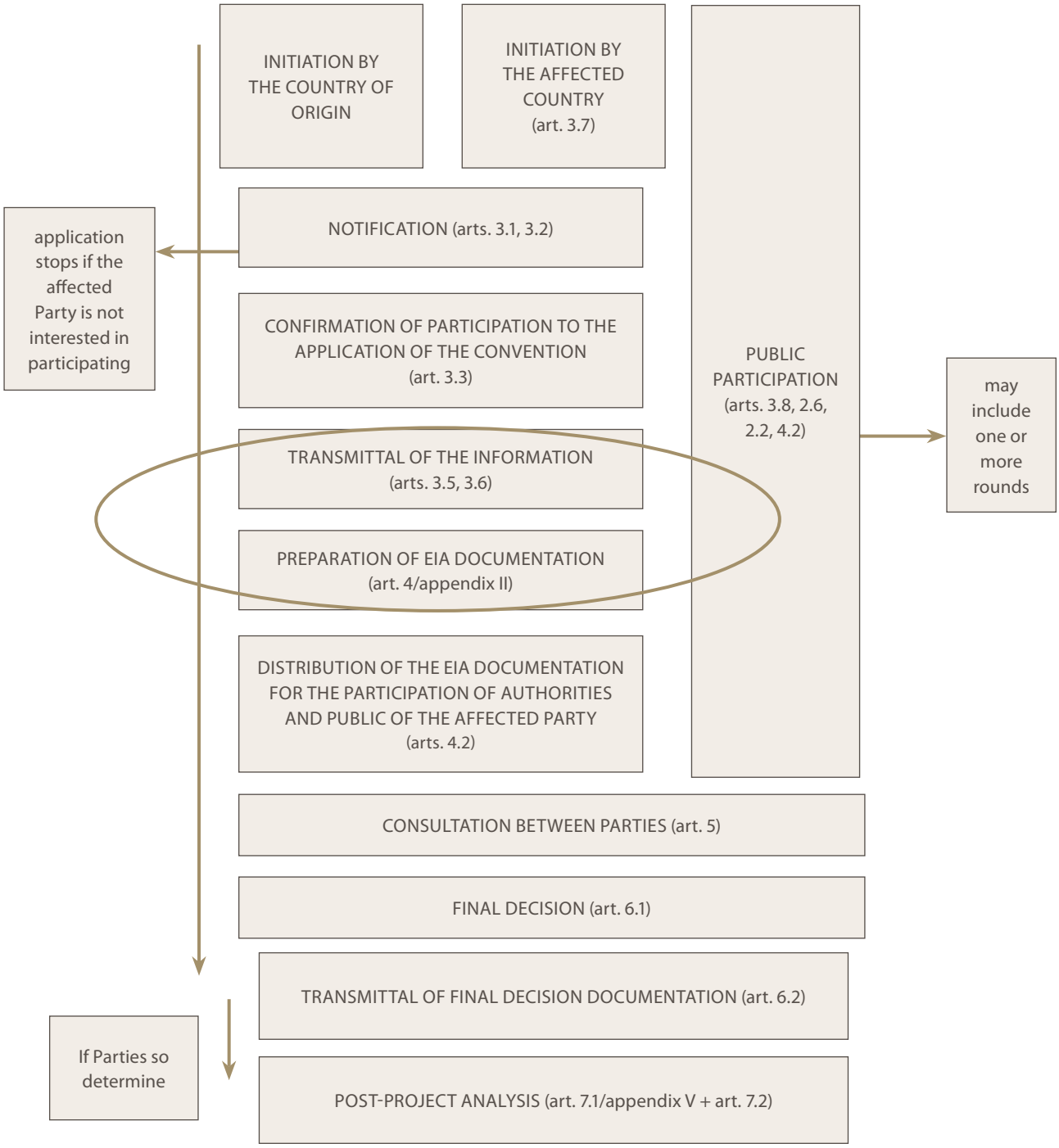
The core obligation of Parties to the Espoo Convention is to take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities (article 2, para. 1). The EIA process is carried out to achieve this. The Convention's procedure "extends" such assessments across borders between Parties (see box 8).

[92] The Espoo Convention defines a "proposed activity" as any activity or any major change to an activity subject to a decision of a competent authority in accordance with an applicable national procedure.
[93] Report of the United Nations Conference on the Human Environment, Stockholm, 5–16 June 1972 (United Nations publication, Sales № E.73.II.A.14 and corrigendum), chap. I.
[94] *Lake Lanoux Arbitration (France v. Spain)* (1957), 24 I.L.R. 101, at 127–128 (para. 11).

Box 8. Espoo Convention's procedure

The procedure has distinct stages, each of which needs to be carried out in a way that serves the case in question, fits into the procedures and the culture of the Parties concerned and fulfils the requirements of the Convention. The procedure starts with the Party where a potentially damaging activity is planned (the "Party of origin") notifying any other Party that it thinks may be affected (the "affected Party"). The following stages include organizing participation and information flow and providing EIA documentation and final results. In case the affected Party decides not to participate in applying the Convention in the notified case, the process is stopped and it is up to the Party of origin to decide whether it carries out an EIA or not. An overall plan is needed for the entire procedure. Each step requires careful preparation before being carried out. National legislation plays an important role when applying the Espoo Convention.

FLOW CHART 1. Stages of an assessment according to the Espoo Convention



The procedure under the Espoo Convention is quite comprehensive (see flow chart 1). The details of the procedure are further specified in various guidance documents adopted in the framework of the Convention.[95] The key characteristics of the procedure include the aspects set out below.

Applicability of the Espoo Convention: In the Convention, appendix I includes a list of activities that automatically require an application of the Convention if significant impacts may extend across the border. The first task is thus to determine whether an activity may have significant impacts across borders. This exercise is often called screening. Some Parties may find that the list of activities in the Convention does not cover all relevant activities, and therefore apply the Convention to a longer list of activities. An agreement between Parties could thus include further activities, which would always require transboundary EIAs. Appendix III contains general criteria to assist in the determination of the environmental significance of activities not listed in appendix I. In most cases, the Convention is applied between neighbouring Parties. However, it also applies to long-range transboundary impacts. Moreover, sometimes Parties decide to notify affected non-Parties and further apply the Convention with respect to non-Parties. Occasionally also the Government of or the project developer from a non-Party has decided to carry out transboundary EIA procedure in accordance with the provision of the Espoo Convention (e.g., for the Nord Stream gas pipeline in the Baltic Sea, and the May 2011 decision by the Russian Federation's nuclear power company, Rosatom, to consult with neighbours on environmental impacts within the framework of the Espoo Convention).

Procedures also in absence of notification: In cases where an affected Party feels that it is likely that the Convention should be applied, although it has not received a notification, the affected Party may initiate discussions on the issue of significance with the Party of origin (article 3, para. 7).

Early involvement: The notification should be made as early as possible, and no later than when the Party of origin informs its own public.

Public participation: The Convention refers several times to the right to public participation in the EIA procedure. It requires both countries to make sure that the public of the affected Party — in the areas likely to feel the impact — has the chance to comment on and object to the proposed activity, with its observations being passed on to the competent authority in the Party of origin. It also requires both countries to arrange the distribution of the EIA documentation not only to the authorities in the affected Party, but also to those of its people who live in the relevant area.

Final decision: The decision-making power remains in the country where the development is planned. The Party of origin shall ensure that in the final decision on the proposed activity due account is taken of the outcome of the EIA, including the EIA documentation, as well as the comments from the authorities and the public of the affected Party, and the outcome of the consultations between the Parties (article 5).

Importance of national frameworks: Every country that is a Party to the Convention also has to have a national EIA procedure (see box 9). The Convention sets out the minimum standards for the content of the EIA documentation that has to be submitted to the competent decision-making authority in the Party of origin, covering subjects such as the presentation of alternatives, including the "no action alternative", and a description of possible mitigation measures and the predictive methods used. The EIA documentation should identify uncertainties and gaps in knowledge and outline monitoring and management programmes and any plans for post-project analyses.

Box 9. Addressing differences in national systems to apply the Espoo Convention

Most countries have a system of environmental impact assessment (EIA); many of the countries of the former Soviet Union have inherited a similar system called "state ecological expertise".

To implement the Convention, national legislation generally has to be amended to provide for a transboundary EIA procedure. The Espoo Convention secretariat is often able to organize support for this work. In addition, institutional capacity and awareness need to be raised, notably including awareness in central and local government of the obligation to apply the Convention. Learning about EIA systems in neighbouring countries will help build relationships and facilitate application of the Convention.

[95] *Guidance on the Practical Application of the Espoo Convention* (see supra note 85); *Guidance on Public Participation in EIA in a Transboundary Context*, Environmental Series No. 7 (ECE/MP.EIA/7) (2006); *Guidance on notification according to the Espoo Convention*, Environmental Series No. 10 (2009) (ECE/MP.EIA/12).

Special issues may also arise in connection with the assessment of policies, plans and programmes (e.g., a planned national strategy to develop hydropower, or a national flood management plan). Such cases are addressed by the Convention's **Protocol on Strategic Environmental Assessment**, which requires notification by a Party of origin and transboundary consultations if the implementation of a plan or programme is likely to have significant transboundary environmental, including health, effects (article 10).

The **Industrial Accidents Convention** has direct relevance to the issue in question, since it provides its Parties with obligations with respect to the planning of hazardous activities. While the scope of cooperation under this Convention is prevention of, preparedness for and response to industrial accidents capable of causing transboundary effects, one of the primary obligations of Parties is to identify hazardous activities. Similarly to the Espoo Convention, the **Industrial Accidents Convention** has an inherent "threshold" — it does not apply to all activities involving hazardous substances. Rather, it applies to activities in which one or more hazardous substances are present or may be present in quantities at or in excess of the threshold quantities listed in annex I to the Convention, and which are capable of causing transboundary effects. The Guidelines to facilitate the identification of hazardous activities for the purposes of the Convention[96] are intended to help Parties in the identification exercise. Also, the Convention encourages its Parties to extend, by mutual agreement, the application of the Convention beyond activities covered by its annex I (article 5).

The obligation to identify hazardous activities is vested with the "Party of origin", i.e., a Party under whose jurisdiction an industrial accident is capable of occurring. The rationale of the obligation to identify hazardous activities is to enable Parties to cooperate in undertaking preventive measures and setting up preparedness measures (article 4, para. 1).

The obligation to identify hazardous activities is twofold: it refers to both existing and proposed hazardous activities within Party's jurisdiction. Therefore, planned hazardous activities are included in the scope of the obligation to identify hazardous activities. The obligation of identification automatically triggers another obligation of the Party of origin — to notify affected Parties of any such proposed or existing activity (article 4, para. 1).

The Industrial Accidents Convention provides for the obligation of Parties concerned, to enter into "discussions", at the initiative of any Party, on the identification of those hazardous activities that are, reasonably, capable of causing transboundary effects (article 4, para. 2). The term "discussions" hereby seems to have the same meaning as a more established term — "consultations". The fact that the Convention provides "any Party" with the opportunity to initiate consultations with regard to the hazardous activities that are, reasonably, capable of causing transboundary effects, is fully in synergy with both the Water Convention, which provides for consultations at the request of any Riparian Party (article 10), and the Espoo Convention, which makes it possible for an affected Party to initiate the procedure in the absence of notification (article 3, para. 7). As further corroborated by article 4, paragraph 3, and annex III of the Convention, the Parties shall also use consultations with respect to proposed or existing hazardous activities in order to determine whether a Party is an affected Party and concerning the transboundary effects of the hazardous activity and measures to reduce and eliminate its effects.

Annex III to the Industrial Accidents Convention provides for the procedure of such consultations. Similarly to the Espoo Convention, the Industrial Accidents Convention requires notification at an early stage: the Party of origin shall provide for the notification of any Party that it considers may be an affected Party as early as possible and no later than when informing its own public about the proposed or existing activity. The Con-

[96] Guidelines to facilitate the identification of hazardous activities for the purposes of the Convention, adopted by Decision 2000/3 of the Conference of the Parties (ECE/CP.TEIA/2, annex IV, appendix), further amended by Decision 2002/1 and Decision 2004/2.

vention obliges the Party of origin to provide information on the hazardous activity and its possible transboundary effects in the event of an industrial accident, as well as for the affected Party to provide upon request the reasonably obtainable information relating to the possible affected area. Where one exists, a joint body may serve as a channel for information between the Parties and a forum for consultations. The Convention provides for public participation in the procedure: the public in areas reasonably capable of being affected by the hazardous activity shall be ensured an opportunity for making comments on, and objections to, the hazardous activity.

Following the completion of the analysis and evaluation documentation by the Party of origin, consultations between Parties may consider the transboundary effects of the hazardous activity in the event of an industrial accident, and measures to reduce or eliminate its effects, and may refer to possible alternatives to the hazardous activity (including the no-action alternative), possible measures to mitigate transboundary effects, forms of possible mutual assistance for reducing transboundary effects, etc. Again, similarly to the Espoo Convention, the power of decision-making remains with the Party of origin: the Party of origin informs the affected Parties of any decision on the activity, along with reasons and considerations on which it was based. At the same time, the Parties concerned shall ensure that due account is taken of the analysis and evaluation, as well as comments received from the public, and of the outcome of consultations between the Parties.

It is important to stress that the Industrial Accidents Convention aims to ensure synergies with the Espoo Convention in cases when a hazardous activity is subject to the Espoo Convention procedure. In such cases, the Industrial Accidents Convention requires that the final decision taken for the purposes of the Espoo Convention fulfils the relevant requirements of the Industrial Accidents Convention (article 4, para. 4).

In relation to planned measures and activities, it should be noted that the Industrial Accidents Convention also obliges Parties to seek the establishment of policies on the siting of new hazardous activities and on significant modification to existing hazardous activities (article 7), in pursuit of the objective of minimizing the risk to the population and the environment of all affected Parties.

The **Aarhus Convention** proved to have an unprecedented role in cases connected with "planned measures". Although the Aarhus Convention does not contain explicit obligations of States vis-à-vis other States, the rights enshrined in the Aarhus Convention are to be exercised by the public "without discrimination as to citizenship, nationality or domicile" (article 3, para. 9). When planned measures may affect the population in the territory of a different State, information to and participation of the citizens/residents of neighbouring countries should be ensured. In this respect, NGOs may trigger States to exercise their rights and obligations under other international legal instruments, with a view to achieving a better protection of the environment and population in the affected areas. For example, NGOs played a crucial role in urging the application of public participation procedures under the Aarhus and Espoo Conventions to the planned Bystroe Canal Project (the Danube-Black Sea deep-water navigation canal in the Ukrainian sector of the Danube Delta), long before the matter was raised in the inter-State relations of Romania and Ukraine.

PLANNED MEASURES
Key Messages

- The UNECE environmental Conventions require a Party planning an activity to notify the affected Parties and to consult on the potential effects of such activity. However, they leave the decision-making power with the Party planning an activity, which makes the final decision. Comments received from the public and outcomes of the consultations should be taken into "due account". Therefore, the UNECE Conventions do not infringe on sovereignty and do not prevent development: through clear, transparent and inclusive consultative procedures they facilitate better quality of decision-making and prevent differences and disputes.
- The UNECE Conventions have a different level of detail with regard to the regulation of "planned measures". This area illustrates complementarities and synergies between the Conventions, where the procedures and mechanisms of the Espoo Convention provide a comprehensive procedural set for implementation of obligations under other Conventions. In case of planned hazardous activities, procedures for notification and consultations are defined in the Industrial Accidents Convention, but may also be undertaken, in some cases, under the Espoo Convention.
- Obligations to notify and consult on "planned measures" are applicable to a selected number of activities which may have a significant transboundary impact on the environment. The activities and thresholds are clearly defined in the provisions of both the Espoo and the Industrial Accidents Conventions.
- The public plays an important role in the consultations on "planned measures".

3.10 Monitoring and Assessment

Monitoring and assessment of surface waters (e.g., rivers, lakes, reservoirs, irrigation channels) and groundwaters are fundamental preconditions for IWRM. The ultimate goal is the provision of information needed for planning, decision-making and operational water management at the local, national and/or transboundary levels, as well as the protection of human health and the environment in general.

The economic difficulties faced by Central Asian States after the break-up of the Soviet Union have had a severe negative impact on the implementation of monitoring and assessment programmes, resulting in a reduction in the number of measuring stations, less frequent measurements and a reduction in the number of parameters measured.

In spite of this, Central Asian countries have established and run for a long period of time monitoring and assessment programmes for water quantity characteristics of surface waters at the national level and have exchanged the available information between the national hydrometeorological services. However, monitoring and assessments of water quality of surface waters and water quantity and quality characteristics of groundwaters is much less developed. Monitoring of quality characteristics of suspended matter, sediments and/or biota is in its infancy in some basins (in particular where international projects have assisted in this direction) or does not exist at all.

Water quantity data that is being monitored is to some extent adequate for the purposes of transboundary cooperation, although there are many remaining needs to make sure that the full range of needed information is available. Transboundary water quality monitoring and exchange of information is very scarce. The example of cooperation between Kazakhstan and Kyrgyzstan on the quality of water in the Chu Basin and the development of cooperation on water quality between Kazakhstan and China are positive exceptions. The forecast capacity needs to be strengthened, in particular in the face of climate change.

OBLIGATIONS UNDER THE WATER CONVENTION

The **Water Convention** obliges all Parties to "establish programmes for monitoring the conditions of transboundary waters" (article 4) because functioning monitoring systems for the national part(s) of transboundary basins and adequate financial and human resources for monitoring and assessment at the national and local levels are a prerequisite for bilateral and multilateral cooperation in transboundary river basins, particularly related to the establishment and implementation of joint programmes for monitoring and joint or coordinated assessments. The latter obligation is comprehensively dealt with under article 11 of the Water Convention (see box 10).

As article 11 points to the need to establish and run *"joint monitoring programmes"* and carry out *"joint or coordinated assessments"*, one should note that the required information to protect and use transboundary waters derives from the domestic monitoring systems; these may also include stations where measurements and sampling are even carried out jointly by the respective riparian countries or under the auspices of a joint body.

Box 10. Excerpts from article 11 of the Water Convention

1. […] the Riparian Parties shall establish and implement joint programmes for monitoring the conditions of transboundary waters, including floods and ice drifts, as well as transboundary impact.
2. The Riparian Parties shall agree upon pollution parameters and pollutants whose discharges and concentration in transboundary waters shall be regularly monitored.
3. The Riparian Parties shall, at regular intervals, carry out joint or coordinated assessments of the conditions of transboundary waters and the effectiveness of measures taken for the prevention, control and reduction of transboundary impact. The results of these assessments shall be made available to the public […].
4. For these purposes, the Riparian Parties shall harmonize rules for the setting up and operation of monitoring programmes, measurement systems, devices, analytical techniques, data processing and evaluation procedures, and methods for the registration of pollutants discharged.

As national monitoring programmes in the various riparian countries are normally set up in accordance with national requirements and conditions (e.g., national legislation, pollution sources or water uses of local or national importance), it is of the utmost importance that monitoring and assessment programmes should be *"harmonized"* (article 11, para. 4). Harmonization means that at least comparable — not necessarily the same — methodologies for measurements, data collection and evaluation should be used, and account should be taken of the fact that existing national monitoring programmes do not necessarily take into account water-quality requirements of water uses in the other riparian countries. This was, for example, the case in some of the pilot projects on monitoring and assessments of the rivers Bug (Ukraine, Belarus and Poland), Kura (Armenia, Georgia and Azerbaijan) and Tobol (Kazakhstan, Russian Federation), where the protection of drinking-water sources in the downstream country was not an objective of the existing monitoring system of the upstream country.[97]

There are some minimum requirements to comply with the provisions of article 11 (see box 11). A step-by-step implementation may be pursued depending on available financial and human resources and the increasing knowledge gained over time about the conditions in the transboundary river basin.

Box 11. Minimum requirements to comply with the provisions of article 11[98]

Joint programmes for monitoring the conditions of transboundary waters, including floods and ice drifts, as well as transboundary impact can be set up and implemented for the entire river basin or for an agreed part of it. Usually, this is specified in the respective bilateral or multilateral agreement. To establish efficient joint monitoring and assessment programmes, Riparian Parties should ensure that all necessary legislative, institutional, managerial and financial measures are in place. They can set up a specific joint expert/working body to develop, operate and maintain the joint monitoring and assessment programme, either in the framework of the existing setting for transboundary cooperation (i.e., joint bodies, such as River Basin Commissions or Meetings of Plenipotentiaries) or as the subject of a stand-alone agreement specifically dedicated to this issue.

The basic elements that should be agreed for such joint monitoring and assessment programmes include:

- Objectives and information needs of monitoring and assessment to produce policy-relevant and water-management-relevant information in all the riparian countries;
- Identification of monitoring sites: The stations can be newly erected or selected from the existing national monitoring network on the basis of jointly agreed criteria for surface waters (e.g., upstream/downstream of the State border(s); upstream/downstream of the confluence(s) of the main transboundary river with its tributaries or the main transboundary river with the sea; downstream of major pollution sources; upstream of important drinking water abstractions) and groundwaters (e.g., in the vicinity of major pollution sources or abstraction sites, observing the groundwater flow direction);
- Selection of determinands for surface water monitoring (water-quantity determinands as well as water-quality determinands, including determinands for monitoring suspended solids and sediments, biological monitoring and hydromorphological characteristics) and groundwater monitoring, respecting water-quantity and water-quality requirements in all riparian countries;
- Sampling frequency, sampling and analytical methods, laboratory quality assurance;
- Data management (data validation, data storage, data exchange, managing data from multiple sources, data analysis and interpretation);
- Assessment methodology;
- Reporting and use of information (reporting obligations, reporting formats and audiences, information use).

On the basis of jointly or internationally agreed procedures, water-quantity measurements, water-quality sampling and analysis, and assessment of data can be, if not agreed otherwise, carried out at the national level. In the UNECE region, there are a number of monitoring stations, where monitoring programmes are carried out in parallel according to the national (legal) requirements of each of the riparian States and according to the requirements of the agreed international monitoring programme. This is, for example, the case with Finnish-Russian transboundary surface waters.

Data gathering should be regularly harmonized, and coordinated assessment/evaluation should be regularly undertaken. Apart from data/information from the monitoring network, it is important to include in the assessment other relevant data, such as data on emissions and releases.

The joint monitoring and assessment programmes should be periodically evaluated.

[97] See IWAC website at http://iwacportal.org/.
[98] Guide to Implementing the Convention, supra note 15, paras. 277–280.

Step-by-step efforts to develop joint programmes for monitoring the conditions of transboundary waters and to carry out joint assessments greatly contribute to building trust among riparian countries and lead to the strengthening of transboundary water cooperation.

GUIDELINES ON MONITORING AND ASSESSMENT OF TRANSBOUNDARY WATERS UNDER THE WATER CONVENTION

More details on the analysis of information needs for water management, the drawing up of an information strategy for river basins, monitoring and data collection and data management and assessment, as well as reporting and information use — which all make up the so-called monitoring and assessment cycle — are laid down in the relevant Guidelines[99] on monitoring and assessment, produced under the auspices of the Water Convention.

The step-by-step approach recommended by the Guidelines on Monitoring and Assessment is particularly important for countries with economies in transition (see box 12). Attaining the purposes and objectives of monitoring and assessment is like creating a road map to achieving a final goal. Transboundary water monitoring and assessment should be set up by modules, considering priorities and tasks that can be accomplished in a given situation. These are followed by tasks that will be carried out later when there are increased human and financial resources, better knowledge and mutual understanding or otherwise improved conditions for transboundary cooperation.

Monitoring and assessment of water quality and quantity require adequate resources. Those who carry out monitoring and assessment should be able to convincingly demonstrate both the benefits of monitoring for IWRM and the possible costs, in terms of environmental degradation and other impacts, of not monitoring. This is particularly crucial for countries in which monitoring activities still seem to be insufficiently funded. The costs of monitoring should be estimated before monitoring programmes begin, or when major revisions are planned.

Because of the continuous character of monitoring, a long-term commitment to funding is crucial to ensure the sustainability of monitoring and assessment activities. This means that funding should come mainly from the State budget. Water users, such as municipalities, water and waste utilities, factories, farmers and irrigators, should contribute to funding the programmes. It may be possible to raise funds by using part of the income from water abstraction fees or by invoking the polluter pays principle. Donor-funded projects concerning transboundary waters should be coordinated with national authorities to ensure the continuity of monitoring activities that have been established in the project.

Managing data from multiple sources is another challenge underlined in the Guidelines. Sources usually include maps, information on land-use characteristics, satellite imagery and socio-economic data. The sections below demonstrate how water managers and monitoring experts can benefit from the work done under other UNECE Conventions and vice versa.

RELEVANT PROVISIONS OF THE ESPOO CONVENTION: THE POST-PROJECT ANALYSIS

Proposed activities that fall under the Espoo Convention are listed in its appendix I. In the water sector, the appendix refers to water construction works, groundwater abstraction, inter-basin water transfer and other water-related proposed activities. Under certain conditions, regulated in article 7, a so-called post-project analysis has to be carried out, taking into account the likely significant adverse transboundary impact of the activity for which an EIA has already been undertaken. The post-project analysis includes "surveillance of the activity and the determination of any adverse transboundary impact". In the context of

Box 12. Step-by-step approaches to monitoring and assessment

A possible step-wise approach entails identifying and agreeing on priorities for monitoring and assessment and progressively proceeding from general appraisal to more precise assessments and from labour-intensive methods to higher-technology ones.

Another alternative is to start with modest objectives — for example, regular exchange of data and information about the sampling methods and instrumentation used. This could lead to jointly agreed measurement and sampling procedures and analytical methodologies, which would pave the way to joint measurements and sampling. The eventual target would be joint data analysis and regular joint assessments backed up by joint monitoring design.

Taking a step-by-step approach could also mean starting with data exchange for stations and sampling points close to the border and then, once this activity is well established, extending it to the whole transboundary basin or aquifer. A more challenging step-by-step approach might mean starting with the exchange of information on water status (quality and quantity) and then, as the relationship between riparian countries becomes stronger, sharing information on pressures and driving forces; evaluating the impacts on the main water uses; and considering possible responses.

[99] See *Guidelines on Monitoring and Assessment of Transboundary Rivers* (2000); *Guidelines on Monitoring and Assessment of Transboundary Groundwaters* (2000); *Guidelines on Monitoring and Assessment of Transboundary and International Lakes* (2002); and *Strategies for Monitoring and Assessment of Transboundary Rivers, Lakes and Groundwaters* (2006) (Unites Nations publication, Sales № E.06.II.E.15); all these publications are available from http://live.unece.org/env/water/publications/pub.html.

monitoring and assessment of transboundary waters, the data received through post-project analysis may represent an important source of information.

RELEVANT PROVISIONS OF THE PROTOCOL ON POLLUTANT RELEASE AND TRANSFER REGISTERS

The objectives of the Protocol on PRTRs to the Aarhus Convention are to enhance public access to information and to facilitate public participation, as well as to encourage pollution reduction (article 1).

PRTRs are intended first to serve the general public. The preamble to the Protocol notes, however, that these registers can also assist Governments in tracking pollution trends, setting priorities and monitoring compliance with international commitments, and they can benefit industry through improved environmental management. Although regulating information on pollution, rather than pollution directly, the Protocol is expected to exert a significant downward pressure on levels of pollution, as no company will want to be identified as among the biggest polluters, whether of air, water or other components of the environment. Such registers, if properly established and maintained, are of enormous benefit for water monitoring and assessment activities.

The Protocol itself requires Parties to establish nationwide systems that report and collect pollution information, and its article 4 identifies a series of core elements for these registers (see box 13).

The Protocol on PRTRs covers 64 activities and 86 substances and categories of substances. Activities relate, inter alia, to the energy sector, the production and processing of metals, mineral industry, chemical industries, waste and wastewater management, paper and wood production and processing, and intensive livestock production and aquaculture. The Protocol closely follows the EU system under the Integrated Pollution Prevention and Control Directive; however, it covers more activities and substances.

As concerns water management, the Protocol sets forth a specific regime for wastewaters, e.g., an off-site transfer of pollutants in wastewater beyond the boundaries of a facility via a

Box 13. Some core elements of a national PRTR

According to the Protocol on PRTRs, a publicly accessible national PRTR is facility-specific as concerns point sources and accommodates reporting on diffuse sources. It is pollutant-specific or waste-specific and it distinguishes among releases to air, land and water.

Such releases to air, water and/or land are understood as any introduction of pollutants into the environment as a result of any human activity, whether deliberate or accidental, routine or non-routine, including spilling, emitting, discharging, injecting, disposing or dumping, or through sewer systems without final wastewater treatment.

Accidental releases from facilities due to a natural phenomenon, such as flooding, should be reported as the pollutants arise from human activity. However, releases that are the result of natural phenomena, such as a volcanic eruption, do not have to be reported.

sewer or any other means, such as containers or tank trucks. Facilities that release wastewater directly to a water body, whether first treated at a facility wastewater treatment plant or not, will have to report the release as "a release to water". The Protocol also requires diffuse sources to be reported.

Many provisions of the Protocol on PRTRs are very important for transboundary water management, when it comes to the use of relevant data from various economic sectors for the purposes of water management and transboundary water cooperation. However, the Registers cannot and should not substitute for water-quality monitoring and assessment programmes for water bodies, neither nationally nor in a transboundary context.

As the Registers are an excellent means to obtain knowledge about the various water-relevant pollution sources and the amount and characteristics of pollution introduced annually into the environment, existing monitoring systems can be adapted to the specificity of the activities, substances and categories of substances incorporated in the Registers, and new water-monitoring systems can be more easily set up, when information on the pollution sources, the specific pollutants and the amounts introduced into the environment is known from the Register.

There is another important link between the Protocol on PRTRs and the Water Convention, as the Water Convention (article 3, para. 2) requires that, for the control of water pollution from industrial sources "existing lists of such industrial sectors or industries and of such hazardous substances in international conventions or regulations, which are applicable in the area covered by this Convention, shall be taken into account".

INTERNATIONAL COOPERATIVE PROGRAMME ON ASSESSMENT AND MONITORING OF THE EFFECTS OF AIR POLLUTION ON RIVERS AND LAKES

The objectives of the International Cooperative Programme on Assessment and Monitoring of the Effects of Air Pollution on Rivers and Lakes (ICP Waters) under the LRTAP Convention are to assess, on a regional basis, the degree and geographical extent of acidification of surface waters. The data collected provide information on dose/response relationships under different conditions and correlate changes in acidic deposition with the physical, chemical and biological status of rivers and lakes. The rivers and lakes are sampled regularly under national monitoring programmes. The length of the data series is mostly between 10 and 20 years, whereas some sites have over 30 years of data. The database of ICP Waters includes data from more than 200 sites in acid-sensitive areas in 24 countries in Europe and North America.[100] In the countries of Eastern Europe, the Caucasus and Central Asia, only one site — in Belarus — is currently part of the network.

From the point of view of transboundary water monitoring, the ICP Waters data from river and lake sites are extremely useful as they provide an insight into long-term trends of water quality resulting from sulphur and nitrogen deposition from long-range transboundary air pollution. Most important is that the selected ICP Waters sites do not have a significant impact from local pollution sources that discharge sulphur and nitrogen compounds (e.g., domestic sewage, industrial wastewater, agriculture); thus they can be used as a reference for estimating the relative importance of various pollution sources in transboundary river basins.

MONITORING AND ASSESSMENT
Key Messages

- Monitoring and assessment of transboundary waters are fundamental preconditions for IWRM and effective transboundary water cooperation.
- The UNECE Water Convention obliges its Parties to establish programmes for monitoring the conditions of transboundary waters, therefore requiring countries to provide for effective monitoring systems for the national parts of transboundary basins. The Water Convention also includes an obligation for Riparian Parties to establish and implement joint programmes for monitoring the conditions of transboundary waters, as well as to carry out joint or coordinated assessments of the conditions of transboundary waters.
- Although there are some minimum requirements to comply with the provisions of the Water Convention on joint monitoring programmes and joint or coordinated assessments, step-by-step implementation may be pursued, if needed, depending on available financial resources, human capacity, and the increasing knowledge gained over time about the conditions of waters in the transboundary basin.
- The outcomes of post-project analyses under the Espoo Convention, the information available in the Registers established under the Protocol on PRTRs and the data received through ICP Waters can be important sources of information for water management and transboundary water cooperation.
- Efforts to develop joint programmes for monitoring the conditions of transboundary waters and to carry out joint assessments greatly contribute to building trust among riparian countries and lead to the strengthening of transboundary water cooperation.

[100] See ICP Waters http://www.icp-waters.no/.

3.11 Exchange of Information

The availability of reliable environmental information could greatly strengthen water management and transboundary water cooperation in Central Asia, where the lack of such information in many instances is caused by the absence of effective information exchange between the countries of the region. The national monitoring systems, which used to be integrated into the regional monitoring system, are now poorly linked, thus making it difficult to collect and process consistent and comprehensive environmental data and information. Moreover, relevant data and information, if available, is sometimes kept undisclosed or used selectively in the interests of the respective co-riparian.

Existing regional bilateral and multilateral agreements in the field provide for exchange of information, most importantly the bilateral agreements between the national hydrometeorological services of the five countries. However, they often remain declaratory in practice and miss procedural elements for their proper implementation.

Efforts to develop information exchange are taking place in the framework of several projects and institutions, e.g., in the Central Asia Regional Water Information Base (CAREWIB) Project,[101] which supports the most comprehensive database on water and environment in the region, as well as a rich electronic library. A draft agreement on national, basin-wide and regional databases was developed in 2006 in the framework of a project supported by the Asian Development Bank, but did not reach the stage of adoption.

EXCHANGE OF INFORMATION UNDER UNECE ENVIRONMENTAL CONVENTIONS

The UNECE environmental Conventions provide for the obligation to exchange information between Parties, which is mentioned in a number of their respective provisions, namely: articles 5, 6, 9, 13, 17 of the Water Convention (with the primary obligation enshrined in articles 6 and 13); articles 2, 3, 15, 16 and annex XI of the Industrial Accidents Convention (with the primary obligation enshrined in article 15); paragraph 9 of the preamble and articles 3, 4, 6, 8, 9 (e) and (f) of the LRTAP Convention (with the primary obligation enshrined in article 8); article 10 of the Aarhus Convention; and articles 3 and 11 of the Espoo Convention. Notwithstanding the fact that they are formulated with various levels of detail and play different roles in the overall regulatory setting of each Convention, these obligations should be seen as mutually complimentary when establishing a comprehensive legal framework for exchange of environmental information between States and enhancing inter-State cooperation.

The *rationale* of regular exchange of data and information within the scope of the **Water Convention** is that it lays down the foundations for cooperation to ensure effective protection of transboundary waters, management of water quality and quantity, as well as the prevention, control and reduction of transboundary impacts. It is the first step in cooperation between Riparian Parties, being a necessary precondition for the realization of higher degrees of cooperation. Article 13 of the Water Convention, on exchange of information between Riparian Parties, is a specific application of the general obligation to cooperate set out in article 2, paragraph 6.

According to the **LRTAP Convention**, exchange of information is one of the means — along with consultations, research and monitoring — to coordinate national action for combating air pollution including long-range transboundary air pollution, and to develop policies and strategies (preamble, para. 9, and article 3).

In article 2 of the **Industrial Accidents Convention**, exchange of information is mentioned as one of the specific fields of international cooperation in the area of prevention of, preparedness for and response to industrial accidents. By means of exchange of information — along with consultation and other cooperative measures — Parties to the Convention must develop and implement policies and strategies for reducing the risks of industrial accidents and improving preventive, preparedness and response measures, including restoration measures.

Exchange of information may take place in a variety of *forms/frameworks*. It is made clear in the Water Convention that the envisioned exchange of information between Riparian Parties should take place within the framework of the *relevant agreements or other arrangements* provided for under article 9 of the Convention (article 13, para. 1). Pursuant to the Industrial Accidents Convention, exchange of information should be carried out at the multilateral or bilateral level (article 15). The Espoo Convention provides that the information provided by the affected Party at the request of the Party of origin shall be furnished *through a joint body* where one exists (article 3, para. 6). The Espoo Convention also foresees that the Parties develop bilateral or multilateral agreements or other arrangements in order to implement their obligations under the Convention (article 8 and appendix VI).

[101] See http://www.cawater-info.net.

Apart from bilateral or multilateral agreements and joint bodies, Parties exchange information under the auspices of the institutional settings under the Conventions, in particular *in the framework of Conferences/Meetings of the Parties*. For example, the Espoo Convention sets out an obligation of Parties at their meetings to "exchange information regarding experience gained in concluding and implementing bilateral and multilateral agreements or other arrangements" (article 11, para. 2 (b)). Similar obligations are enshrined in the Aarhus Convention (article 10, para. 2 (b)) and the Water Convention (article 17, para. 2 (b)).

The UNECE Conventions are also rather specific with regard to the *content of information* to be exchanged. The Water Convention requires the exchange of "reasonably available" data (article 13). The terms "reasonably available" in the Water Convention (article 13) and "available" in the LRTAP Convention (article 8) do not substantially differ from the term "reasonably obtainable" used in the Espoo Convention (article 3, para. 6) and in the Industrial Accidents Convention (article 15 *et seq.*). These expressions are used to indicate that, as a matter of general legal duty, a Party is under an obligation to provide only such information as is readily at its disposal, for example, that which it has already collected for its own use or is easily accessible. In a specific case, whether data and information was "readily" available would depend upon an objective evaluation of such factors as the effort and cost its provision would entail, taking into account the human, technical, financial and other relevant resources of the requested Party.[102] Article 3, paragraph 7, of the Espoo Convention also refers to "sufficient" information, however this term is to reflect the essential role of exchange of information for the notification stage of the procedure of EIA in a transboundary context.

The Water Convention contains a non-exhaustive list of data categories which are to be exchanged between Riparian Parties on an ordinary basis (article 13, paras. 1 and 2). These are reasonably available data on (a) environmental conditions of transboundary waters; (b) experience gained in the application and operation of best available technology and results of research and development; (c) emission and monitoring data; (d) measures taken and planned to be taken to prevent, control and reduce transboundary impact; (e) permits or regulations for wastewater discharges; and (f) information on the national regulations of Riparian Parties. Bearing in mind the fact that the list of data categories is non-exhaustive and that all Parties are under the general obligation to exchange information (article 6), the Convention encourages the Riparian Parties to *continuously expand the spectrum of information to be exchanged*.

Unlike the Water Convention, the list of information to be exchanged under the Industrial Accidents Convention is

[102] See *Yearbook of the International Law Commission,* 1994, vol. II, (part two), p. 108.

exhaustive; however, it is also more explicit. The Industrial Accidents Convention enumerates the elements of information to be exchanged, which can also be the subject of multilateral and bilateral cooperation (annex XI). Such elements include legislative and administrative measures, policies, objectives and priorities for prevention, preparedness and response; measures and contingency plans at the appropriate level affecting other Parties; measures taken regarding prevention of, preparedness for and response to industrial accidents; experience with industrial accidents and cooperation in response to industrial accidents with transboundary effects; emergency preparedness and response; etc.

In addition to ensuring the regular two-way flow of available data, the obligation to exchange information also includes the *obligation to provide information upon request*. For example, article 13, paragraph 3, of the Water Convention concerns requests for data or information that is not available to the Riparian Party from which it is sought. In such cases, the requested Riparian Party is to "endeavour" to comply with the request. That is to say that the latter is to act in good faith and in a spirit of cooperation in doing its best to provide the data or information sought by the requesting Riparian Party. The due diligence character of the obligation to provide requested information avoids imposing absolute standards that would not take into account the different degrees of technological and economic development of Riparian Parties. In order to prevent the abuse of the right to request data and information, the Water Convention allows a Riparian Party to make the submission of information conditional upon payment, by the requesting Party, of reasonable charges for collecting and, where appropriate, processing requested data and information.

It should be emphasized that the obligation to exchange data under the Water Convention (article 13, para. 1) and to endeavour to provide information upon request (article 13, para. 3), exists for all Riparian Parties, whether situated upstream or downstream. Therefore, a downstream Riparian Party may not refuse to provide information or exchange data with an upstream Riparian Party on the assumption of their irrelevance for the upstream Riparian Party or absence of transboundary meaning in it. The purpose of requiring all Riparian Parties to exchange data and provide information upon request is to enable them to implement the Water Convention's core obligation of cooperation (article 2, para. 6), aimed at the protection of transboundary waters, as a shared resource, as well as the marine environment. The holistic nature of the concept of the environment under the Convention requires efforts from all riparians. Since the exchange of information and the provision of information upon request are forms of cooperation, the above considerations are further confirmed by the fact that under the same article 2, paragraph 6, the Riparian Parties have to cooperate "on the basis of equality and reciprocity".

As the *minimum requirements* to comply with the respective provisions on exchange of information under UNECE environmental Conventions, their Parties must establish mechanisms or procedures for exchange of information and ensure the availability of certain data. Mechanisms or procedures for exchange of data might be set up within the framework of relevant agreements or other arrangements. If such bilateral or multilateral agreements are not yet in place, cooperation on exchange of information could start with other arrangements (for example, memoranda of understanding between competent authorities or appropriate governmental bodies with regard to selected categories of data).

The **Water Convention** requires Riparian Parties to facilitate the exchange of *best available technology,* particularly through the promotion of the commercial exchange of available technology, direct industrial contacts and cooperation, and the provision of technical assistance (article 13, para. 4). The **Industrial Accidents Convention** also provides for exchange of technology, namely technology for the prevention of, preparedness for and response to the effects of industrial accidents (articles 2 and 16).[103] Similar provisions regarding the obligation to facilitate the exchange of technology are set out in the Protocols to the LRTAP Convention.[104] By referring to the "provision of technical assistance" as one of the ways to facilitate the exchange of technology, these UNECE instruments take into account the potentially different levels of technological and economical development of Parties and encourage cooperation to narrow the gap.

PROTECTION OF INFORMATION

The obligation to exchange information may be subject to "protection of information" limitations. Thus, the Water Convention allows Parties in accordance with their national legal systems and applicable supranational regulations to protect information related to industrial and commercial secrecy, including intellectual property, or national security (article 8). The Espoo Convention contains a provision limiting the distribution of information, such that it does not affect a Party's right to protect information the supply of which would be prejudicial to industrial or commercial secrecy or national security (article 2, para. 8). The Industrial Accidents Convention also addresses limitations on the supply of information (article 22), requiring that the Convention's provisions do not affect the rights or the obligations of Parties in accordance with their national laws, regulations, administrative provisions or accepted legal practices and applicable international regulations to protect information related to personal data, industrial and commercial secrecy, including intellectual property, or national security. Moreover, article 22, paragraph 2, of the Industrial Accidents Convention specifies that if a Party nevertheless decides to supply such protected information to

[103] Moreover, article 18 of the Espoo Convention articulates that "the Conference of the Parties shall, at its first meeting, commence consideration of procedures to create more favourable conditions for the exchange of technology for the prevention of, preparedness for and response to the effects of industrial accidents".

[104] 1988 Protocol concerning the control of Emissions of Nitrogen Oxides or their Transboundary Fluxes (preamble, para. 9 and article 3); 1991 Protocol concerning the Control of Emissions of Volatile Organic Compounds or their Transboundary Fluxes (article 4); 1994 Protocol on Further Reduction of Sulphur Emissions (article 3); 1998 Protocol on Heavy Metals (article 4); 1998 Protocol on Persistent Organic Pollutants (article 5); and 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (article 4).

another Party, the Party receiving such protected information shall respect the confidentiality of the information and shall only use that information for the purposes for which it was supplied.

For a better understanding of the relationship between article 8 and article 13, paragraph 1, of the Water Convention, as well as article 22 and respective provisions of the Industrial Accidents Convention, useful guidance can be drawn from the Aarhus Convention (article 4, paras. 3 and 4), which elaborates on the limitations on access to environmental information. Parties may not apply the above limitations if they are not provided for in their national legal systems and applicable supranational regulations (for the Water Convention) or their national laws, regulations, administrative provisions or accepted legal practices and applicable international regulations (for the Industrial Accidents Convention).

The Conventions do not define the term "national security"; however, many national Governments already have similar exceptions in place and have interpreted them narrowly. Some countries have chosen to require information concerning the environment to be made accessible regardless of how it affects national security. Parties tend to analyse whether access to the information would actively harm national security. Under both the Water Convention and the Industrial Accidents Convention, Parties are allowed to withhold certain types of information related to commercial and industrial secrecy, including intellectual property. For Parties to be able to withhold information on the basis of commercial confidentiality, the national law must explicitly protect the type of information in question as commercial or industrial secrets. Under the Industrial Accidents Convention, Parties may also withhold information that will adversely affect the privacy of individuals. This exception is meant to protect documents such as employee records, salary history and health records.

It should be recalled that the Aarhus Convention calls for Parties to interpret the grounds of refusing access to information in a restrictive way, taking into account the public interest served by the disclosure and whether the data requested relates to emissions into the environment (article 4, para. 4).

NOTIFICATION ON PROPOSED ACTIVITIES AND THE OBLIGATION TO EXCHANGE INFORMATION

The obligation to exchange information may take specific forms in cases of notification and consultations on proposed activities. For example, the **Industrial Accidents Convention** (article 4) provides for notification by the Party of origin of proposed or existing hazardous activities within its jurisdiction that are, reasonably, capable of causing transboundary effects. A detailed procedure for such notification is given in annex III to the Industrial Accidents Convention. The notification may be followed by consultations between the Party of origin and the affected Party concerning, inter alia, the transboundary effects of the hazardous

activity in the event of an industrial accident, and measures to reduce or eliminate its effects. Both the notification and consultations are accompanied by obligations to provide various types of relevant information. In addition, notification or exchange of information to be made under the UNECE Industrial Accidents Notification System (see section 3.12), primarily in the form of reports, is well elaborated, structured and exhaustive.

Following the same rationale, exchange of information constitutes an essential element of the core procedure of the EIA in a transboundary context under the **Espoo Convention**. Provisions on exchange of information, set out in article 3, paragraphs 5 to 7, of the Convention are closely linked to notification and consultation on the proposed activities. The obligation to provide the final decision on the proposed activity, along with the reasons and considerations on which it was based (article 6, para. 2), as well as exchange of information under the post-project analysis procedure, could be considered as specific forms of the obligation to exchange information within the scope of the Espoo Convention.

EXCHANGE OF INFORMATION
Key Messages

- The UNECE environmental Conventions establish a comprehensive regulatory framework for the exchange of information between States as a specific dimension of the general obligation to cooperate.
- Being mutually complementary, the UNECE Conventions facilitate the exchange of a wide variety of environmental data and information, as well as technology, providing means for effective water management, including joint management and protection of transboundary waters. The Water Convention envisions both the obligation to exchange available data (active information sharing), as well as the obligation to endeavour to provide information upon request.
- Bilateral or multilateral agreements or other arrangements and joint bodies established by such bilateral or multilateral agreements provide useful frameworks for the exchange of information.
- The institutional set-up of the UNECE Conventions, based on Meetings/Conferences of the Parties, facilitates exchange of information and experience about achievements and challenges in implementation, as well as lessons learned.
- As the minimum requirements to implement the respective provisions of UNECE Conventions on exchange of information, Parties must establish mechanisms or procedures for exchange of information and ensure the availability of certain data, at least, the data listed in mandatory provisions of respective Conventions.

3.12 Prevention of Accidental Water Pollution

Industrial accidents may lead to severe water pollution with transboundary impacts. This has been particularly demonstrated by the 1986 accident near Basel, Switzerland, following a fire at a chemical warehouse, where huge quantities of fire-extinction water entered the Rhine River, causing major damage to the environment. Another example is the 2000 accident at Baia Mare, Romania, where cyanide-containing water from a tailings reservoir polluted such transboundary rivers as the Somes, Tisza and Danube. There are sites in Central Asia where there is a high risk of accidents at industrial installations that manufacture or store hazardous substances, including tailings dams. Such risks are associated with the physical conditions of the sites (e.g., obsolete technology), as well as the likelihood of flood events that can flush industrial sites or tailings dams and carry away hazardous substances, or earthquakes that can destroy industrial installations or cause leakages of substances into the groundwaters or surface waters.

The Fergana Valley has many nuclear waste storage sites, abandoned uranium mines with poorly secured tailings dams and nuclear reactors that pose a severe security hazard. Tailings are exposed to wind erosion and are in many cases easily accessible to grazing animals.[105]

In Central Asian countries, there is a wide range of regulations and governmental decisions on hazardous chemicals and waste in force, and the protection of the public in the case of emergencies is planned for. However, in most cases, the legal framework for preventing and responding to emergencies such as industrial accidents requires strengthening in order to meet all the requirements of the UNECE environmental Conventions, in particular those of the Industrial Accidents Convention.

HAZARDOUS ACTIVITIES IN TRANSBOUNDARY RIVER BASINS: ROLE OF THE INDUSTRIAL ACCIDENTS CONVENTION

Among UNECE Conventions, the **Industrial Accidents Convention** is the central framework for the prevention of accidental pollution in general, and of transboundary waters in particular. The aim of this Convention is to help its Parties to prevent industrial accidents that can have transboundary effects, to prepare for them and to respond to them. The Convention also encourages its Parties to help each other in the event of such an accident, to cooperate on research and development, and to share information and technology.

The Industrial Accidents Convention requires the identification of hazardous activities capable of causing transboundary effects. Such hazardous activities are activities in which one or more hazardous substances are present or may be present in quantities at, or in excess of, the threshold quantities listed in annex I to this Convention, and which are capable of causing transboundary effects (article 1, para. (b)). If it comes to an accident, the majority of substances listed in annex I are usually released into the air. Some substances, however, can cause severe water pollution. This is, for example, the case of substances that are toxic and very toxic to aquatic organisms.[106] For these substances, the threshold quantities for installations are 500 tons and 200 tons, respectively.

Obviously, such a list can never be complete and needs to be updated if new information on substances and/or their hazardous effects becomes available. Therefore, the Industrial Accidents Convention has introduced a special procedure for amending annex I (article 26, para. 4).

Location criteria have been drawn up and adopted under the Industrial Accidents Convention to help in the identification of hazardous activities that can cause transboundary effects.[107] These criteria establish a maximum distance of the hazardous activities of 15 kilometres (km) from the border, for activities involving substances which may cause a fire or explosion or which involve toxic substances that may be released into the air in the event of an accident. For accidental transboundary water pollution, location criteria have also been specified, taking into account, inter alia, the distance of the hazardous activity from the border and the flow velocity of the river into which hazardous substances may be discharged during an accident (see box 14).

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[105] See "Radioactive waste hotspots and transboundary pollution in Central Asia's Ferghana Valley", by cartographer Emmanuelle Bournay, UNEP, the United Nations Development Programme, the North-Atlantic Treaty Organization, the Organization for Security and Cooperation in Europe and the Environment and Security Initiative, 2005, on the UNEP/GRID-Arendal website at http://maps.grida.no/go/graphic/radioactive_waste_hotspots_and_transboundary_pollution_in_central_asia_s_ferghana_valley.

[106] The toxicity to aquatic life is expressed as lethal concentration for fish, effective concentration for daphnia or inhibiting concentration for algae; see annex I to the Convention adopted at the fourth meeting of the Conference of the Parties to the Industrial Accidents Convention (2006), available from http://live.unece.org/fileadmin/DAM/env/teia/doc/ANNEX-I/AnnexIENG.pdf.

[107] See Decision 2004/2 of the Conference of the Parties to the Industrial Accidents Convention. This decision specifies location criteria for hazardous activities that may release hazardous substances into the air and/or into water bodies, ECE/CP.TEIA/12, annex II. Note should be taken of the fact that annex I to the Industrial Accidents Convention is being updated if need be, for example, when new information on hazardous substances becomes available. Therefore the numbers allocated to the various substances' categories may vary (see also box 14).

It is important to note that not all accidents that occur in transboundary basins may lead to significant transboundary effects, as in certain cases the flow of polluted substances may take such a long time that mitigation or clean-up measures are most likely to have been taken before such effects could be felt. Therefore, the Parties to the Industrial Accidents Convention followed the advice of the Joint Expert Group on Water and Industrial Accidents,[108] which recommended that the distance between the location of the hazardous activity and the border should correspond to approximately a flowing period of two days of average flow velocity.

EMERGENCY PREPAREDNESS, INCLUDING CONTINGENCY PLANNING

Despite stringent safety standards, industrial accidents involving hazardous substances may occur. The Industrial Accidents Convention, in its article 8 on emergency preparedness, therefore outlines how Parties can maintain a high level of preparedness to respond to an industrial accident, especially if it affects other countries. This includes the preparation and implementation of on-site contingency plans, including suitable measures for response and other measures to prevent and minimize transboundary effects (article 8, para. 2) and the preparation and implementation of off-site contingency plans. Off-site contingency plans cover measures to be taken within the territory of the State, where the accidents may happen, to prevent and minimize transboundary effects (article 8, para. 3). Moreover, "The Parties concerned shall endeavour to make such plans compatible; where appropriate, joint off-site contingency plans shall be drawn up in order to facilitate the adoption of adequate response measures" (article 8, para. 3). Both on-site and off-site contingency plans should be reviewed regularly (article 8, para. 4).

It should also be stressed that in the event of an industrial accident or imminent threat thereof, the contingency plans, prepared in accordance with the relevant provisions of article 8 of the Industrial Accidents Convention, are activated as soon as possible and to the extent appropriate to the circumstances (article 10, para. 3).

The provisions of the Industrial Accidents Convention related to transboundary waters, for example, the requirement to make off-site contingency plans compatible or draw up joint contingency plans, may add new tasks to joint bodies — which are not listed in the **Water Convention**'s article 9, paragraph 2 — or specify their existing tasks. Contingency planning is also required under article 3, paragraph 1 (j), of the Water Convention, along with the obligation to take measures in order to minimize the risk of accidental pollution (article 3, para. 1 (l)). The Guide to Implementing the Convention recommends that contingency plans should address one or more of the following emergency situations: a technical failure; accidents involving hazardous substances; natural disasters, such as floods, ice

Box 14. Location criteria for hazardous activities in transboundary river basins

Hazardous activities in transboundary river basins are those, located

> *Along or within catchment areas [1] of transboundary and border rivers, transboundary or international lakes, or within the catchment areas of transboundary groundwaters, for activities involving substances that fall under category 3, 4, 5 or 8 [*] of part I of annex I to the Convention and that may be released into watercourses in the event of an accident. Whether or not such an activity is capable of causing a transboundary effect in such an event should be decided by the competent authority of the Party of origin, preferably in consultation with joint bodies [2]. The decision should depend, among other things, on the existence of river warning and alarm systems and the distance [3] between the location of the hazardous activity and the border.*

Source: Decision 2004/2 of the Conference of the Parties to the Industrial Accidents Convention, para. 5.

Notes: [*]: The original text of 2004 speaks about categories 3, 4, 5 or 8. In the currently valid version of annex I this should read 4, 5, 6, 8a or 8b, i.e., substances that are toxic (4), very toxic (5), oxidizing (6), toxic to aquatic organisms (8a) or very toxic to aquatic organisms (8b).

The explanatory notes to this paragraph 5 are as follows:

[1] A catchment area of a transboundary river or lake is defined as the whole drainage area of this river or lake with a common outlet.

[2] A joint body means any bilateral or multilateral commission or other appropriate institutional arrangements for cooperation between Riparian Parties.

[3] The joint ad hoc expert group on water and industrial accidents recommended that this distance should correspond to approximately a flowing period of two days of average flow velocity.

[108] The seventh meeting of the Signatories to the Industrial Accidents Convention (1998) proposed that a joint ad hoc expert group on water and industrial accidents be established under both the Industrial Accidents Convention and the Water Convention. This proposal was endorsed by the first meeting of the Working Group on Water Management (1998), established under the Water Convention. For the activities of this Joint Expert Group, see http://live.unece.org/env/teia/adhocgroup.html.

hazards and droughts; extreme weather conditions; sabotage of installations; or any other emergency situation (see also box 15 on lessons learned from contingency planning in transboundary basins). It goes without saying that for accidents involving hazardous substances the obligations under the Water Convention should be read together with the requirements on contingency planning set out in the Industrial Accidents Convention.

Moreover, the obligation of the Parties to the Water Convention to develop contingency planning should be read in conjunction with their obligation under article 14, which includes the requirement that:

> The Riparian Parties shall without delay inform each other about any critical situation that may have transboundary impact. The Riparian Parties shall set up, where appropriate, and operate coordinated or joint communication, warning and alarm systems with the aim of obtaining and transmitting information. ... The Riparian Parties shall inform each other about competent authorities or points of contact designated for this purpose.

The Guide to Implementing the Convention highlights that the reference in article 14 of the Water Convention to "any critical situation that may have transboundary impact" refers to a situation that poses a threat of causing transboundary impact. Such a situation may occur suddenly or may develop over a period of time and reach, at some point, a level which poses a threat of causing transboundary impact (for example, the continuous raise of water level during a flood, becoming at some point dangerous to the safety of a dam). Article 14 does not fix the threshold or scale of possible transboundary impact. The lack of any threshold together with a reference to "any" critical situation serve to ensure that the Riparian Parties avoid losing time and inform each other about wider range of situations at the earliest stage. The provisions of this article also apply to a situation already causing transboundary impact, if the information had not been provided earlier. The obligation to inform about any critical situation that may have transboundary impact covers critical situations irrespective of their origins, whether these are natural phenomena (e.g., floods, ice drifts, storms, earthquakes) or caused by human conduct (e.g., industrial accidents, man-made floods).[109]

SITING OF NEW AND SIGNIFICANT MODIFICATIONS OF EXISTING HAZARDOUS ACTIVITIES

Article 7 and the relevant provisions and recommendations of annexes V and VI to the Industrial Accidents Convention regulate the siting of new and significant modifications of existing hazardous activities. Matters that should be considered in-

Box 15. Some lessons learned from contingency planning for transboundary river basins[110]

A consolidated contingency plan should include:

- An internal (i.e., on-site) contingency plan, elaborated by an operator and being applicable only at the national level; and
- An external (i.e., off-site) contingency plan, elaborated by the responsible authorities and being applicable at the national level and, as relevant, at the transboundary level. The operator should secure full cooperation with the competent authorities (e.g., water directorates' intervention units, fire brigades, etc.) and their access to facilities during the emergency situation. Therefore, even if in a transboundary context only an external contingency plan is considered, an internal contingency plan is an important starting point for developing any external contingency plan.

Riparian Parties should aim at drawing up a joint contingency plan for the river basin concerned in order to facilitate the effective implementation of adequate measures. Otherwise, Riparian Parties should inform each other of their contingency plans through a designated authority, ensure that plans' provisions are harmonized and agree on the mechanism for implementing them in a coordinated way. Transboundary contingency plans should be in line with the national legislations of the respective Riparian Parties and take into consideration the natural conditions and socio-economic situation in the basin concerned.

A transboundary contingency plan should be concise and easy to follow, and should describe practical steps to be taken throughout all phases of an emergency situation. It should contain clear water-quality and water-quantity evaluation criteria, a list of competent authorities and contacts of the focal point, and templates on data to be completed by the responsible officer. It should provide for methodology for assessment and monitoring of waters, as follows: either Riparian Parties use the same water monitoring systems and agree on a joint methodology or each Party uses its own water monitoring systems and applies its own methodology, which are then harmonized through a clear guidance. To facilitate communication and overcome a possible language barrier, countries may consider developing a system of unified notification forms. Contingency plans should provide clear rules of procedure for public information and public involvement.

[109] Guide to Implementing the Convention, supra note 15, paras. 299–300.
[110] Ibid., paras. 209, 215–216.

clude, inter alia, the severity of the harm inflicted on people and the environment and the distance from the location of the hazardous activity at which harmful effects on people and the environment may reasonably occur (annex V, para. 2, subsection on decision-making on siting). Moreover, matters to be considered include the results of consultations and public participation processes; an analysis of the increase or decrease of the risk caused by any development in the territory of the affected Party in relation to an existing hazardous activity in the territory of the Party of origin; and the evaluation of the environmental risks, including any transboundary effects (annex VI, paras. 2–4).

INDUSTRIAL ACCIDENT NOTIFICATION SYSTEM

To respond effectively and in a coordinated way to an industrial accident, "the Parties shall … provide for the establishment and operation of compatible and efficient industrial accident notification" (Industrial Accidents Convention, article 10, para. 1). This obligation under the Convention has led to the establishment of the UNECE Industrial Accident Notification System. Since 2008, the Industrial Accident Notification System has been operated through an Internet application.[111] A notification of an industrial accident requires the completion and submission of an online form containing early warning information on an accident (e.g., location of the hazardous activity, substances involved), and an information report when additional information on an accident is known. In case of the need for assistance, a report requesting mutual assistance needs to be completed and submitted. The notification is made through e-mail between points of contact.

COMPETENT AUTHORITIES AND POINTS OF CONTACT

Parties to the Industrial Accidents Convention must designate or set up authorities specifically to deal with prevention, preparedness and response to industrial accidents (article 17). Most Parties have designated the Ministry of Environment and/or the Ministry of Interior as the competent authorities; other examples include the Federal Alarm Centre (Austria), the Ministry of Defence (Denmark), the National Rescue Board (Estonia) and the Ministry for Emergency Situations (Kazakhstan). UNECE member countries that are not a Party to the Convention have nominated focal points. According to the Convention, Parties must also designate points of contact, i.e., natural persons to whom industrial accident notifications must, and requests for assistance should, be addressed. As of 1 July 2011, the network of points of contact comprises 39 countries and the EU.

As part of measures to establish and maintain adequate emergency preparedness to respond to industrial acci-

[111] UNECE Industrial Accident Notification System, see http://live.unece.org/env/teia/pointsofcontact.html.

Box 16. Lessons learned from a joint German-Polish exercise on transboundary pollution of the Oder River (2009)

Participants agreed that, for an effective response, **cooperation between neighbouring countries** was essential. Such cooperation could only be successful if it was not limited to crisis management (preparedness and response), but also addressed risk management (prevention), as well as aftermath management, where feedback was shared between the countries and their authorities dealing with the different risk management areas (cross-areas and cross-country cooperation, risk management-safety chain methodology).

Within **risk management**, it was important that neighbouring countries were able to properly identify sources of risk, maintain relevant databases and exchange information on risks. They should also cooperate with each other, especially through sharing of new practices and technology (e.g., methodologies for risk assessment, modelling, approaches to land-use planning, etc.) or implementing joint projects with the objective of improving safety standards and decreasing risks for emergency situations (e.g., projects related to critical infrastructure issues).

Within **crisis management**, neighbouring countries should harmonize off-site contingency planning. That harmonization should include, especially with regard to response planning along waterways, agreement on:

- Use or establishment of alert and warning notification systems (e.g., alert and warning systems for international rivers such as the Odra, Rhine, Danube, Elbe; the UNECE Industrial Accidents Notification System, etc.);
- Establishing sectors for response actions; and
- Procedures and schemes for providing each other with mutual assistance (border crossing for the response forces in the event of an emergency).

An important part of crisis management was also a continuous **joint training** of the response forces to verify if the agreed procedures and systems were well known to and easily applicable for their personnel.

Aftermath management also required relevant cooperation. Countries should first of all help each other, when needed, in identifying the causes, especially for major accidents. In the event of accidents in border areas they should **evaluate** the joint response and identify ineffective procedures. They should share with each other lessons learned from different incidents and accidents so that similar events could be prevented or a more effective response could be prepared.

dents, national authorities are to establish and maintain an effective system involving relevant bodies in the notification and management of emergency situations. As accidental releases of hazardous substances may adversely affect transboundary waters, it is recommended that the competent authorities and points of contact establish proper communications with authorities responsible for water management; this refers also to communication with joint bodies (e.g., international river commissions), as stressed on many occasions by the Joint Expert Group on Water and Industrial Accidents. Moreover, the 2009 German-Polish exercise (see box 16) and the technical workshop on joint management of transboundary emergencies involving international waterways concluded that:

> Cooperation was not possible if countries had not established legislation providing the basis for risk, crisis and aftermath management. Additionally, it would be difficult without bilateral agreements that specified in more detail the responsibilities of the neighbouring countries and their authorities vis-à-vis each other. The legislation and the bilateral agreements had not only to be established, but also enforced.[112]

ESPOO CONVENTION AND THE PROTOCOL ON PRTRS

It is important to note that provisions of the Industrial Accidents Convention refer to EIA (annex VIII, para. 4) or directly to the **Espoo Convention** (article 4, para. 4), which once more emphasizes the preventive role of EIA and of that Convention. Proposed activities that fall under the Espoo Convention include such hazardous activities as integrated chemical installations, nuclear energy-related activities, large-diameter pipelines and certain waste-disposal installations (appendix I to the Espoo Convention).

It should also be noted that the Aarhus Convention's **Protocol on Pollutant Release and Transfer Registers** requires Parties to establish nationwide systems that report on and collect pollution information. Its article 4 identifies a series of core elements of such a register, which include the establishment and maintenance of a publicly accessible national PRTR that — as far as point sources are concerned — is facility-specific. It is essential to note that such facility-specific registers should also include hazardous activities as defined by the Industrial Accidents Convention.

[112] Joint management of transboundary emergencies involving international waterways, German-Polish exercise, Report of the technical workshop (ECE/CP.TEIA/2010/8); available from http://live.unece.org/fileadmin/DAM/env/documents/2010/teia/ece.cp.teia.2010.8.EN.pdf

SAFETY GUIDELINES AND GOOD PRACTICES FOR PIPELINES

In the UNECE region, pipelines are an increasingly important means of transporting hazardous substances listed in annex I to the Industrial Accidents Convention. Crude oil, its derivatives and natural gas are among the major substances transported by pipelines in UNECE region. The effects of accidents involving pipelines can be very serious, as is shown by the oil leak in the Komi Republic (Russian Federation) in 1994 and the gas explosion in Ghislenghien (Belgium) in 2004. External interference is the most frequent cause of pipeline incidents in the UNECE region. Other causes of incidents are corrosion and poor construction and insufficient maintenance.

Although pipelines are operated with increasing care and the majority of operators recognize the importance of maintaining the integrity of their pipeline networks, in many UNECE countries the safety of pipeline operation needs further improvement. There is also a need to raise awareness and share experience and good practices among the competent authorities, pipeline operators and the public.

As many pipelines cross borders between two or more countries, accidents involving pipelines that carry hazardous substances may have far-reaching transboundary effects and can lead to accidental water pollution. This calls for harmonization across the region, as regulations and requirements concerning the safety of pipeline operation differ from country to country.

Against this background, the Parties to the Industrial Accidents Convention and the Parties to the Water Convention decided to share experience regarding pipeline safety and entrusted their Joint Expert Group on Water and Industrial Accidents to supervise the development of Safety Guidelines and Good Practices for Pipelines[113] (see box 17).

The Safety Guidelines were adopted in 2006 by the Conventions' governing bodies. The Safety Guidelines address Governments, competent authorities and the operators/owners of pipelines. An annex to the Safety Guidelines provides specific recommendations on technical and organizational issues, including design and construction, construction and testing, the pipeline management, emergency planning, inspection, and hazard/risk assessment and land use planning.

Box 17. Some basic principles and recommendations of the Safety Guidelines and Good Practices for Pipelines

Pipelines for the transport of hazardous substances should be designed and operated so as to prevent any uncontrolled release into the environment (para. 12). Leaks from any part of a facility or pipeline that contain hazardous substances should be recognized adequately in a quick and reliable way, especially in environmentally sensitive or highly populated areas.

Governments should provide leadership and create and maintain administrative frameworks to facilitate the development of a safe and environmentally sound transportation infrastructure, including pipelines.

National legislation should be clear, enforceable and consistent among different countries in order to facilitate international cooperation in, for example, the development and implementation of emergency plans.

UNECE member countries should establish a system of permits and of land use planning procedures with the involvement of the public in order to ensure that pipelines are planned, designed, constructed and operated in a safe way. They should also ensure adequate monitoring and control.

Competent authorities should:

- Carry out the permitting process, including EIA, in a transboundary context when applicable;
- Set up a system of inspections or other control measures in order to ensure that pipeline operators meet requirements;
- Ensure that external and internal emergency plans are reviewed, tested and, where necessary, revised and updated at suitable intervals.

The pipeline operator and/or owner has primary responsibility throughout the whole lifecycle of its systems for ensuring safety and for taking measures to prevent accidents and limit their consequences for human health and the environment. Furthermore, in case of accidents, all possible measures should be taken to limit such consequences.

The pipeline operator should draw up a document establishing a pipeline management system and ensure that it is properly implemented. The pipeline management system should be designed to guarantee a high level of protection of human health and the environment.

[113] ECE/CP.TEIA/2006/11–ECE/MP.WAT/2006/8, available from http://live.unece.org/fileadmin/DAM/env/documents/2006/teia/ECE_CP.TEIA_2006_11%20E.pdf.

PREVENTION OF OIL POLLUTION

Oil extraction and transportation may adversely affect the environment, natural resources, and people's health across borders. In order to ensure that environmental concerns are duly taken into account in the oil industry, relevant provisions in UNECE environmental Conventions specifically address these issues. Appendix I to the **Espoo Convention** expressly mentions *offshore hydrocarbon production*, *crude oil refineries (excluding undertakings manufacturing only lubricants from crude oil)*, *major storage facilities for petroleum, petrochemical and chemical products* and *large-diameter oil pipelines* in the list of activities falling within the scope of the Convention. Likewise, annex I to the **Aarhus Convention** refers to *mineral oil refineries* and *pipelines for the transport of oil (with a diameter of more than 800 mm and a length of more than 40 km)* as activities where Parties shall apply its provisions on public participation (article 6). Relevant provisions of the **Water Convention** and **Industrial Accidents Convention** naturally touch upon this field of activities as well: in particular, oil spill prevention plans and contingency planning should be developed in accordance with these Conventions.

PREVENTION OF ACCIDENTAL WATER POLLUTION
Key Messages

- The Industrial Accidents Convention is the central framework for prevention of accidental pollution, preparedness and response. Joint activities of the Industrial Accidents Convention and the Water Convention aim to address prevention of industrial accidents in transboundary river basins.
- In addition to the obligation to identify hazardous activities, the Industrial Accidents Convention includes obligations to ensure emergency preparedness, including implementation of contingency plans; to establish industrial accident notification system; to notify affected Parties in case of an industrial accident; and to take adequate response measures.
- These requirements are corroborated by the Water Convention's obligations to develop contingency planning; to inform other Riparian Parties of critical situations that may have transboundary impact; to set up coordinated or joint warning and alarm systems; and to provide mutual assistance upon request.
- As accidental releases of hazardous substances may adversely affect transboundary waters, it is recommended that the competent authorities and points of contact under the Industrial Accidents Convention establish and maintain proper communications with authorities responsible for water management, as part of broader efforts to ensure the operation of an effective system involving relevant bodies in the notification and management of emergency situations. Joint bodies for transboundary water cooperation should have an important role in the prevention of accidental water pollution in transboundary basins.


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3.13 Dams and Other Hydro-Technical Installations

The water management infrastructure of Central Asia comprises a multitude of reservoirs, dams, irrigation systems and pumping stations, a great number of canals and dozens of multipurpose hydraulic installations. The highest dam in the world, the Nurek Dam, a rockfill dam 300 metres in height, is located on the Vakhsh River (a tributary to the Amu Darya) in Tajikistan, and one of the longest canals in the world — the Karakum Canal, with a length of more than 1,100 km, which contributes about half of the water used in Turkmenistan — originates from the Amu Darya River. Water infrastructure was frequently built for joint use during the times when the Central Asian countries were part of the Soviet Union.

Dams and reservoirs are of major importance for the economy and future development of the Central Asian region: they ensure drinking water supply by contributing to seasonal and long-term regulation of river flows; and they provide a reliable source of water for irrigation, industrial water uses and hydropower. Dams and reservoirs can also be efficient means of addressing floods and droughts.

Today, the major issue at the heart of the regional debate on the use of water and energy resources in Central Asia is the planned development of additional hydropower capacity by upstream countries — Tajikistan and Kyrgyzstan — through the construction of new dams and reservoirs, including large dams. These plans raise concerns and meet varying degrees of opposition in the neighbouring countries.

Another major issue is the ageing of existing dams in Central Asia. The problem of ageing water infrastructure, aggravated by the lack of funding for its adequate maintenance and coupled with population growth downstream from the dams, represents increased risks to life, health, property and the environment, also in a transboundary context.

With regard to existing as well as possible new water infrastructure, development of cooperation and finding joint solutions for its management, use and safety is an important challenge. The bilateral cooperation on the joint management and use of water infrastructure on the Chu and Talas Rivers between Kazakhstan and Kyrgyzstan is a positive example, as is the cooperation between Turkmenistan and Iran on the Dosti Dam on the Tejen/Harirud River.

UNECE CONVENTIONS AND THE DEVELOPMENT OF NEW DAMS

None of the UNECE environmental Conventions prevents development. *None of the UNECE Conventions prohibits building new dams,* including large ones. There are dams all across the UNECE region, and new dams are being built in the countries participating in the UNECE environmental Conventions. At the same time, the Conventions require that certain procedural steps are followed and certain obligations are implemented when a new dam is planned to be built or a major change in an existing dam is planned for implementation. The application of these requirements of the UNECE Conventions leads to better quality of decisions, improves decision-making processes, enhances mutual understanding among riparians and contributes to the prevention of differences and disputes.

The **Water Convention** does not explicitly mention dams. However its cornerstone obligations — to prevent, control and reduce transboundary impact (article 2, para. 1), to ensure equitable and reasonable use (article 2, para. 2 (c)), and to cooperate (article 2, para. 6) — provide a general framework that should govern the relations of Parties when a new activity, including dams and other water installations, is planned. In addition, article 9 obliges Riparian Parties to enter into agreements and establish joint bodies, tasked "to serve as a forum for the exchange of information on existing and planned uses of water and related installations that are likely to cause transboundary impact" and "to participate in the implementation of environmental impact assessments relating to transboundary waters, in accordance with appropriate international regulations", whereas article 10 requires Riparian Parties to hold consultations at the request of any such Party. This cooperative setting aims to ensure that Riparian Parties consult each other on major issues relevant to the waters they share, including the construction of new dams and other hydro-technical installations.

The **Espoo Convention** includes "large dams and reservoirs" in appendix I. This means that when a large dam and/or reservoir become the "proposed activity" under the meaning of the Espoo Convention,[114] the Party of origin (the Party which plans an activity) has the following major obligations. First, it must ensure that an EIA is undertaken prior to a decision to authorize or undertake a proposed large dam or reservoir that is likely to cause a significant adverse transboundary impact. Secondly, the Party of origin has to

[114] Proposed activity" means any activity or any major change to an activity subject to a decision of a competent authority in accordance with an applicable national procedure (Espoo Convention, article 1, (v)).

notify affected Parties of a proposed activity. Thirdly, the Party of origin must consult with affected Parties concerning the potential transboundary impact of the proposed large dam or reservoir and measures to reduce or eliminate its impact. It is important to emphasize that the Party of origin *makes the final decision about a proposed large dam or reservoir on its own*: the Espoo Convention only obliges Parties to take *"due account"* of the outcomes of the EIA, comments received from authorities and the public, as well as outcome of consultations with the affected Parties (article 6, para. (1)). Also, the Convention's **Protocol on Strategic Environmental Assessment** obliges Parties to the Protocol to apply its provisions on notification and consultation also to plans and programmes likely to have significant transboundary environmental, including health, effects (article 10). The development of a national strategy or action programme to develop hydropower could fall under these provisions of the Protocol.

The **Industrial Accidents Convention** explicitly excludes from its sphere of application "dam failures, with the exception of the effects of industrial accidents caused by such failures" (article 2, para. 2 (c)). At the time of the negotiations of the Protocol on Civil Liability to the Industrial Accidents and Water Conventions, it was concluded that exclusion of the dam failures contained in article 2, para. 2 (c), of the Industrial Accidents Convention, referred only to water dams. In order to avoid any uncertainty, the Protocol on Civil Liability clearly defined its scope to include tailings dams (article 2, para. 2 (e) (i)).[115] The Industrial Accidents Convention lays down the principle of the operator's responsibility ("the operator is obliged to take all measures necessary for the safe performance of the hazardous activity and for the prevention of industrial accidents", article 3, para. 3) which has become a common principle also in national legislation on dam safety.

The **Aarhus Convention** specifically mentions "dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres" as part of annex I, therefore requiring its Parties to apply the procedures of article 6, on public participation, with respect to decisions on whether to permit such proposed activities. In addition, annex I includes "works for the transfer of water resources between river basins where this transfer aims at preventing possible shortages of water and where the amount of water transferred exceeds 100 million cubic metres/year" and "in all other cases, works for the transfer of water resources between river basins where the multiannual average flow of the basin of abstraction exceeds 2,000 million cubic metres/year and where the amount of water transferred exceeds 5% of this flow", for which the Parties also have to apply the provisions of article 6.

EXISTING DAMS: MAJOR OBLIGATIONS UNDER UNECE CONVENTIONS

The key obligation that international law imposes on States in this area is to *take all necessary measures*, i.e., to exercise due diligence, *in order to maintain and protect installations, facilities and others works at international watercourses*. This obligation follows from the responsibility of States not to cause damage to the environment of other States or to areas beyond national jurisdiction — a cornerstone principle of international environmental law. Formulated in the 1994

[115] See report of the sixth meeting of the Conference of the Parties to the Industrial Accidents Convention (ECE/CP.TEIA/22), paras. 59–60; available from http://live.unece.org/fileadmin/DAM/env/documents/2010/teia/FINAL-REPORT-ENG-FEB.pdf.

ILC Draft Articles on the Law of Non-Navigational Uses of International Watercourses, and subsequently in the 1997 United Nations Convention as the obligation of watercourse States "within their respective territories, [to] employ their best efforts to maintain and protect installations, facilities and other works related to an international watercourse",[116] this obligation is not spelled out in the UNECE environmental Conventions. UNECE Conventions — in particular, the Water and Espoo Conventions, view this specific obligation as part of the obligation to prevent, reduce and control transboundary impact. Similarly, the obligation to enter into consultations with regard to the safe operation and maintenance of installations and their protection from wilful or negligent acts or the forces of nature, which is spelled out in the 1994 ILC Draft Articles and the 1997 United Nations Convention, is covered by the more general obligations of the Water Convention to exchange information both regularly and upon request (article 13), and to enter into consultations upon request (article 14).

The obligation to maintain and protect installations, facilities and other works is often specified in the bilateral and multilateral transboundary water agreements and arrangements. For example, the 2008 Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on Rational Use and Protection of Transboundary Waters provides for the obligation of Parties "to ensure maintenance in proper technical conditions of existing hydrotechnical and other installations at transboundary waters".[117] Often, joint bodies established by riparian States under transboundary water agreements are also empowered to oversee the operation and safety of dams and other water installations.

In addition, the Espoo Convention, which applies to both new activities as well as to "any major change to an activity", can be an important mechanism to contribute to the dam safety by ensuring that concerns of neighbouring countries are addressed not only in cases of planned dams, but also with regard to modifications to existing dams or their operation.

Dam safety has long been the area of work and active involvement of UNECE. In 1988, the Senior Advisers to ECE Governments on Environmental and Water Problems endorsed the soft-law instrument *Recommendations to ECE Governments on Dam Safety with Particular Emphasis on Small Dams*.[118] The Recommendations focus primarily on measures to be taken at the domestic level. However, they stress the need to activate cooperation of basin countries on the issues of dam safety, standards, rules and liability. The Recommendations also suggest that when possible, unified procedures, standards and rules should be agreed and adopted by basin States.

Since 2006, the UNECE implements the Project *"Capacity building for cooperation on dam safety in Central Asia"*,[119] which is part of the programme of work of the Water Convention. The project assists Central Asian countries in establishing adequate institutional and legal frameworks for dam safety at the national and regional levels, and in strengthening information exchange and notification in case of accidents with dams. A model national law on the safety of large hydraulic facilities, including dams, has been developed as a basis for national harmonized legal frameworks for dam safety. Also, a draft regional agreement of Central Asian countries, on cooperation on dam safety, is under negotiation. The main outcomes also include the improvement of the national legal and institutional frameworks for dam safety in the countries of Central Asia.

DAMS AND OTHER HYDRO-TECHNICAL INSTALLATIONS
Key Messages

- UNECE environmental Conventions do not prohibit building new dams, including large dams. They require that certain procedural steps are followed and certain obligations, in particular on notification and consultation, are implemented when a new dam is planned to be built or a major change in an existing dam is planned. UNECE Conventions leave the decision-making power with the Party which plans a dam. Such procedures facilitate the application by the Parties of the substantive principles, such as the obligation to prevent, control and reduce transboundary impact, the principle of equitable and reasonable utilization and the obligation of cooperation.
- Under UNECE Conventions, the obligation to employ best efforts to maintain and protect installations, facilities and other works related to transboundary waters is part of the obligation to take all appropriate measures to prevent, control and reduce transboundary impact.
- UNECE is active in the development of legal, technical and institutional frameworks for dam safety cooperation at different levels, with a current focus on subregional cooperation in Central Asia.

[116] Draft Articles on the Law of the Non-navigational Uses of International Watercourses, in Report of the International Law Commission on the work of its forty-sixth session, Official Records of the General Assembly, forty-ninth session, Supplement No. 10 (A/49/10), reprinted in Yearbook of the International Law Commission, 1994, vol. II (part two), article 26; and article 26 of the 1997 United Nations Convention.

[117] Agreement between the Government of the Russian Federation and the Government of the People's Republic of China on the Rational Use and Protection of Transboundary Waters, signed in Beijing on 29 January 2008, article 2, para. 3.

[118] Recommendations to ECE Governments on Dam Safety with Particular Emphasis on Small Dams (1988), available from http://live.unece.org/fileadmin/DAM/env/water/publications/documents/Reco_E/Reco_Dam%20Safety.pdf.

[119] The project is implemented in cooperation with the International Fund for saving the Aral Sea. More information on the project is available from http://live.unece.org/env/water/damsafety.html.

3.14 Tailings Management Facilities

The accidental release of over 100,000 cubic meters of cyanide-polluted water into the Lapus River, following the breakdown of a tailings dam at Baia Mare (Romania) in January 2000, demonstrated the significant risks of tailings management facilities for humans and the environment. This accident caused severe transboundary water pollution of the Somes River (shared by Romania and Hungary) and sections of the Tisza and Danube Rivers further downstream. More recently, in October 2010, the Ajka alumina-sludge spill in Hungary has led to serve pollution of surface and groundwaters and terrestrial ecosystems and has again shown the significant risks associated with the operation of tailings facilities.

In Central Asia — apart from gold, lead, mercury, tin and other non-radioactive ore tailings — the issue of uranium tailings is also extremely critical. Many radioactive waste storage facilities are located in regions of seismic activity, in landslide- and mudflow-prone sectors, in zones subject to flooding and high groundwater levels and also near the banks of rivers that are located in the main transboundary river basins.[120] In Kyrgyzstan, the large quantity of radioactive waste the country has inherited from the Soviet era is a major threat. These wastes are accumulated in 36 uranium tailings sites and 25 uranium mining dump sites located throughout the country. The ongoing degradation of uranium tailings and the associated risks of water resources contamination pose a wide range of threats to public health and the environment; they also present a challenge to political and economical stability in the region, as they could have a transboundary impact on neighbouring countries, e.g., Kazakhstan, Tajikistan and Uzbekistan.[121]

Many existing tailings management facilities in Central Asia, whether active, inactive, neglected, temporarily closed or abandoned, fall under the definition of "hazardous activities" under the UNECE Industrial Accidents Convention, as hazardous substances are present there in amounts at, or in excess of, the threshold quantities adopted by the Convention. This calls for increased efforts to use the platform of this Convention to improve the management of tailings in Central Asia.

UNECE CONVENTIONS AND PROTOCOLS OF PARTICULAR RELEVANCE TO TAILINGS MANAGEMENT FACILITIES

The **Industrial Accidents Convention** defines an industrial accident, inter alia, as an event resulting from an uncontrolled development in the course of any activity involving hazardous substances in an installation, for example, during manufacture, use, storage, handling, or disposal (see article 1, para. (a)). Such installations include tailings management facilities (see box 18), provided that hazardous substances in amounts at, or in excess of, the threshold quantities given in annex I to the Industrial Accidents Convention are present.

As industrial accidents may have adverse transboundary effects on transboundary surface waters and groundwaters, there is a close link to the "accidents-related" provisions of the **Water Convention**, which was drawn up in parallel to the Industrial Accidents Convention. For example, the Water Convention requires that the risk of accidental pollution be minimized (article 3, para. 1 (l)), contingency planning be developed (article 3, para. 1 (j)), and warning and alarm systems on critical situations be in operation (article 14).

SAFETY GUIDELINES AND GOOD PRACTICES FOR TAILINGS MANAGEMENT FACILITIES

On the basis of the provisions of the Water and Industrial Accidents Conventions, the Joint Expert Group on Water and Industrial Accidents (see section 3.12) has drawn up *Safety Guidelines and Good Practices for Tailings Management Facilities* (2008).[122] The Safety Guidelines are intended to limit the number of accidents at tailings management facilities and the severity of their consequences for human health and the environment. The Guidelines contain administrative, technical and organizational aspects related to tailings facilities management, including provisions for public participation, and address Governments, competent authorities and the operators of facilities (see box 19). They also provide summaries of good experience for the management of such facilities.

[120] See United Nations Kyrgyzstan, "Uranium Tailings in Central Asia", available from http://www.un.org.kg/en/un-in-kyrgyzstan/what-we-do/article/233-what-un-does/3557-uranium-tailings-in-central-asia.
[121] *Second Environmental Performance Review of Kyrgyzstan*, (United Nations publication, Sales № E.09.II.E.7, p.105); available from http://www.unece.org/env/epr/epr_studies/Kyrgyzstan%20II%20En.pdf.
[122] Safety Guidelines and Good Practices for Tailings Management Facilities (ECE/CP.TEIA/2008/9–ECE/MP.WAT/WG.1/2008/5), available from http://live.unece.org/fileadmin/DAM/env/documents/2008/TEIA/ECE_CP_TEIA_2008_9E.pdf.

Box 18. Tailings management facilities

Tailings management facilities encompass the whole set of structures required for the handling of tailings from ore mining. Tailings are mixtures of water and fine mineral particles, normally ranging between 10 µm and 1 mm, left over after the separation of the valuable fraction of an ore from the uneconomic fraction. In coal mining, tailings occur as fine waste suspended in water.

Tailings may contain trace quantities of metals found in the host ore (e.g., antimony, copper, gold, lead, mercury, tin) and they may contain substantial amounts of hazardous substances used in the extraction process, such as inorganic copper compounds or cyanides. If improperly handled, significant leakages of hazardous substances into surface waters or groundwaters may occur as well as short-range air pollution by dry tailings' dust blown away from the storage area.

Risks of pollution of surface waters and groundwaters, and related damage or risk to human health, infrastructure and environmental resources, are posed by tailings management facilities in all categories: active, idle/inactive, neglected, temporarily closed and abandoned/orphaned.

There is particular concern regarding the large number of abandoned or orphaned tailings management facilities, where monitoring or maintenance is not undertaken as jurisdiction on these sites is not in place or inadequate.

TAILINGS MANAGEMENT FACILITIES AND THE ESPOO CONVENTION

The Safety Guidelines and Good Practices for Tailings Management Facilities purposely refer to the provisions of the **Espoo Convention** by stating that "projects on constructing tailings management facilities, which might have adverse environmental impact across borders, should be notified and consulted between Governments of neighbouring countries and the UNECE Espoo Convention and its provision to perform an environmental impact assessment should be applied".

This is so because the Espoo Convention lists "major mining, on-site extraction and processing of metal ores or coal" (appendix I, para. 14) as activities that are subject to EIA. Thus, the Party to the Espoo Convention that plans to construct a tailings management facility must ensure that in accordance with the provisions of the Espoo Convention an EIA is undertaken prior to a decision to authorize or undertake such a project if this is likely to cause a significant adverse transboundary impact (article 2, para. 3). This Party also has to ensure that affected Parties are notified of the proposed activity (article 2, para. 4). Moreover, the Espoo Convention requires that the said Party provide an opportunity to the public in the areas likely to be affected to participate in relevant EIA procedures regarding the proposed tailings management facility (article 2, para. 6).

In this context, it is important to note that the **Protocol on Strategic Environmental Assessment** to the Espoo Convention goes one step further - it obliges the Parties to make policies, plans and programmes subject to SEA:

> A strategic environmental assessment shall be carried out for plans and programmes, which are prepared for … industry including mining … country planning or land use, and which set the framework for future development consent for projects listed in annex I and any other project listed in annex II that requires an environmental impact assessment under national legislation. (article 4, para. 2)

Annex I to the Protocol includes major mining, on-site extraction and processing of metal ores or coal, and annex II includes quarries, open cast mining and peat extraction, as far as not included in annex I, underground mining, as far as not included in annex I, and extraction of minerals by marine or fluvial dredging.

TAILINGS MANAGEMENT FACILITIES AND THE AARHUS CONVENTION

The Safety Guidelines and Good Practices for Tailings Management Facilities also refer to the provisions of the Aarhus Convention by stating that:

> [Tailings management facilities] should be operated in accordance with the provisions of the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters…. Where the subject of concern is of transboundary nature, the principles of Almaty Guidelines on Promoting the Application of the Principles of the Aarhus Convention in International Forums … should apply.

The Aarhus Convention and its annex I do not explicitly refer to tailings management facilities, but enumerate instead activities in the energy sector, the production and processing of metals, the mineral industry, the chemical industry and its installations and other sectors. Obviously, one or another activity may rely on tailings management facilities. Moreover, the provisions of article 6 on public participation in decisions on specific activities apply with respect to decisions on whether to permit proposed activities listed in Annex I. One can also judge from the broad definition of environmental information under the Aarhus Convention (article 2, para. 3) that information on the operation of tailings management facilities and the potential or real risk they may cause is covered by that definition.

Box 19. Core principles of the Safety Guidelines and Good Practices for Tailings Management Facilities and recommendations of a policy nature

GOVERNMENTS should provide leadership and create minimum administrative frameworks to facilitate the development and safe operation and decommissioning of the tailings management facilities.

COMPETENT AUTHORITIES should ensure meaningful public participation and easy access to information in accordance with the relevant provisions of the Industrial Accidents and Water Conventions and, in particular, the Aarhus Convention.

THE OPERATORS of tailings management facilities have the primary responsibility for ensuring the safety of tailings management facilities and for formulating and applying safety management procedures, as well as for utilizing technology and management systems to improve safety and reduce risks.

THE OPERATORS of tailings management facilities should cooperate with the competent authorities and local communities in preparing external emergency plans.

Only competent — properly certified (in accordance with the national legislative, regulatory and safety management norms) — **PERSONNEL** should be engaged in the planning, design, construction, operation/management and closure of tailings management facilities.

Tailings management facilities should be operated in accordance with the construction, safety and environmental norms of the country concerned, taking into account internationally established best practice, and on the basis of an **OPERATING AND MANAGEMENT PLAN** (operation manual) evaluated and accepted by the relevant competent authority, as appropriate.

For tailings management facilities, which pose a potential risk to neighbouring communities and land-uses due to their size or presence of hazardous materials, **INFORMATION TO AND INVOLVEMENT OF THESE COMMUNITIES AND INDIVIDUALS** in accordance also with internationally recognized procedures should be ensured for the purpose of drawing up an emergency plan that the community understands.

TAILINGS MANAGEMENT FACILITIES
Key Messages

- Tailings management facilities and the associated risks of water resources contamination pose a wide range of threats to public health and the environment. When accidents at tailings management facilities may have a transboundary impact, transboundary cooperation is required to ensure their safe operation.
- Tailings management facilities fall under the definition of "hazardous activities" under the Industrial Accidents Convention, provided that hazardous substances in amounts at, or in excess of, the threshold quantities given in annex I to this Convention are present.
- As industrial accidents at tailings management facilities may have significant adverse transboundary effects on transboundary surface waters and groundwaters, joint activities of the Industrial Accidents Convention and the Water Convention aim to ensure their safe operation. The Safety Guidelines and Good Practices for Tailings Management Facilities developed under the two Conventions provide detailed practical guidance on administrative, technical and organizational aspects related to the management of tailings facilities.
- The Safety Guidelines and Good Practices for Tailings Management Facilities call upon Governments to ensure meaningful public participation and easy access to information on tailings management facilities in accordance with the provisions of the Aarhus Convention.
- Under the Espoo Convention, projects on constructing tailings management facilities which might have significant adverse environmental impact across borders require an EIA and necessitate notification and consultation between neighbouring countries.

3.15 Navigation

The drainage basin of the Aral Sea spreads across the territories of all five Central Asian States that share the water resources of the two main transboundary rivers — the Amu Darya and the Syr Darya. The Amu Darya River is also shared with Afghanistan. Kazakhstan and Turkmenistan are littoral states of the Caspian Sea — the largest salt-water lake in the world. There are also a number of large watercourses shared by Central Asian States with their neighbouring countries, such as the Ural, Tobol and Ishim (a tributary of the Irtysh River), shared by the Russian Federation and Kazakhstan; the Irtysh River itself, whose basin spreads mostly over the territories of the Russian Federation and Kazakhstan, with its headwaters located in China; and the Ili River, which flows into Lake Balkhash and is predominantly located in Kazakhstan and China, with a small part shared with Kyrgyzstan. Navigation on some of the above waterways or parts thereof has historically played, and is nowadays recovering, an important role for national economies in the region.

Inland water transport (IWT) is considered to be a competitive alternative and addition to road and rail transport, offering a sustainable and environment-friendly mode of transport in terms of energy consumption, noise and gas emissions. The importance of IWT varies significantly between and within the Central Asian countries, reflecting a strong influence of national and regional transport policies, as well as economic and geographical factors. In Kazakhstan, for instance, the national strategy aims at rebuilding the hydraulic engineering structures on inland waterways, upgrading the technical parameters of main navigable rivers and canals, such as the Irtysh River and the Ural-Caspian canal, and integrating IWT in the Caspian regions of the country into the North-South international transit route.[123] For Kazakhstan and Turkmenistan, the fact that the coastal route in the Caspian Sea belongs to inland waterways of international importance (E waterways) [E 90-05] under the European Agreement on Main Inland Waterways of International Importance of 1996 (AGN) provides an additional incentive to develop trading ports in the area.

NAVIGATION AND THE PRINCIPLE OF EQUITABLE AND REASONABLE UTILIZATION

Navigation is an activity, in many cases, just as important as the non-navigational uses of waterways, such as fishing, irrigation and the production of energy. The fact that most international watercourses can accommodate several uses raises an important question of the priority of uses. The *principle of equitable and reasonable utilization* entitles each basin State, within its territory, to a reasonable and equitable share in the beneficial uses of the waters of an international basin. Navigation is one of such beneficial uses. It is important to remember that according to the principle of equitable and reasonable utilization, no water use shall have inherent priority over other uses of the water resources of an international basin.

The **Water Convention** embodies the above principle of equitable and reasonable utilization (article 2, para. 2 (c)) and provides a framework and guidance for developing and operationalizing sustainable water policies and strategies to address transboundary water-related environmental concerns. In relation to the issue of navigation, it should be stressed that the Water Convention does not exclude it from its scope of application. Even though it is not specifically referred to in the Convention, it may cause transboundary impact within the meaning of the Convention and therefore is an area where the Parties may have to take appropriate measures to prevent, control and reduce any transboundary impact (article 2, para. 1).

LEGAL AND INSTITUTIONAL FRAMEWORKS FOR INLAND NAVIGATION

Inland navigation in the UNECE region is currently regulated by a variety of intergovernmental institutions and bodies at multilateral and bilateral levels. The *Pan-European Ministerial Conferences on Inland Water Transport*, regularly organized over the last 15 years, adopt Ministerial declarations on the priorities for IWT development. The main European international rivers are managed by *navigation commissions* entrusted with setting technical and legal standards for navigation in the respective river basins. The navigation commissions in the UNECE region include the Central Commission for Navigation on the Rhine, the Moselle Commission, the Danube Commission and the International Sava River Basin Commission.[124] For the Danube, the Rhine and the Moselle, environmental protection has been entrusted to special river protection commissions, such as the International Commission for the Protection of the Danube River, the International Commission for the Protection of the Rhine and the International Commissions

[123] See White Paper On Efficient And Sustainable Inland Water Transport In Europe: Note by the Secretariat (ECE/TRANS/SC.3/WP.3/2009/13).

[124] The Framework Agreement on the Sava River Basin (2002) facilitates cooperation on sustainable development of the Sava River Basin. The major objectives of the Agreement are the establishment of an international regime of navigation on the Sava River and its navigable tributaries, ensuring sustainable water management and the prevention or limitation of hazards. The Protocol on the Navigation Regime was signed in 2002. The Protocol on Prevention of Water Pollution Caused by Navigation was adopted in 2009.

for the Protection of the Moselle and the Saar. The navigation commissions, however, are paying increasing attention to environmental aspects of inland navigation, such as the prevention of pollution from inland vessels, waste management and the impact of infrastructure development on the environment.

While the freedom of navigation on international inland waterways was proclaimed as far back as 1815, in the Final Act of the Vienna Congress, there is no international legal instrument establishing the freedom of access to all inland waterways in the UNECE region. The national waterways of a number of UNECE countries, for example, Kazakhstan, still remain closed to international navigation. The *core uniform rules* applicable to the traffic on inland waterways (marking on vessels, visual signs on vessels, sound signals and radiotelephony, waterway signs and markings, rules of the road, berthing rules, signalling and reporting requirements and prevention of pollution of water and disposal of waste) are contained in the UNECE resolutions on the "European Code for Inland Waterways (CEVNI)" and "Signs and Signals on Inland Waterways (SIGNI)".[125]

The rules on the transport of *dangerous goods* on inland waterways have been codified in the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways of 2000 (ADN) under the auspices of UNECE and the Central Commission for Navigation on the Rhine.

Inland navigation can contribute to making transport more *environmentally sustainable*, particularly where it substitutes for road transport. It can, however, also have significant influence on river ecosystems. In addition, global warming and carbon emissions are becoming a key issue for the future of IWT. Inland navigation can be one of the solutions towards reducing the carbon emissions of the transport sector through a modal shift from road transport. However, in order to maintain this competitive edge, efforts are required to ensure that the continuing reduction of carbon dioxide intensity in road transport is paralleled by similar progress in IWT.[126]

Recognizing the potential conflict between the environmental friendliness of navigation and its impact on the environment, the International Commission for the Protection of the Danube River, the Danube Commission and the International Sava River Basin Commission adopted the Joint Statement on Guiding Principles on the Development of Inland Navigation and Environmental Protection in the Danube River Basin (2007/08).[127] The Joint Statement provides guidance for decision makers dealing with IWT and environmental sustainability, as well as for water managers preparing relevant riverine environmental and navigation plans, programmes and projects. It emphasizes that in order to guarantee an interdisciplinary approach and broader acceptance of the ongoing and future planning process on waterway development, the ministries responsible for envi-

[125] The most recent significant revision of CEVNI, based on comparative analysis of the regulations of the Central Commission for Navigation on the Rhine, the Danube Commission and the Mosel and the Sava Commissions, took place in 2008–2009. See 2011 White Paper on Efficient and Sustainable Inland Water Transport in Europe (ECE/TRANS/SC.3/189).

[126] Ibid.

[127] The Joint Statement is available from http://www.icpdr.org/icpdr-pages/navigation_and_ecology_process.htm.

ronment, water management and transport, scientists and experts in river engineering, navigation, ecology, spatial planning, tourism and economics, as well as representatives of other stakeholders, such as environmental NGOs and relevant private sector representatives, should be involved from the beginning.

The Joint Statement lists *integrated planning principles*, which should be applied to every project on inland navigation. These include: interdisciplinary planning teams; joint planning objectives; transparent planning process; SEA and EIA; information and consultation with the international river commissions; minimizing impacts, mitigation and/or restoration; giving preference to reversible interventions; taking due account of climate change; priority ranking of possible measures; and monitoring the effects of measures, etc. The Joint Statement emphasizes that, due to the fact that IWT plans and projects have environmental implications, there is a need to carry out SEA for qualifying plans, programmes and policies, and EIA for qualifying projects. Although originally drafted for the Danube River Basin, the planning principles and criteria of the Joint Statement could be used, as appropriate, as a reference for other river systems.

UNECE has also addressed issues related to the planning of navigation projects through its environmental instruments such as the **Espoo Convention** and its **SEA Protocol**. The Espoo Convention lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact beyond the borders of the State planning such activities. It provides a comprehensive list of activities for which EIA should be carried out, including those types which might be of relevance to the development of navigation: (a) trading ports and inland waterways and ports for inland-waterway traffic which permit the passage of vessels of over 1,350 metric tons; (b) large dams and reservoirs; and (c) groundwater abstraction activities or artificial groundwater recharge schemes where the annual volume of water to be abstracted or recharged amounts to 10 million cubic metres or more.[128] Similar types of activities are found in annex I to the **Aarhus Convention**, which requires Parties to apply its provisions on public participation in decision-making with respect to decisions on whether to permit proposed activities listed in that annex.

As part of its recent efforts, the UNECE Working Party on Inland Water Transport issued the *UNECE White Paper on Efficient and Sustainable Inland Water Transport in Europe* (2011), based on policy studies, ministerial declarations and input from river commissions and other international bodies. The White Paper outlines key elements of a Pan-European strategy for efficient and sustainable IWT.[129]

NAVIGATION
Key Messages

- Navigation is nowadays recovering its important role for national economies in many parts of UNECE region, including some countries of Central Asia. Inland water transport is, in comparison to air and road transport, seen as more environmentally friendly and energy efficient, although IWT and navigation projects may have an impact on the environment, including transboundary impact.
- The principles of reasonable and equitable utilization and of the prevention of significant transboundary impact, enshrined in the Water Convention, provide the legal framework for balancing navigation with other uses of transboundary waters.
- Catchment-wide thinking and transboundary cooperation in the planning of navigation-related activities call for multidisciplinary planning and decision-making processes. Early integration of stakeholders and of environmental objectives is essential for a successful planning process.
- UNECE legal instruments in the areas of transport and the environment provide a consolidated legal basis for cooperation on the issues of navigation and the environment.

[128] The second amendment to the Espoo Convention, once in force, will also include in this list "works for the transfer of water resources between river basins where this transfer aims at preventing possible shortages of water and where the amount of water transferred exceeds 100 million cubic metres/year"; and "in all other cases, works for the transfer of water resources between river basins where the multi-annual average flow of the basin of abstraction exceeds 2,000 million cubic metres/year and where the amount of water transferred exceeds 5 per cent of this flow". In both cases, transfers of piped drinking water are excluded.

[129] See supra note 125.

3.16 Public Participation in Transboundary Water Management

Four countries of Central Asia — Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan — are Parties to the Aarhus Convention, which plays a significant role in advancing access to environmental information, public participation and access to justice in environmental matters, and also in the broader efforts for political reform and transition in the Central Asian subregion.

Numerous educational and training projects relevant to the implementation of the Aarhus Convention in Central Asia promote its principles and improve awareness among the public and governmental authorities. In some State and local government institutions, special training programmes have been elaborated and carried out to train officials in communicating with and informing the public on environmental matters (Kazakhstan, Kyrgyzstan, Turkmenistan), with Aarhus Centres playing an important role in these processes. At the same time, although Central Asian countries have taken substantive steps in transposing into their legislation and promoting the provisions of the Aarhus Convention at the national level, implementation remains a challenge. In particular, implementation of the public participation provisions of the Aarhus Convention needs to be further developed, while access to justice is the most slowly developing area and needs further attention.[130]

With regard to public participation in water management, during the past decade, national water legislation and organization of water resources management have been reformed in many Central Asian countries and this development continues. For example, the 2003 Water Code of Kazakhstan introduced the principle of water basin management and opened up the possibility for the various governmental and non-governmental entities involved in water management or water use, such as water users' associations or water-related NGOs, to be consulted before decisions are taken. Furthermore, water users' associations have been established in Tajikistan and Uzbekistan, with the responsibility for the maintenance and operation of irrigation networks, and also for water supply in rural communities. Associations responsible for irrigation networks have also been established in Kyrgyzstan.[131] At the same time, specific water-related NGOs are almost non-existent in some countries of the region, and water and sanitation issues are mostly dealt with by environmental, development and women's organizations. Appropriate recognition of and support to associations, organizations or groups promoting environmental protection is still needed in the countries of the subregion.

Public participation in the activities of joint bodies for transboundary water cooperation is still in its infancy, with the cooperation of Kazakhstan and Kyrgyzstan on the rivers Chu and Talas showing the most advanced development in this area. In 2010, a Draft Statute of the proposed international (transboundary) basin council for the Chu and Talas Rivers was prepared and discussed at the ninth session of the Commission of the Republic of Kazakhstan and the Kyrgyz Republic on the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas. The international basin council for the Chu and Talas Rivers, involving the public, NGOs and water users, is expected to be a consultative and advisory body for the proposed joint commission on sustainable development in the basins of the Chu and Talas Rivers, which is under consideration by the two countries. The council would be mandated to develop and submit recommendations for consideration by the joint commission.

Forty-three UNECE member States and the EU are Parties to the Aarhus Convention — the primary instrument on access to information, public participation and access to justice in the UNECE region. Other UNECE Conventions also address access to information and public participation in environmental matters and some of them, such as the Protocol on Water and Health and the Protocol on PRTRs, also include provisions on access to justice.

The Aarhus Convention, adopted in 1998, took into account the norms and experience of other UNECE environmental Conventions. However nowaday***s*** *relevant provisions of UNECE Conventions are increasingly interpreted and applied in the light of concepts and principles of the Aarhus Convention,* taking into account the wide geographical coverage of the Aarhus Convention, covering, with very few exceptions, the vast majority of Parties to other UNECE instruments. This is due to the fact as well that the Aarhus Convention *requires its Parties to promote the principles of Aarhus Convention in international decision-making processes and within the framework of international organizations (article 3, para. 7).*[132] Bearing in mind the above relationship, it can be established that, with respect to public participation in transboundary water management, as well as water management at national level, respective provisions of the UNECE environmental Conventions are mutually complementary and should be considered and applied as *a single regulatory regime for participatory decision-making.*

[130] See national implementation reports submitted in connection with the fourth session of the Meeting of the Parties in 2011 at http://live.unece.org/env/pp/reports_implementation_2011.html and the Synthesis report on the status of implementation of the Convention (ECE/MP.PP/2011/7) at http://live.unece.org/env/pp/mop4/mop4.doc.html.

[131] *Second Assessment of Transboundary Rivers, Lakes and Groundwaters*, supra note 63, chap. 5: Central Asia.

[132] In order to provide practical guidance in this area, the Meeting of the Parties to the Aarhus Convention adopted the Almaty Guidelines on Promoting the Application of the Principles of the Aarhus Convention in International Forums, see supra note 87.

In the area under discussion, UNECE Conventions primarily set out obligations for their Parties and for public authorities, while setting out rights for "the public" and "the public concerned". The definition of *"the public"* in the Aarhus Convention applies the "any person" principle, meaning that each individual natural or legal person enjoys all the substantive and procedural rights covered by the Convention. For emphasis, the Aarhus Convention explicitly mentions associations, organizations and groups. The Protocol on Water and Health (article 2, para. 11) and the SEA Protocol (article 2, para. 8) follow the same approach. The definition of the "public" in the Industrial Accidents Convention includes "one or more natural or legal persons" (article 1 (j)); the same definition can be found in the Espoo Convention (article 1 (x)). However, the 2004 amendment to the Espoo Convention, once in force, will extend the definition to explicitly include associations, organizations and groups.

According to this approach, no person shall be excluded from the definition of "the public" on the grounds of nationality, domicile, citizenship, or place of registered seat (article 3, paragraph 9, of the Aarhus Convention and similar provisions in other instruments). This is specifically important for access to information, public participation and access to justice in the transboundary context.

The term *"public concerned"* is based on the concept of 'being affected' which is well known in some jurisdictions and was already employed in the Espoo Convention for the purpose of defining the public which should be allowed to participate in transboundary EIA. The definition does not require a person to show a legal interest to be a member of the "public concerned". For example, in cases where the area potentially affected by a proposed activity crosses an international border, members of the public in the neighbouring country might be members of the "public concerned" for the purposes of public participation provisions. To be part of the "public concerned" under the Aarhus Convention, NGOs need to promote environmental protection and meet relevant requirements under national law.

ACCESS TO INFORMATION

Access to full, accurate and up-to-date information is *an essential prerequisite* for effective public participation in decision-making. It can also stand alone, in the sense that the public may seek access to information for any number of purposes, not just to participate.

The concept of access to information includes so called *"passive" and "proactive"* access. The "passive" access to information concerns the right of the public to seek information from public authorities and the obligation of public authorities to provide information in response to a request. The second notion – "proactive" access to information – concerns the right of the public to receive information and the obligation of authorities to collect and disseminate information of public interest without the need for a specific request. Public authorities should hold environmental information in the public interest.

Access to information stands as the first pillar of the **Aarhus Convention**, which provides very detailed rules and standards in this area (articles 4 and 5). It is also present in the **Water Convention**, which requires that certain information, including water-quality objectives, permits and results of sampling and compliance checks, be available to the public for inspection free of charge, and requires Parties to provide members of the public with reasonable facilities for obtaining copies of such information (article 16). The **Protocol on Water and Health** contains a similar provision (article 10), which also requires that additional information be available in response to a request from a member of the public. The **Industrial Accidents Convention** obliges Parties to ensure that adequate information is given to the public in areas capable of being affected by an industrial accident arising out of a hazardous activity (article 9, para. 1). The **Espoo Convention** (notably, article 3, para. 8, and article 4, para. 2) and, in particular, its **Protocol on Strategic Environmental Assessment** (numerous provisions, but most importantly article 8, paragraph 2) have strong provisions for access to

information on planned activities, plans, programmes and, potentially, policies and legislation, and to related environmental information.

A number of basic rules to guarantee access to information that can be drawn from the UNECE Conventions are *applicable to the area of water management*.[133] To provide for effective access to information, it is important that States guarantee the right to information through adequate legislation. States should ensure that public authorities make information available to the public. Thus, all information relevant to the protection and sustainable use of waters, and other environmental information, should be made available to the public unless it falls within a finite list of exempt categories. As far as national legislation contains restrictions on access to environmental information, such exemptions should be clearly defined and construed narrowly, taking into account the public interest served by the disclosure and also whether the information relates to emissions into the environment.

The public should be *actively informed on specific occasions*, such as in cases of (the threat of) flooding, water pollution due to accidents, water scarcity and groundwater depletion, or if there is a danger to human health and safety.

In a *transboundary context*, where the public interest is served by the disclosure of information contained in working documents (documents in the course of completion) and comments thereon, riparian States and joint bodies for transboundary water cooperation should consider granting the public access to these documents. Riparian States and joint bodies are encouraged to publish specific information or documents on transboundary waters. Also, riparian States and joint bodies should grant access to the following information covering a wide spectrum, including:

(A) Conditions of the transboundary waters and results of monitoring thereof, including floods and ice drifts, as well as transboundary impact;
(B) Measures taken to prevent, control or reduce transboundary impact, including watersaving measures, and assessment of the effectiveness of these measures;
(C) Ecological restoration projects;
(D) Measures taken in the field of water-quantity management, including flood management, and the effectiveness of those measures;
(E) Water-quality objectives, and results of checking compliance with the water-quality objectives;
(F) Permits issued and the conditions to be met;
(G) Results of water effluent sampling;
(H) Results of checking compliance with permit conditions;
(I) Drafts of plans and programmes, including comments by NGOs.

Riparian States and joint bodies for transboundary water cooperation should facilitate access to meeting documents of the joint bodies and their subsidiary organs. As one of the means to inform the public, electronic forms of communication should be used, especially in a transboundary context.

PUBLIC PARTICIPATION

Public participation *enhances the quality and implementation of decisions* by giving the public an opportunity to express its concerns and by enabling public authorities to take due account of such concerns. Public participation under the UNECE environmental Conventions relies on access to information in order to ensure that the public can participate in an informed fashion, and also on access to justice — to ensure that participation takes place efficiently.

The **Aarhus Convention** devotes its second pillar to public participation (articles 6, 7 and 8). UNECE instruments adopted before the Aarhus Convention also include provisions on public participation. The **Espoo Convention** (article 2, paras. 2 and 6; article 4, para. 2) establishes that the assessment of proposed activities with a potentially significant transboundary environmental impact should take place with the participation of the public in the areas likely to be affected. It requires a Party of origin to notify the public of the affected Party (article 3) and to take due account of the comments submitted (article 6, para. 1). The **Industrial Accidents Convention** requires a Party within whose jurisdiction an industrial accident may occur to give opportunities for participation to the public in affected areas, without regard to borders (article 9, para. 2).

UNECE environmental instruments adopted after the Aarhus Convention directly refer to this Convention and follow its provisions. The **Protocol on Water and Health** takes note of the Aarhus Convention in its Preamble and includes the three Aarhus Convention pillars in its principles (article 5, para. 1). The Protocol explicitly provides for public participation in the establishment of targets for the standards to be maintained for protection against water-related disease and in the development of water management plans (article 6, paras. 2 and 5). The **SEA Protocol** also acknowledges the Aarhus Convention in its preamble. It includes public participation in the definition of SEA (article 2, para. 6) and provides for public participation in the screening and scoping of plans and programmes (article 5, para. 3, and article 6, para. 3). The Protocol sets out more detailed requirements for public participation in the SEA of plans and programmes (article 8).

There is no set formula for public participation; *at a minimum, public participation* requires (a) adequate, timely and effective notice; (b) adequate information, including access to all available information relevant to a decision-making procedure; (c) proper procedures including adequate time frames for public participation, allowing the public enough time to prepare for its participation in the decision-making as well as to be able to participate effectively "early" in the decision-making process; and (d) that appropriate account be taken of the outcome of public participation.

Public participation should include information, notification, dialogue, consideration and response. While the "public concerned" has stronger rights with respect to notification on environmental matters and examination of environmental information, any member of the public has the right to submit comments, information, analyses or opinions during the public

[133] For more information see UNECE/UNEP, "Water Management: Guidance on Public Participation and Compliance with Agreements" (2000); available from http://www.unece.org/env//water/publications/documents/guidance.pdf.

participation procedures on environmental matters via written submissions, or public hearings or enquiries with the applicant. Both the Aarhus Convention and the Espoo Convention oblige Parties to ensure that the decision maker takes *due account of the outcome of the public participation* procedures. Parties are obliged to inform the public of the decision taken, and the text of a reasoned decision is to be made accessible to the public.

The procedures for public participation — through the notion of "the public concerned" and in the light of the non-discrimination clauses mentioned above — include also, where appropriate, *the public across national borders*.[134] The Aarhus Convention specifically requires Parties to give notice to the public concerned, early in an environmental decision-making procedure, of the fact that the activity is subject to a national or transboundary EIA procedure (article 6, para. 2 (e)). The Espoo Convention includes a similar provision requesting the Party of origin to notify affected Parties "as early as possible and no later than when informing its own public about that proposed activity" (article 3, para. 1), therefore assuming that the public of the Party of origin is to be notified "as early as possible".

PUBLIC PARTICIPATION IN EIA AND SEA

The **Espoo Convention** sets out the following important aspects of public participation in transboundary EIA:

(a) Establishment of a national EIA procedure, including for proposed activities listed in appendix I, that permits public participation (article 2, para. 2);
b) The opportunity for public participation in the EIA procedure for both the public of the affected Party and the public of the Party of origin (article 2, para. 6);
c) Notification of the affected Party as early as possible and no later than when the Party of origin informs its own public about a proposed activity (article 3, para. 1);
d) Joint responsibility of the concerned Parties to ensure that the public of the affected Party in the areas likely to be affected is informed of their right to, and provided with possibilities for, making comments or objections on, the proposed activity (article 3, para. 8);
e) Joint responsibility of the Parties concerned for the distribution of the EIA documentation to the public of the affected Party in the areas likely to be affected (article 4, para. 2);
f) The requirement that, in the final decision on the proposed activity, the Parties ensure that due account is taken of the comments on or objections to the proposed activity from the public of the affected Party in the areas likely to be affected (article 6, para. 1).

The **SEA Protocol** includes "public participation and consultations" in the very definition of "strategic environmental assessment", which means the evaluation of the likely environmental, including health, effects, which comprises the determination of the scope of an environmental report and its preparation, the carrying out of public participation and consultations, and the taking into account of the environmental report and the results of the public participation and consultations in a plan or programme (article 2, para. 6). The Protocol covers plans and programmes in various sectors, including water, "which are likely to have significant environmental, including health, effects". The instrument prescribes procedures to be followed and requirements regarding the content of the assessment documentation. It refers specifically to the Aarhus Convention and requires the results of public participation procedures to be taken into account during the adoption of the plans and programmes.

For the preparation of plans and programmes, the **Aarhus Convention** also calls on Parties to "make appropriate practical and/or other provisions for the public to participate" and, for the preparation of policies relating to the environment, Parties are asked to "endeavour to provide opportunities for public participation" to the extent appropriate (article 7).

Under the **Aarhus Convention**, Parties should endeavour to involve the public in the development of *laws and normative acts*. Article 8 of the Convention incorporates some of the basic principles found in earlier provisions. For example, the reference to the "effectiveness" of public participation requires authorities to ensure that the basic conditions for public participation are provided. Also, the public should be involved at an early stage, while options are still open, so that the participation of the public can have a real impact on the draft laws, regulations and normative acts.

PUBLIC PARTICIPATION IN TRANSBOUNDARY COOPERATION

In addition to participation through EIA and SEA, the issue of public participation in *joint bodies for transboundary cooperation* is of great importance for proper implementation of the UNECE environmental Conventions, in particular the Water Convention.[135] Whereas earlier agreements which established joint bodies only stipulated their responsibilities regarding dissemination of information, many joint bodies for transboundary water cooperation have now accumulated considerable expertise and created a number of mechanisms to ensure active participation of NGOs and other stakeholders in their activities.

Some joint bodies establish working groups for cooperation with NGOs and other stakeholders. River forums and stakeholder conferences have become important mechanisms for public participation in joint bodies' activities. In recent years, joint bodies established by countries in Eastern Europe, the Caucasus and Central Asia have taken some steps towards improving access to information and stakeholder participation. In most cases, however, these are limited to access to information, and may take the form of press releases on the outcomes of sessions, provision of information upon request, maintenance of a website or the placing of certain information on the websites of participating governmental agencies. Participation of NGOs and other stakeholders in the activities of joint bodies in some cases exists as a non-formalized practice, such as inviting some NGOs to working group meetings or sessions of a joint body. Some joint bodies are discussing the

[134] See, for example, the findings and recommendations of the Compliance Committee of the Aarhus Convention on communication ACCC/C/2004/03 and submission ACCC/S/2004/01 with regard to compliance by Ukraine with its obligations in the case of the Bystroe deep-water navigation canal construction (ECE/MP.PP/C.1/2005/2/Add.3), para. 28.
[135] *River basin commissions*, supra note 89.

idea of establishing public boards with advisory functions. Lack of finances is often noted as one of the barriers to broadening access to information and public participation.

The experience of most progressive joint bodies in the field of information dissemination and public participation has been summarized in the UNECE/United Nations Environment Programme (UNEP) publication, "Water Management: Guidance on Public Participation and Compliance with Agreements".[136] The Guidance is a set of recommendations to apply the provisions of the Aarhus Convention to water management, including transboundary waters. Guidance with regard to public participation in joint bodies can also be drawn from the Almaty Guidelines on Promoting the Application of the Principles of the Aarhus Convention in International Forums.

Joint bodies established by the Riparian Parties should consider developing, to the extent of their capacity, clear and detailed procedures to ensure access to information for the public as a prerequisite for effective participation in the management and use of transboundary waters. Provisions to ensure public participation should also be provided. Joint bodies should be entrusted with the power to develop their own rules of procedure and other internal regulations (financial regulations, staff regulations, rules for observers, etc.), as necessary for their activities.

When transboundary cooperation has not yet progressed to the establishment of joint management institutions, there still are *a number of ways* that Riparian Parties can promote public participation in transboundary water cooperation. For example, riparian States should provide for public participation in the preparation and development of international water agreements. The development of international documents, plans and programmes for specific catchment areas should be open to public participation, including programmes for monitoring the conditions of transboundary waters.

At the *national level*, public participation in the preparation of plans, programmes and policies relating to water management at different levels of government should be ensured through the national legal system. The public should be informed about, and involved in, standard setting (e.g., on minimum quality standards for wastewater and emission standards). The procedures for the granting of permits (e.g., for groundwater withdrawal or discharge of wastewater) should provide for significant public information and public participation.

ACCESS TO JUSTICE

While access to justice provisions are mostly missing from other UNECE environmental instruments, the **Aarhus Convention** provides for an overarching framework for access to justice in environmental matters, including the water sector. Access to justice means that the public has the ability to go to court or another independent and impartial review body to ask for review of potential violations of its rights under the Convention and/or national laws relating to the environment. While making the distinction between judicial and administrative procedures, the Convention outlines certain general requirements imposed on all reviewing instances and procedures within the scope of the Convention. First, the access to justice procedures must be fair, equitable, timely and not prohibitively expensive. Second, they must provide adequate and effective remedies and be carried out by independent and impartial bodies. Third, information on administrative and judicial review procedures must be disseminated to the public, and the Parties are encouraged to establish appropriate assistance mechanisms to remove or reduce financial and other barriers.

PUBLIC PARTICIPATION IN TRANSBOUNDARY WATER MANAGEMENT
Key Messages

- Although the UNECE environmental instruments adopted prior to the Aarhus Convention contain less detailed provisions than it does in the areas of access to information, public participation and access to justice, they are nowadays increasingly interpreted and applied in the light of the concepts and principles of the Aarhus Convention. With regard to public participation in transboundary water management, the respective provisions of the UNECE Conventions are mutually complementary and should be applied as a single regulatory regime for participatory decision-making.
- Under the "non-discrimination clause" of the Aarhus Convention and several other UNECE instruments, the provisions on access to information, public participation and access to justice have transboundary applicability.
- Public participation forms an important part of EIA of proposed activities and SEA of plans and programmes.
- Public participation in joint bodies for transboundary cooperation is of utmost importance for proper implementation of UNECE Conventions, in particularly the Water Convention.
- The UNECE instruments oblige their Parties to take outcomes of public participation procedures into due account.

[136] Supra note 133.

3.17 Liability and Responsibility

"Liability", "responsibility", "compensation", "fault" and "the polluter pays principle" are among the issues which are often invoked in the political debates over the use of water resources in Central Asia. To ensure a constructive dialogue it is important that these concepts are properly understood and not misused in the countries of the region.

UNECE environmental Conventions contain provisions of a general character with regard to liability and responsibility. The **Water Convention** gives a general mandate for the Parties to support appropriate international efforts to elaborate rules, criteria and procedures in the field of responsibility and liability (article 7). Similarly, the **Industrial Accidents Convention** obliges the Parties to support appropriate international efforts to elaborate rules, criteria and procedures in the field of responsibility and liability (article 13). Although the **Aarhus Convention** does not provide for rules on liability and compensation, it explicitly guarantees access to information (article 4) for the public affected, which, inter alia, can help the victims to establish a causal link between the damage suffered and the damaging substance or activity. Moreover, the Aarhus Convention requests Parties to ensure that members of the public have **access to justice** (article 9). As UNECE Conventions are rather general with regard to civil liability and responsibility, these issues are governed, in many aspects, by **general international law**.

THE PROTOCOL ON CIVIL LIABILITY

In 2000, the tailings mine spill in Baia Mare, Romania, caused pollution by cyanide-laced wastewater (approximately 100,000 cubic metres of tailings water with an estimated 120 tons of cyanide and heavy metal load) of the Lapus-Tisza-Danube river system that affected the populations, environment and economy of the three basin States — Romania, Hungary and Serbia. This accident, which highlighted the shortcomings of the existing regimes on civil liability and the inadequacy of the legal remedies available to the victims of transboundary pollution, prompted the UNECE countries to negotiate the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the Water Convention and the Industrial Accidents Convention. The Protocol was formally adopted and signed at the "Environment for Europe" Ministerial Conference in Kyiv, Ukraine, on 21 May 2003. The Protocol, not yet in force, aims to provide for a comprehensive regime for civil liability and for adequate and prompt compensation for damage resulting from transboundary effects of industrial accidents on transboundary waters (see box 20).

The Protocol establishes the liability of the operator for damage caused by an industrial accident in the course of a hazardous activity, which means that damage due to chronic pollution is not covered (article 4). The Protocol contains definitions of the terms "industrial accident" and "hazardous activity". In respect of this last definition, annex I to the Protocol lists the threshold quantities of hazardous substances, the presence or excess of which is required for an activity to be considered hazardous. With the limitations explained below, the Protocol provides for the *strict liability of the operator*, once the fact which gives rise to liability occurs. No fault is required to be proven for the liability to arise. That is to say that the operator is liable even if he proves that he has complied with all the appropriate due diligence standards on the matter. The operator can be exonerated of his liability only in cases of *force majeure* which are specifically defined under international law and listed in the Protocol. They include an armed conflict, a natural phenomenon of inescapable consequences, or the situation in which the harmful conduct was the result of compliance with a compulsory measure of a public authority. Similarly, the liability of the operator is excluded if the damage was due wholly to the wrongful and intentional conduct of a third party. If, on the other hand, the injured person has by his or her own fault contributed to the damage, the compensation may be reduced. The fact that the Protocol deals exclusively with the establishment of strict liability for the operator does not mean that fault-based liability is excluded (article 5). The issues of fault-based liability are left to the domestic legislation of each State Party to the Protocol.

"Damage" under the Protocol includes loss of life or personal injury, as well as loss or damage to property. It also includes environmental damage in the sense of costs of measures for the reinstatement of the impaired transboundary waters and the cost of response measures (article 2, para. 2). The former are the measures which aim to reinstate or restore damaged or destroyed components of transboundary waters to their original condition or — and this is a relevant novelty — to introduce, where appropriate, the equivalent of these components into the transboundary waters. Response measures, on the other hand, are those which aim at preventing, minimizing or mitigating possible loss or damage or arranging for environmental clean-up. Damage also includes loss of income directly deriving from an impairment of a legally protected interest in any use of the transboundary waters for economic purposes.

The strict liability of the operator *is limited to certain amounts*, which are specified in annex II to the Protocol. No such limits exist in respect of fault-based liability. Claims for compensation must be brought within three years from the date that the claimant knew or ought reasonably to have known of the damage caused and of the person liable. In any case, claims cannot be brought after 15 years from the date of occurrence of the industrial accident (article 10). Of paramount importance is article 11 of the Protocol, which secures the effective application of the Protocol in case the operator is unable to cover his strict liability

Box 20. Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters

The Civil Liability Protocol gives individuals affected by the transboundary impact of industrial accidents on transboundary waters (e.g., fishermen or operators of downstream waterworks) a legal claim for adequate and prompt compensation.

The Protocol makes companies liable for accidents at industrial installations, including tailings dams, as well as during transport via pipelines.

Physical damage, damage to property, loss of income, the cost of reinstatement and response measures are all covered by the Protocol.

The Protocol sets the financial limits of liability depending on the risk of the activity, i.e., the quantities of the hazardous substances that are or may be present and their toxicity or the risk they pose to the environment. To cover this liability, companies have to establish financial securities, such as insurance or other guarantees.

The Protocol aims to ensure that there is no discrimination with regard to victims: victims of the transboundary effects cannot be treated less favourably than victims from the country where the accident has occurred.

Moreover, by encouraging companies to take measures to prevent damage they will henceforth be liable for, the Protocol will help to prevent accidents from happening in the first place and limit their adverse effects on people and the environment.

The financial limits of liability and the minimum amount of financial securities have been agreed by all the actors of the negotiation process for the Protocol, including the insurance sector, and are therefore realistic

obligations deriving from the Protocol. Namely, the *operator is obliged to be insured* for amounts not less than the minimum limits for financial securities which are specified in annex II.

Claims for compensation according to the Protocol may be brought *before the courts of a Party where the accident occurred, or the damage was suffered or the defendant has his or her habitual residence or, if the defendant is a company or other legal person, where it has its principal place of business, its statutory seat or central administration* (article 13, para. 1). Article 8, paragraph 3, of the Protocol adds that the provisions of the Protocol and measures adopted by the Parties necessary to implement the Protocol, including the procedural rules, shall be applied among the Parties *without discrimination based on nationality, domicile or residence*.

STATE RESPONSIBILITY

By adopting the Protocol, Parties to the Water Convention and the Industrial Accidents Convention fostered the development of rules, criteria and procedures in the field of liability and made a significant contribution to international efforts in this area. With regard to State responsibility, the Protocol on Civil Liability expresses the general principle that each State bears international responsibility, as provided for by the general rules of international law or by explicit treaty commitments made by a given State (article 12).

The issues concerning international State responsibility have been dealt with by the International Law Commission — a body mandated by the United Nations General Assembly to promote the progressive development of international law and its codification. In 1949 ILC selected State responsibility among the topics which it considered suitable for codification. It divided the issue into two topics: State responsibility for international wrongful acts and international liability for injurious consequences arising out of acts not prohibited by international law.

In 2001, ILC adopted the Draft Articles on Responsibility of States for Internationally Wrongful Acts. The Draft Articles formulate, by way of codification and progressive development, the basic rules of international law concerning the responsibility of States for their wrongful acts. The Draft Articles deal with the requirements for the international responsibility of a State to arise and the legal consequences for the responsible State of its internationally wrongful act, in particular as they concern cessation and reparation. They also address implementation of the international responsibility of a State, i.e., identifying the State or States which may react to an internationally wrongful act and specifying the modalities by which this may be done, including, in certain circumstances, by the taking of countermeasures.[137]

Also in 2001, ILC adopted the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities,[138] while in 2006, it adopted the Draft Principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities.[139] The Draft Principles address the scenario in which, even if the relevant State fully complies with its prevention obligations under international law, accidents or other incidents may nonetheless occur

[137] See Draft Articles on Responsibility of States for Internationally Wrongful Acts, with commentaries, *Yearbook of the International Law Commission*, 2001, vol. II, Part Two, as corrected, p. 26.
[138] International Law Commission, Report of the fifty-third session (2001), A/56/10, p. 146.
[139] International Law Commission, Report of the fifty-eighth session (2006), A/61/10, p. 106.

and have transboundary consequences that cause harm and serious loss to other States and their nationals. The Draft Principles try to provide a regulatory framework to avoid that those who suffer harm or loss as a result of such incidents involving hazardous activities are left to carry those losses, but may obtain prompt and adequate compensation. The Draft Principles establish the means by which this may be accomplished. The United Nations General Assembly has commended the Draft Articles on Responsibility of States for Internationally Wrongful Acts, the Draft Articles on Prevention of Transboundary Harm from Hazardous Activities and the Draft Principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities, to the attention of Governments of United Nations Member States.

THE POLLUTER PAYS PRINCIPLE

The general idea that the injurious consequences of harm should be shifted to the source of harm finds support in two basic principles of environmental law, namely the polluter pays principle and the precautionary principle. The polluter pays principle means that the polluter should bear the cost of preventing damage to the environment. The objective of this principle is to channel the costs of prevention and reparation of environmental damage to the person/entity which is in the best position to prevent such damage and internalize the costs of pollution damage. The related precautionary principle requires that where there are threats of damage to the environment, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[140]

The polluter pays principle is referred to in several UNECE instruments. The Water Convention offers a basic definition of the polluter pays principle as one "by virtue of which costs of pollution prevention, control and reduction measures shall be borne by the polluter" (article 2, para. 5).

As for the content and scope of application of the polluter pays principle, it should be emphasized that the principle has a *primarily domestic nature*, i.e., it regulates primarily domestic relationships rather than transboundary ones. The polluter pays principle is a regulatory tool for domestic public administrations to internalize the cost of pollution prevention, control and reduction with regard to routinely conducted polluting activities. It therefore *does not provide legal grounds to claims for compensation* between Parties, while having a preventive *rationale*. Also, the polluter pays principle *does not give rise to compensation claims for damage caused by private operators to individuals* for the loss of property, health, life, economic opportunity, etc. It is for national legal systems to afford the victims of pollution access to appropriate remedies.

The trigger for the application of the principle is the presence of a potential or actual polluting activity, irrespective of whether such pollution is lawful or not. Accordingly, the polluter pays principle cannot be seen as a licence to pollute. The more one pollutes, the more one is liable to bear the costs. On that score, the polluter pays principle not only saves public funds, but also *provides a strong economic incentive for polluters — usually private operators — to invest in prevention* and treatment technologies and to carry out their activities with a high degree of care. In addition to the preventive focus of the principle, the polluter pays principle also covers the control and reduction of *accidental pollution*. In this context, the polluter pays principle aims at ensuring that the final costs of pollution control and reduction are borne by the polluter. This aim can also be achieved through cost recovery by the public authorities when control and remediation measures are undertaken by the authorities, e.g., in the case of emergency response measures.

LIABILITY AND RESPONSIBILITY
Key Messages

- In general, UNECE Conventions do not address the rules on State liability and responsibility in detail; these issues are left to be governed by the general international law.
- The Protocol on Civil Liability to the Water and Industrial Accidents Conventions aims to provide for a comprehensive regime for civil liability and for adequate and prompt compensation for damage resulting from the transboundary effects of industrial accidents on transboundary waters. The Protocol makes companies liable for accidents at industrial installations. To cover this liability, companies have to establish financial securities, such as insurance or other guarantees.
- The issues of State responsibility have been addressed in the codification work of ILC. ILC adopted Draft Articles on Responsibility of States for Internationally Wrongful Acts, Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, and Draft Principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities.
- One of the key principles in UNECE environmental Conventions — the polluter pays principle — aims to internalize the cost of pollution prevention and control and therefore stimulate the reduction of pollution. This principle has primarily a domestic nature and does not provide legal grounds to claims for compensation for water pollution between States.

[140] *Liability and Compensation Regimes Related to Environmental Damage: Review by UNEP Secretariat*, United National Environment Programme. Nairobi, 2002.

3.18 Dispute Settlement

According to Article 2, paragraph 3, of the United Nations Charter, all Members of the United Nations are to settle their international disputes by peaceful means in such a manner that international peace and security, and justice, are not endangered. The obligation of peaceful settlement of disputes covers any inter-State dispute irrespective of its subject matter or its gravity, as it is clearly enunciated in the Manila Declaration on the Peaceful Settlement of International Disputes, adopted in 1982 by the United Nations General Assembly.[141] Water disputes provide no exception to this rule.

All UNECE Conventions under review contain provisions on dispute settlement. Namely, these are: article 22 of the Water Convention; article 21 of the Industrial Accidents Convention; article 13 of the LRTAP Convention; article 15 of the Espoo Convention; and article 16 of the Aarhus Convention. All of these provisions refer specifically to disputes arising between two or more Parties about the interpretation or application of the respective Conventions. Moreover, all of the above provisions, except for the corresponding article in the LRTAP Convention, are formulated almost identically.[142] It can thus be established that the provisions on dispute settlement of the UNECE Conventions are mutually compatible and can be interpreted in a uniform way.

DISPUTE SETTLEMENT PROVISIONS UNDER UNECE CONVENTIONS

Since the procedures for dispute settlement in the UNECE Conventions are largely alike, they can be analysed on the basis of article 22 of the **Water Convention**. This article echoes the principle contained in Article 2, paragraph 3, and Article 33 of the United Nations Charter, which provide for the obligation of States to settle their disputes peacefully, while ensuring the freedom of choice of the means of dispute settlement. Article 22, paragraph 1, of the Water Convention provides for the obligation to try to settle the dispute through "negotiation or by any other means acceptable to the parties". This obligation can be said to be encompassed by the general *principle of cooperation*, codified in very advanced and mandatory terms under the Water Convention, among others in article 2, paragraph 6, on the obligation of cooperation, and in article 9, on the conclusion of bilateral and multilateral agreements and the establishment of joint bodies.

Although the "other means of dispute settlement acceptable to the parties to the dispute" are not enumerated in article 22, paragraph 1, according to Article 33 of the United Nations Charter, as well as the Manila Declaration on the Peaceful Settlement of International Disputes, such *other means* are mediation, inquiry, conciliation, arbitration, judicial settlement or recourse to regional arrangements or agencies, or other peaceful means of the choice of the Parties, including good offices.[143] Parties have to conduct these procedures *in good faith*, taking into account the legitimate interests of the other Party, so that the dispute settlement procedure is not deprived of any meaning, and should try to avoid any action which might aggravate the dispute.

The provision under review is flexible enough so as to allow the parties to the dispute to agree on such peaceful means as may be appropriate to the circumstances and the nature of their dispute. However, if they do not agree on a specific means, article 22, paragraph 1, imposes an obligation to seek a solution through negotiation, which appears thereby as the default means of settlement of the Water Convention. This is due to the fact that negotiation is the means of settlement most commonly used in international practice, as well as the most effective and flexible one.

The absence of any express reference in article 22 of the Water Convention to other forms of dispute settlement, except for negotiation, and the lack of even an encouragement to refer the dispute to joint bodies, should be appreciated against the background of the obligation under the Water Convention to establish joint bodies for bilateral and multilateral cooperation, whose tasks under the Convention cover the widest range of prevention and joint management measures that have a direct impact on dispute avoidance.

With respect to a dispute that could not be resolved in accordance with paragraph 1, article 22, paragraph 2 provides for an "opt in" formula for compulsory arbitration or adjudication (settlement through the courts). Like similar provisions in the other environmental Conventions, article 22 of the Water Convention does not provide for compulsory settlement of disputes through arbitration or adjudication, unless a Party

[141] General Assembly resolution 37/10.

[142] The LRTAP Convention is less explicit with regard to adjudication and arbitration as means of dispute settlement. In addition, there are some minor differences in the dispute settlement provisions under several Protocols to the LRTAP Convention, namely the Protocol on Further Reduction of Sulphur Emissions (1994), the Protocol on Heavy Metals (1998), and the Protocol on Persistent Organic Pollutants (1998) and the Protocol to Abate Acidification, Eutrophication, and Ground-level Ozone (1999). These Protocols provide for an additional means of settlement — a conciliation commission.

[143] "Good offices" are a means of dispute settlement by which a third party seeks to facilitate contact and dialogue between the disputing parties. The third party exercising good offices, differently from mediation, does not submit proposals for the settlement of the dispute. Often, good offices, with the consent of the disputing parties, evolve into mediation.

explicitly agrees to be bound by the respective procedure. Under paragraph 2, a Party, when signing, ratifying, or acceding to the Water Convention, or at any time thereafter, may declare in writing to the Depositary that, for a dispute not resolved in accordance with paragraph 1, it accepts adjudication by the ICJ or arbitration, or both of these means of dispute settlement, as compulsory.[144] In case the disputing Parties have accepted both means of dispute settlement referred to in paragraph 2, the dispute may be submitted only to the ICJ, unless the Parties agree otherwise.

Therefore, arbitration and adjudication are not compulsory under the Convention, but only optional, as in general international law. The *optional nature of judicial and arbitral dispute settlement* under the Water Convention — just as in the large majority of international MEAs — should be considered in the light of the obligation to establish joint bodies for bilateral and multilateral cooperation under its article 9, as such bodies largely exercise functions close to dispute prevention and management.

An application to the ICJ or to the arbitration procedure may be made only by a Party which has made to the Depositary (the United Nations Secretary General) a declaration of acceptance of one or both of those means of settlement (Water Convention, article 22, para. 2) and only against a Party which has accepted the same obligation. The arbitration procedure is conducted in accordance with the procedure described in annex IV to the Water Convention, while adjudication before the ICJ is conducted in accordance with its Statute and Rules, as elaborated by the court.

Whereas the Water Convention presently does not have a **mechanism to support implementation and compliance**, such mechanisms are available under other UNECE Conventions (see chapter 4). Such mechanisms are the best means to address problems of implementation and application of a Convention's provisions, which may fall short of giving rise to a legal dispute. The establishment of mechanisms to support implementation and compliance is also based on the assumption that arbitral and judicial means of dispute settlement — mechanisms of an adversarial nature — are frequently not entirely appropriate and may also be ineffective with regard to MEAs. At the same time, the non-confrontational, non-judicial and consultative mechanisms of the kind carried out by implementation and compliance bodies, if resorted to at a sufficiently early stage, may serve as a useful means of dispute prevention. They may also serve, at a later stage, as an important tool of dispute management.

INQUIRY PROCEDURE UNDER THE ESPOO AND THE INDUSTRIAL ACCIDENTS CONVENTIONS

The inquiry commissions under the **Espoo Convention and the Industrial Accidents Convention** represent specific means of dispute settlement. While the dispute settlement procedures under article 15 of the Espoo Convention and article 21 of the Industrial Accidents Convention are applied to cases where a dispute arises between two or more Parties about the interpretation or application of the respective Conventions, the inquiry procedure under these two Conventions is designed to assist in solving the situation where the Parties cannot agree whether there is likely to be a significant adverse transboundary impact of a particular proposed activity (under the Espoo Convention), or whether an activity is hazardous in the meaning of the Convention (under the Industrial Accidents Convention).

[144] Very few Parties to the Water Convention have made such declarations.

Under the **Espoo Convention** an inquiry procedure is provided for by article 3, paragraph 7, and appendix IV. When a Party considers that it would be affected by a significant adverse transboundary impact of a proposed activity listed in appendix I, and when no notification has taken place, the affected Party may initiate discussions with the Party of origin. If no common view is reached, any of the Parties may ask an inquiry commission in accordance with the provisions of appendix IV to give advice on the matter. Therefore, the ultimate goal of submitting the question to an inquiry commission is to seek advice on the likelihood of significant adverse transboundary impact of particular proposed activity.

Similarly, under Article 4 of the **Industrial Accidents Convention**, for the purpose of undertaking preventive measures and setting up preparedness measures, the Party of origin shall identify hazardous activities within its jurisdiction and ensure that affected Parties are notified of any such proposed or existing activity. The Parties concerned shall, upon the initiative of any such Party, enter into discussions on the identification of those hazardous activities that are, reasonably, capable of causing transboundary effects. If the Parties concerned do not agree on whether such an activity is a hazardous activity, any Party may submit that question to an inquiry commission for advice, in accordance with the provisions of annex II to the Convention.

Elements of the inquiry procedures enshrined in appendix IV to the Espoo Convention and annex II to the Industrial Accidents Convention are largely formulated in the same manner. In many respects, they resemble the respective provisions on the arbitration procedure under the said Conventions. Conceptual differences are, certainly, to be found in the nature of both bodies, namely: the arbitral tribunal renders an award which it is mandatory for the parties to the dispute to comply with, while the inquiry commission transmits a final opinion which is advisory in nature.

The first inquiry procedure under the Espoo Convention was initiated by Romania seeking advice on the likelihood of a significant adverse transboundary impact of the Danube-Black Sea Deep Water Navigation Canal in the Ukrainian Sector of the Danube Delta. The Inquiry Commission's opinion was transmitted to the parties to the inquiry procedure and to the Convention secretariat in July 2006, containing a unanimous conclusion that there would likely be a significant adverse transboundary impact. As one of the consequences of the inquiry procedure, Ukraine and Romania entered into consultations regarding this particular planned activity.

DISPUTE SETTLEMENT
Key Messages

- UNECE Conventions provide a sufficient and effective set of means for dispute settlement which are common in international law. Their respective provisions in that regard are formulated largely in the same manner.
- Under UNECE Conventions, Parties are free to choose means of dispute settlement acceptable to them. Negotiation is a means of settlement, specifically referred to in the UNECE Conventions. However, Parties are also free to use other means, provided for under Article 33 of the United Nations Charter, such as mediation, inquiry, conciliation, arbitration, judicial settlement or recourse to regional arrangements or agencies, or other peaceful means of the choice of the Parties, including good offices. UNECE environmental Conventions also provide for an "opt in" formula for compulsory arbitration or adjudication.
- Tasks of joint bodies for bilateral and multilateral cooperation, especially under the UNECE Water Convention, usually cover the widest range of prevention and joint management measures, which contributes to conflict prevention and the avoidance of disputes.
- The non-confrontational, non-judicial and consultative mechanisms to support implementation and compliance, if resorted to at a sufficiently early stage, may serve as a useful means of dispute prevention. They may also serve, at a later stage, as an important tool for dispute management.


SERBIA

Chapter 4

UNECE ENVIRONMENTAL CONVENTIONS:

Reporting, Implementation and Compliance

UNECE environmental Conventions place a strong emphasis on implementation. In addition to numerous guidance documents developed under the UNECE Conventions in order to guide and facilitate implementation, the reporting procedures as well as mechanisms to support implementation and compliance are among the key tools used to strengthen implementation. These tools are also an important feature which distinguishes UNECE Conventions from a number of other multilateral agreements on environment and development.

REPORTING

Periodic reporting contributes to the effective functioning of UNECE Conventions and their Protocols. It provides a basis for evaluating the effectiveness of the legal instrument; it is a means for sharing information among Parties; and it also serves as a basis for reviewing Parties' implementation of and compliance with their obligations under the Convention or Protocol.[145] Reporting also helps promote implementation by increasing public awareness and by identifying gaps in implementation and compliance, and therefore stimulating specific measures directed at improving implementation.

With the exception of the Water Convention, all the UNECE environmental Conventions, as well as the Water Convention's Protocol on Water and Health, have reporting procedures.

According to the **Protocol on Water and Health**, every three years, Parties shall review the progress made in achieving the targets it has set in accordance with the Protocol and submit, for circulation to the other Parties, a summary report of the data collected and evaluated and the assessment of the progress achieved. The Meeting of the Parties reviews the progress in implementing the Protocol on the basis of such reports.

The pilot reporting exercise under the Protocol on Water and Health took place in 2009–2010. In 2010, the second Meeting of the Parties reviewed the results of this exercise and adopted the *Guidelines on the setting of targets, evaluation of progress and reporting*.[146]

Under the **LRTAP Convention**, Parties have an obligation to report annually on their emissions of polluting substances under the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) established under the Convention. The data on emissions reported by the Parties is collected and made publicly available through an online database, the EMEP Centre on Emission Inventories and Projections, hosted by the Austrian Environment Agency. Parties to the LRTAP Convention are also obliged to report to the Convention's Implementation Committee on their implementation of the protocols thereto. On the basis of a questionnaire, Parties send information to the secretariat, which summarizes the information and periodically reports on it to the Implementation Committee. The Implementation Committee reports annually to the Executive Body of the Convention, which makes decisions upon recommendations by the Committee. The latest report of the Imple-

[145] Guidelines for Strengthening Compliance with and Implementation of Multilateral Environmental Agreements in the ECE region (UNECE Guidelines) (ECE/CEP/107), available from http://www.unece.org/env/documents/2003/ece/cep/ece.cep.107.e.pdf.
[146] Supra note 46.

mentation Committee shows that almost all Parties to the protocols comply with the reporting obligations under them. Once every four years the secretariat publishes a compilation of the information submitted by the Parties (the "Strategies and Policies for Air Pollution Abatement" Reviews).

Initially, the **Espoo Convention** included no reporting requirements. However, the reporting system under this Convention has been gradually developed. At their second meeting (2001), Parties initiated the first review of implementation of the Convention. On the basis of Parties' responses to a questionnaire, the secretariat drafted the review of implementation, which was adopted by the Meeting of the Parties in 2004. At their third meeting (2004), the Parties initiated the second review of implementation.[147]

At their third meeting, the Parties also amended the Espoo Convention by adding, inter alia, article 14 bis, "Review of compliance", which introduced regular reporting and the compliance procedure. The amendment has not yet come into force. In the meantime, the fourth session of the Meeting of the Parties launched the third review of implementation based on the reports by Parties for presentation at the fifth session of the Meeting of the Parties in 2011. Responses to the third review questionnaire on implementation of the Espoo Convention for the period 2006–2009 were received from 41 out of 44 States Parties; while 2 Parties were not expected to report as they had joined the Convention after the reporting period.[148] The Espoo Convention's Implementation Committee is tasked with examining the reviews of implementation to identify compliance issues, both general (i.e., common) and specific (i.e., relating to individual Parties).

The **Industrial Accidents Convention** stipulates that the Conference of the Parties shall review the Convention's implementation and requires Parties to periodically report on implementation (articles 18 and 23). The Conference of the Parties established a Working Group on Implementation to lead this process. By 2011, five reporting cycles had already taken place. On the basis of individual country reports submitted to the secretariat, the Working Group compiled five reports on the implementation of the Convention, all of which were endorsed by the Conference of the Parties at the respective sessions. The fifth report by the Working Group on Implementation showed that, while one Party was late in submitting its national implementation report, only one Party had not managed to submit its report at all. Moreover, three non-Parties had submitted reports.[149] Through a password-protected website, the reports are made available to the competent authorities designated by individual Parties.

The **Aarhus Convention** requires Parties to keep under continuous review the implementation of the Convention on the basis of regular reporting (article 10, para. 2). The Meeting of the Parties established a reporting mechanism whereby each Party is requested to submit a report to each session of the Meeting of the Parties on the legislative, regulatory and other measures taken to implement the Convention, and their practical implementation. An important feature of the Aarhus Convention reporting mechanism is that reports submitted by Parties, Signatories and other States should be prepared through a transparent and consultative process involving the public. Also, international, regional and non-governmental organizations engaged in programmes or activities on the implementation of the Aarhus Convention may provide the secretariat with reports on their programmes or activities and lessons learned. National implementation reports are submitted to the secretariat, which prepares a synthesis report for each session of the Meeting of the Parties. Under the third reporting cycle (2011), 38 national implementation reports were submitted out of 44 reports due.[150]

According to article 17, paragraph 2, of the **Protocol on PRTRs**, the Meeting of the Parties to the Protocol shall keep under continuous review the implementation and development of the Protocol on the basis of regular reporting by the Parties. At its first session (2010), the Meeting of the Parties adopted the format for reporting and requested each Party to submit to the secretariat in advance of the second ordinary session of the Meeting of the Parties a report on the legislative, regulatory or other measures taken to implement the provisions of the Protocol, and on the practical implementation of these measures at the national level. In advance of each subsequent ordinary session, Parties must review their reports and submit to the secretariat new information and, where available, a consolidated national implementation report. The secretariat then prepares a synthesis report for each ordinary session of the Meeting of the Parties, summarizing the national implementation reports and identifying significant trends, challenges and solutions.

SUPPORT TO IMPLEMENTATION AND COMPLIANCE

Implementation and compliance refer to State activities aimed at achieving the goals and objectives of the treaty regime. Compliance is an integral component of implementation and refers to a State's behaviour in terms of its conformity with treaty commitments.[151] The term "implementation" of a treaty refers to the activity that its Parties have to undertake in order to "apply" and, therefore, to "comply with" its provisions. It refers, inter alia, to all relevant laws, regulations, policies and other measures and initiatives that Parties adopt and/or take to meet their obligations under a treaty.[152]

The term "non-compliance" is used, especially in relation to MEAs, to indicate the non-performance of treaty obligations, as a subtle terminological alternative to the term *breach* used

[147] Review of implementation of the Convention: draft decision IV/1 on review of implementation (ECE/MP.EIA/2008/12), available from http://live.unece.org/fileadmin/DAM/env/documents/2008/eia/ece.mp.eia.2008.12.e.pdf.
[148] Review of implementation for the period 2006–2009, available from http://live.unece.org/env/eia/implementation/review_implementation_2010.html.
[149] Fifth report on the implementation of the Convention (2008–2009) (ECE/CP.TEIA/2010/3).
[150] See the synthesis report on the status of implementation of the Convention (ECE/MP.PP/2011/7); more information on implementation of the Convention is available from http://www.unece.org/env/pp/reports_implementation_2011.htm.
[151] Geneva Strategy and Framework for Monitoring Compliance with Agreements on Transboundary Waters. Outcome of the joint UN/ECE-UNEP project with the Netherlands as lead country (MP.WAT/2000/5, annex I, para. 3).
[152] See *Guidelines on Compliance with and Enforcement of Multilateral Environmental Agreements (UNEP Guidelines)* (UNEP(DEPI)/MEAs/WG.1/3, annex II, paragraph 9 (b)) and UNECE Guidelines, supra note 149, para. 4 (b).

under the Vienna Convention on the Law of Treaties, or to the terms *violation* and *infringement*. The expression "non-compliance" is meant to recognize that lack of performance of treaty obligations may not necessarily involve a claim for assessment of a breach and may not be due to the outright unwillingness to comply with a given environmental rule by the State concerned, but rather to its inability to do so.

The reasons for the inability to fully implement and apply, and, eventually, to comply with, an international obligation may be various. In particular, a given obligation may be particularly complex — from a conceptual or technical point of view — or not sufficiently detailed or determined in its content. Accordingly, States may face special difficulties in identifying the precise normative content of a given obligation, or they may lack the necessary technical — including legal and administrative, or technological — capacity to implement it effectively.

Institutional and procedural arrangements for facilitating, reviewing and promoting implementation and compliance on a multilateral and cooperative basis are increasingly being provided under MEAs. International guidelines on implementation and compliance issues concerning such agreements have been adopted within the UNEP[153] and the UNECE[154] frameworks. Having specific regard to implementation, application and compliance issues arising out of the water agreements, the Geneva Strategy and Framework for Monitoring Compliance with Agreements on Transboundary Waters[155] was produced in 1999 within the framework of the Water Convention, setting out principles and guidelines for the establishment of compliance promotion and review procedures for legal instruments negotiated under, or in connection with, the Water Convention. Both the Guidelines and the Geneva Strategy consider the advisability of the establishment of *permanent procedures and bodies* addressing implementation and/or compliance with MEAs and provide guidance thereto.

The objective, nature and principles of mechanisms and procedures to facilitate and support implementation and compliance usually indicate their primarily *facilitative purposes with respect to implementation and application of Conventions, as well as their non-adversarial, non-confrontational and non-judicial and consultative nature*. The "non-confrontational nature" means that the procedure should not set a stage for a confrontation between the Party initiating the procedure and the concerned Party/Government. The "non-judicial nature" means that the implementation/compliance review procedure is not a trial. The "consultative nature" means that the procedure aims at assisting Parties on problems of implementation and compliance. The ultimate goal of the mechanisms and procedures to facilitate and support implementation and compliance is to facilitate and assist Parties in resolving problems, rather than condemning Governments.

Most importantly, given the transboundary scope of almost all the UNECE environmental Conventions, mechanisms and procedures to facilitate and support implementation and compliance, if applied at a sufficiently early stage, serve as a useful means of *dispute prevention*.

Mechanisms and procedures to facilitate and support implementation and compliance have been set up for most of the multilateral environmental instruments adopted within the UNECE framework.

[153] See UNEP Guidelines, supra note 152.
[154] See UNECE Guidelines, supra note 145.
[155] Geneva Strategy, supra note 151.

In 1997, the Executive Body of the **LRTAP Convention** established the Implementation Committee for the review of compliance by the Parties with their obligations under the protocols to the LRTAP Convention.[156] The Committee consists of representatives of nine Parties to the Convention, which are among Parties to at least one protocol to the Convention, each elected for a term of two years. The Committee's work focuses on three main areas: it periodically reviews compliance with Parties' reporting obligations; it considers any submission (both "self-submissions" and "Party-to-Party submissions") or referral (by the Convention secretariat) of possible non-compliance by an individual Party with any of its obligations under a given protocol; and it carries out in-depth reviews of specified obligations in an individual protocol at the request of the Executive Body. The Implementation Committee is not a decision-making body. It meets twice a year and reports annually to the Executive Body, which makes decisions upon recommendations by the Committee. The Executive Body may, upon consideration of a report and any recommendations of the Committee, decide by consensus upon measures of a non-discriminatory nature to bring about full compliance with the protocol in question, including measures to assist a Party's compliance. From its establishment in 1997 until 2011, the Committee has considered cases of possible non-compliance by 12 Parties.

In 2002, the Meeting of the Parties to the **Aarhus Convention** established the Compliance Committee for the review of compliance by the Parties with their obligations under the Convention.[157] Article 15 of the Convention clearly indicates that the mechanism shall be non-confrontational, non-judicial and consultative in its nature and shall allow for public involvement. The Committee consists of nine members serving in their personal capacity, elected by the Meeting of the Parties. The compliance mechanism may be triggered in four ways: Party-to-Party submission; self-submission; referral by the secretariat; and communication from a member of the public. In addition, the Committee may examine compliance issues on its own initiative and make recommendations; prepare reports on compliance with or implementation of the provisions of the Convention at the request of the Meeting of the Parties; and monitor, assess and facilitate the implementation of and compliance with the reporting requirements under the Convention. The Committee reports on its activities at each ordinary meeting of the Parties and makes recommendations. However, it is the Meeting of the Parties which may, upon consideration of a report and any recommendations of the Committee, decide upon appropriate measures to bring about full compliance with the Convention. As of August 2011, the Committee has already considered some 60 communications from members of the public and 1 Party-to-Party submission.

In 2001, the Meeting of the Parties to the **Espoo Convention** established the Implementation Committee for the review of compliance by the Parties with their obligations.[158] The objective of the Committee is to assist Parties to fully comply with their obligations under the Convention. The Committee consists of eight Parties and has the power to: consider self-submissions and Party-to-Party submissions (the latter having been initiated on four occasions to date); review periodically compliance by the Parties with their obligations under the Convention on the basis of the information provided in their reports; prepare the reports with a view to providing assistance to the Party concerned (e.g., by clarifying and assisting in the resolution of questions, providing advice and recommendations relating to procedural, technical or administrative matters and providing advice on the compilation and communication of information); and prepare, at the request of the Meeting of the Parties, a report on compliance with or implementation of specified obligations in the provisions of the Convention. The Implementation Committee may also "become aware" of possible non-compliance by a Party and may begin a "Committee initiative". NGOs and the secretariat have each furnished information to the Committee on several occasions to attract the Committee's attention to possible cases of non-compliance by a Party, but it is not an automatic trigger for a Committee initiative: in deciding to act upon its own initiative, the Committee should take into account a number of factors, including the availability of Committee time and resources. Again, the Committee reports on its activities to the Meeting of the Parties which may, upon consideration of a report and any recommendations of the Committee, decide upon appropriate general measures to bring about compliance with the Convention and measures to assist an individual Party. With the entry into force of the Protocol on Strategic Environmental Assessment in 2010, the Committee is now also entrusted to deal with issues of implementation and compliance for the Protocol.

Recently, new mechanisms to support implementation and compliance have been established under the Protocol on Water and Health to the Water Convention and the Protocol on PRTRs to the Aarhus Convention.

In 2007, the Meeting of the Parties to the **Protocol on Water and Health** established the Compliance Committee to facilitate, promote and aim to secure compliance with the obligations under the Protocol.[159] The Committee consists of nine members, elected by the Meeting of the Parties to the Protocol. The Committee has the power to: consider any submission (including self-submissions and Party-to-Party submissions), referral (by the secretariat) or communication (from members of the public) relating to specific issues of compliance; prepare, at the request of the Meeting of the Parties, a report on compliance with or implementation of specific provisions of the Protocol; and monitor, assess and facilitate the implementation of and compliance with the reporting requirements of the Protocol. The Committee may examine compliance issues and make recommenda-

[156] Decision 1997/2 (ECE/EB.AIR/53, annex II). Currently, the status of the Committee is governed by decision 2006/2 on "Implementation Committee, its structure and functions and procedures for review".
[157] Decision I/7, adopted by the Meeting of the Parties at its first meeting in Lucca, 21–23 October 2002 (ECE/MP.PP/2/Add.8).
[158] See decision II/4 on "Review of compliance" (2001) (MP.EIA/2001/4). Currently, the Implementation Committee's structure, functions and procedures are governed by the appendix to decision III/2 (MP.EIA/2004/3) and the operating rules (decision IV/2, annex) (ECE/MP.EIA/10).
[159] See Decision I/2 on "Review of compliance" (2007) (ECE/MP.WH/2/Add.3 and EUR/06/5069385/1/Add.3).

tions or take measures if and as appropriate. The Committee reports on its activities at each ordinary meeting of the Parties. Upon consideration of the report and any recommendations of the Committee, the Meeting of the Parties to the Protocol may decide upon non-confrontational, non-judicial and consultative measures. The Committee has not considered any cases yet.

In 2010, the Meeting of the Parties to the **Protocol on PRTRs** to the Aarhus Convention established the Compliance Committee for the review of compliance by the Parties with their obligations under the Protocol.[160] The Committee consists of nine members, serving in their personal capacity. The Committee has the power to: consider any submission (including 'self-submission' and 'Party-to-Party submission'), referral (by the Secretariat) or communication (from members of the public); at the request of the Meeting of the Parties prepare a report on compliance with or implementation of provisions of the Protocol; monitor, assess and facilitate the implementation of and compliance with the reporting requirements the Protocol; take measures, as appropriate; carry out any other functions that may be assigned to it by the Meeting of the Parties. The Committee reports on its activities at each ordinary meeting of the Parties. Upon consideration of the report and any recommendations of the Committee, the Meeting of the Parties to the Protocol may decide upon non-confrontational, non-judicial and consultative measures. The Committee has not considered any cases yet.

The **Industrial Accidents Convention** did not expressly provide for the establishment of a mechanism to review implementation and compliance. However, the Conference of the Parties at its first meeting established the Working Group on Implementation as a subsidiary body, which meets at least once before each meeting of the Conference of the Parties. The Working Group on Implementation has a maximum of 10 members nominated from amongst representatives of the Parties to the Convention. The main responsibilities of the Working Group on Implementation are: to monitor the implementation of the Convention and to report on its implementation to the Conference of the Parties; to review national implementation reports and prepare an overall report on the implementation of the Convention; to assist the Bureau in facilitating the implementation of or ratification by UNECE member countries of the Convention; and to carry out other tasks assigned by the Conference of the Parties. Five reporting cycles have already taken place under the Industrial Accidents Convention and, hence, the Working Group on Implementation has compiled five reports on the implementation of the Convention, all of which were endorsed by the Conference of the Parties at the respective sessions.

In 2009, the Meeting of the Parties to the **Water Convention** at its fifth session decided to consider at its next session in 2012 a proposal on an institutional and procedural mechanism to facilitate and support implementation and compliance with the Water Convention.

REPORTING, IMPLEMENTATION AND COMPLIANCE
Key Messages

- Nearly all UNECE environmental Conventions and Protocols have established a system of periodic reporting by their Parties in order to evaluate progress, stimulate exchange of experience and strengthen implementation. The vast majority of Parties to UNECE Conventions closely follow the reporting requirements.
- Reporting systems (format, methodology, etc.) under UNECE Conventions continuously evolve on the basis of lessons learned, best practices and new challenges and needs.
- UNECE Conventions place a great emphasis on implementation. Under most of them, mechanisms to support implementation and compliance have already been established. Parties to the Water Convention are progressing towards taking such a step.
- Although there are differences between the existing mechanisms to support implementation and compliance under the different UNECE Conventions, the objective, nature and principles of such mechanisms indicate their primarily facilitative purpose with respect to the implementation and application of the Conventions, as well as their non-adversarial, non-confrontational and non-judicial and consultative nature.
- In transboundary settings, mechanisms to support implementation and compliance under the different UNECE Conventions play an important dispute prevention role.

[160] Decision on review of compliance (2010) (ECE/MP.PRTR/2010/2/Add.1).

Chapter 5

UNECE ENVIRONMENTAL CONVENTIONS:

Assistance and Capacity-building

UNECE environmental Conventions place a great emphasis *on assistance in implementation*. The Meeting (or Conference) of the Parties under each UNECE Convention has the task of keeping under review the implementation of the respective Convention with a view to strengthen the ability of Parties to achieve the goals of the instrument, i.e., with a view to providing needed assistance in implementation.

Under all the UNECE environmental Conventions, Parties take part in the working groups and other subsidiary bodies, such as the task forces and expert groups, established by the Meeting (or Conference) of the Parties. These groups, assisted by the secretariat, address technical, legal, institutional, economic and financial issues related to the implementation of a Convention. Such *institutional frameworks* assist Parties in implementation through (a) exchange of experience, (b) capacity-building, and (c) development of soft-law guidelines and recommendations. Capacity-building seminars, awareness-raising trainings, pilot projects, advisory services by the UNECE Regional Adviser on Environment and assistance programmes and guidance instruments tailored to specific subregions are regularly applied under the UNECE Conventions as specific tools and means in this work.

Apart from the general "collective" assistance in implementation, some Conventions provide for the legal obligation of individual Parties to facilitate exchange of technology and technical assistance to achieve the purposes of the Convention. For example, the Industrial Accidents Convention obliges its Parties, consistent with their laws, regulations and practices, to facilitate the exchange of technology for the prevention of, preparedness for and response to the effects of industrial accidents (article 16, para. 1). The Water Convention lays down a similar obligation for Riparian Parties — to facilitate exchange of best available technology, particularly through the promotion of: the commercial exchange of available technology; direct industrial contacts and cooperation, including joint ventures; the exchange of information and experience; and the provision of technical assistance (article 13, para. 4). The Protocol on Water and Health provides the requirement for international support for national action (article 14). The implementation of such obligations often takes the form of provision of support by individual Parties for projects that raise the institutional and/or technological capacity of other Parties to implement their own obligations.

Non-Parties to the UNECE environmental Conventions, including in Central Asia, take part in many activities under the umbrella of these Conventions. They often become the beneficiaries of capacity-building activities and participate in the projects of the UNECE Conventions. However, non-Parties have a limited capacity to initiate a new area of work for a Convention, and do not participate in the decision-making of Meetings (or Conferences) of the Parties and their subsidiary bodies.

Each UNECE Convention has developed its own tools to assist implementation. The **Water Convention**, through the project Capacity for Water Cooperation in Eastern Europe, the Caucasus and Central Asia,[161] provides multidisciplinary training to experts from the countries of Eastern Europe, the Caucasus and Central Asia. Another programme — the programme of pilot projects launched by the Meeting of the Parties in 2009 — assists Parties in implementing the Convention and making use of its guidance documents in three areas: climate change adaptation in transboundary basins; joint monitoring and assessment; and payments for ecosystem services to support IWRM.[162] The Water Convention also provides assistance to Parties and non-Parties in developing new transboundary water agreements and establishing or strengthening joint bodies for transboundary water cooperation — these efforts currently take place in the Dniester River Basin, in the Kura-Aras Basin and in the Drin River Basin. The National Policy Dialogues on IWRM, facilitated by the UNECE secretariat — an implementation tool of the EU Water Initiative in the countries of Eastern Europe, the Caucasus and Central Asia, — promote the application of the Water Convention's principles in 10 countries of this subregion.[163]

In Central Asia, a priority subregion for the work under the Water Convention, a number of projects are implemented in accordance with the Convention's work programme. This includes: (a) the project, "Capacity-building for cooperation on dam safety in Central Asia", which facilitates the development of regional cooperation and national legislation on the safety of dams, reservoirs and other hydro-technical installations; (b) the project, "Regional dialogue and cooperation on water resources management in Central Asia", which aims to strengthen institutional and legal frameworks for regional water cooperation; (c) the Chu and Talas Rivers project, which facilitated the establishment by Kazakhstan and Kyrgyzstan of the bilateral Commission and currently supports further broadening of cooperation to improve the joint management of two rivers; (d) the CAREWIB project, which aims to improve the availability and exchange of information in the water and environmental sectors in Central Asia; and (e) the "Water quality in Central Asia" project, which aims to establish common principles for the measurement, exchange of information and joint assessment of water quality and to facilitate the development of more efficient national policies.[164]

Under the **Protocol on Water and Health**, the Parties to the Protocol at their first meeting in 2007 established a unique tool — the Ad Hoc Project Facilitation Mechanism[165] to help mainstream international support for national action. The Project Facilitation Mechanism includes the Ad Hoc Project Clearing House, which is an open-ended body under the Meeting of the Parties to the Protocol with members from Parties and non-Parties (both from donor and recipient countries), as well as from global and regional financial institutions, relevant international organizations, competent international NGOs and international foundations with cooperation programmes of recognized importance for water and health. The mechanism identifies priority activities of non-infrastructure interventions in the area of water supply and sanitation, and advocates funding of specific proposals in this area.

The **Espoo Convention and its SEA Protocol** pay specific attention to subregional cooperation and capacity-building to strengthen contacts between the Parties and other actors, including States outside the UNECE region. Subregional and national workshops serve as major tools to assist implementation.[166] Also, several guidance instruments were developed to assist in implementation of the Convention in selected subregions (such as the *Guidelines on Environmental Impact Assessment in a Transboundary Context in the Caspian Sea Region* (2003)[167] and the Guidelines on Environmental Impact Assessment in a Transboundary Context for Central Asian Countries (2007))[168]. Apart from development of the Guidelines, in Central Asia, capacity-building activities are organized within the programme of national EIA workshops in Central Asia and Azerbaijan, and also with support of the project "Regional dialogue and cooperation on water resources management in Central Asia".[169]

The Espoo Convention also uses pilot projects to assist countries in implementation. Examples include a transboundary EIA pilot project on a new copper and gold mining operation, with the participation of Kazakhstan and Kyrgyzstan, and a pilot implementation project on the application of the Convention to a proposed hydroelectric power plant on the Neman River, with participation of Belarus and Lithuania.

Under the Espoo Convention and its SEA Protocol, specific efforts are applied to facilitate the exchange of good practice. This is done through seminars on specific issues relevant for implementation, which are organized back to back with other meetings under the Convention. These good practice seminars focused on the legislation and procedures for implementation of the Convention in individual countries, projects with long-range transboundary impacts and climate change.[170] In addition, the Espoo Convention provides assistance to its Parties and non-Parties in developing new agreements (e.g., multilateral agreement among the countries of South-Eastern Europe for implementation of the Convention (Bucharest Agreement, 2008)). The subregional initiative on SEA, proposed by Armenia, Belarus and the Republic of Moldova at the Belgrade "Environment for Europe" Ministerial

[161] Capacity for Water Cooperation Project, see http://live.unece.org/env/water/cwc.html.
[162] Future programme of pilot projects under the Convention (ECE/MP.WAT/2009/5), available from http://live.unece.org/fileadmin/DAM/env/documents/2009/Wat/mp_wat/ECE_MP_WAT_2009_5_E.pdf.
[163] For more information on the National Policy Dialogues, see http://www.unece.org/env//water/npd.htm.
[164] For more information on Water Convention projects in Central Asia, see http://live.unece.org/env/water/centralasia.html.
[165] See supra note 49.
[166] More information on subregional activities under Espoo Convention is available at http://live.unece.org/env/eia/subregions.html.
[167] These Guidelines were developed by the five Caspian littoral States with support from the UNEP, UNECE, the European Bank for Reconstruction and Development and the Caspian Environment Programme. Available from http://live.unece.org/env/eia/publications19.html.
[168] These Guidelines were noted by the fourth session of the Meeting of the Parties (ECE/MP.EIA/WG.1/2007/6), available from http://live.unece.org/env/eia/subregions/central_asia.html#CAguide.
[169] More information on activities of the Espoo Convention in Central Asia is available from http://live.unece.org/env/eia/subregions/central_asia.html.
[170] For more information on exchange of good practice seminars under the Espoo Convention, see http://live.unece.org/env/eia/activities/activityeiaexchange.html.

Conference in 2007, and joined by Azerbaijan and Georgia, has become an important instrument to promote the ratification and application of the SEA Protocol.

In addition, the Espoo Convention's Implementation Committee oversees country-specific performance reviews to provide legal assistance to Parties in implementing the Convention, and now the SEA Protocol. This function has now been supplemented by pre-accession legislative assistance for future Parties to the Convention and its Protocol, which Uzbekistan, among others, has requested.

Under the **Industrial Accidents Convention**, an Assistance Programme[171] was adopted by the Conference of the Parties at its third meeting (2004). The Programme was launched with the aim of assisting countries from South-Eastern and Eastern Europe, the Caucasus and Central Asia to address the challenges they faced in implementing the Convention, and in particular to support the establishment of necessary policies under the Convention. The Assistance Programme is composed of two phases: a preparatory and an implementation phase. During the preparatory phase, countries need to implement basic tasks and to report on their implementation when receiving fact-finding missions. During the implementation phase, countries having successfully implemented the basic tasks can participate in assistance activities aimed at implementing more complex tasks under the Convention. In Central Asia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan participate in the Assistance Programme. Currently, these four countries are in the Programme's second phase, which allows intensification of needs-driven assistance on industrial safety. Such needs-driven assistance may include training sessions (e.g., on the evaluation of safety reports or the identification of hazardous activities), pilot projects and other assistance activities developed in cooperation with beneficiary countries. Efforts to strengthen implementation are also undertaken through seminars and workshops discussing complex issues of prevention, preparedness and response. These activities are organized outside of the Assistance Programme.

Under the **Aarhus Convention and its Protocol on PRTRs**, thematic regional and subregional workshops are organized to assist in implementation.[172] The web-based tools — the Aarhus Clearinghouse for Environmental Democracy and the global portal PRTR.net — serve to promote access to knowledge and facilitate exchange of experience across countries, organizations and partners.[173] Apart from this, the Aarhus Convention and its Protocol on PRTRs largely benefit from the organization of capacity-building activities on these two instruments by many international and national organizations and partners. This is why regular coordination meetings take place under the umbrella of the Convention, in order to discuss progress in and coordinate future capacity-building activities with regard to the implementation of the Convention, its Protocol and Principle 10 of the Rio Declaration on Environment and Development. These meetings bring together UNECE, UNEP, the United Nations Institute for Training and Research, the European Commission, the European Investment Bank, the Organization for Security and Cooperation in Europe (OSCE), the Regional Environmental Center for Central and Eastern Europe, environmental NGOs under the umbrella of the European ECO Forum, and others to address capacity-building needs and possi-

[171] More information on the Assistance Programme is available from http://live.unece.org/env/teia/assistance.html.
[172] For details of capacity-building activities under the Aarhus Convention, see http://live.unece.org/env/pp/oa.html.
[173] The Aarhus Clearinghouse for Environmental Democracy is available at http://aarhusclearinghouse.unece.org/; for the PRTR Global Portal, see http://www.prtr.net/.

ble responses. Since 2002, Aarhus Centres and Public Environmental Information Centres have been established in several countries, including Albania, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan and Tajikistan, with support from OSCE. The Aarhus Centres provide a forum for Government officials to meet with members of environmental NGOs to build cooperative approaches in order to tackle environmental issues.[174]

Under the **LRTAP Convention**, in 2004–2008, the project "Capacity Building for Air Quality Management and the Application of Clean Coal Combustion Technologies in Central Asia" (CAPACT Project), financed from the United Nations Development Account, was implemented to strengthen the capacity of air quality management institutions in Kazakhstan to implement the LRTAP Convention and its protocols, as well as to promote the application of appropriate clean coal combustion technologies for heat and power generation from solid fuels. Since this project concluded, the Convention's Executive body recognized furthered cooperation with the countries of Eastern Europe, the Caucasus and Central Asia as a key priority. A new Coordinating Group was established, under the leadership of the Russian Federation, with a focus on assisting the countries of the subregion in furthering their participation under the Convention.[175] In parallel, the Russian Federation in cooperation with Belarus and Kazakhstan, launched a joint project with the aim of implementing and ratifying the three most recent protocols under the Convention (namely the POPs, Heavy Metals and Gothenburg Protocols).

It is important to emphasize that all UNECE Conventions develop their activities aimed at assistance in implementation and capacity-building *based on the actual needs* of countries, and do their best to better respond to requests for assistance, from both Parties and non-Parties. This spirit of cooperation and mutual assistance may be best illustrated by the example of the development in 2008–2009 by the Parties to Water Convention of the Guide to Implementing the Convention following the request for clarification of the legal and technical implications of accession by two non-Parties — Georgia and the former Yugoslav Republic of Macedonia.

Assistance to implementation under all UNECE Conventions is closely linked with the *UNECE Environmental Performance Review (EPR) Programme*. The national EPRs address, among other issues, participation in MEAs, including UNECE Conventions, and measures needed to strengthen implementation. The EPR Programme plays an important role in identifying areas where assistance in implementation of UNECE Conventions is most needed.

An area of growing importance is the *inter-Convention cooperation* based on the synergies between the Conventions as well as on capacity-building needs of the countries involved.

ASSISTANCE AND CAPACITY-BUILDING
Key Messages

- The institutional frameworks of the UNECE environmental instruments place great emphasis on implementation. They assist Parties in implementation through exchange of experience, capacity-building and development of soft-law guidelines and recommendations.
- Each UNECE environmental Convention has developed its own tools to assist implementation. Capacity-building seminars, awareness-raising trainings, pilot projects, advisory services, assistance programmes and guidance instruments tailored to specific subregions are set up under the UNECE Conventions.
- The UNECE Conventions develop their activities aimed at assistance in implementation and capacity-building based on the actual needs of countries, in order to respond to requests for assistance from Parties, as well as non-Parties.
- More and more UNECE Conventions pay specific attention to inter-Convention cooperation, also in capacity-building activities.

[174] Information on the Aarhus Centers is available at http://live.unece.org/env/pp/acintro.html.
[175] The Coordinating Group on the promotion of action towards implementation of the Convention in Eastern Europe, the Caucasus and Central Asia was officially established by the Executive Body at its twenty-eighth session (ECE/EB.AIR/106, para. 83 (a)).

CONCLUSIONS AND RECOMMENDATIONS

The current legal framework for inter-State cooperation for the management and use of transboundary water resources in Central Asia — based on the 1992 Agreement on cooperation in joint management, use and protection of water resources of inter-State sources, the 1999 Agreement on the status of the International Fund for Saving the Aral Sea (IFAS) and its organizations, and other binding agreements, as well as semi-formal arrangements and documents of recommendatory character — is often assessed as being fragmented. Some of the subregional instruments on water management no longer satisfy all Central Asian countries, and some instruments may not always be complied with. Central Asia would undoubtedly benefit from an authoritative overarching legal framework for water management and transboundary water cooperation, accepted by all five States. While the rules of international customary law and selected soft-law instruments could be applied to govern the relations of Central Asian States on the protection and management of water resources, they are often differently interpreted by Central Asian countries.

The UNECE environmental instruments are an authoritative and coherent legal framework — in other words, common "rules of the game" — which could be applied as an appropriate overarching legal framework for water management and transboundary water cooperation in Central Asia. The UNECE Conventions have been implemented for more than a decade by other UNECE countries. Their institutional infrastructure promotes region-wide and subregional cooperation, information sharing, exchange of experience and technical assistance, as well as providing help in accession and implementation. The collective body of experience, embodied in the Meetings/Conferences of the Parties and their subsidiary institutions, is a guarantee against biased interpretations of their provisions. The diversity of parties to the UNECE environmental instruments demonstrates their usefulness for all countries, regardless of the level of social and economic development or the availability and quality of water resources.

In the 20 years since its adoption, the Water Convention — the central UNECE instrument for water management and transboundary water cooperation — has been the basis for many bilateral and multilateral transboundary water agreements across the UNECE region and for the work of numerous joint bodies for transboundary water cooperation.

However, it should be well understood that the UNECE environmental instruments themselves do not offer "ready-made" solutions to specific problems; rather, their implementation ensures continuous cooperation of States under common legal frameworks, towards agreed objectives, and with support from their institutional mechanisms. Such cooperation ultimately leads to finding solutions to specific problems at the local, national and transboundary levels.

THE WAY AHEAD

Central Asian countries are encouraged to use the UNECE environmental instruments and benefit from their tools and mechanisms.

UNECE environmental instruments also offer many opportunities for non-Parties to prepare for accession and implementation. Central Asian States that are not Parties to an UNECE instrument can, among others, invite awareness missions and events to be organized by the respective Conventions and Protocols, participate in the capacity-building programmes and activities under these environmental instruments, and attend meetings under them. Diagnostic studies, assessment of national legislation and cost-benefit analyses can also be initiated as instruments to inform the decision-making processes when considering accession.

Although UNECE environmental instruments represent a coherent framework, step-by-step accession to individual instruments is reasonable and practical, with accession to the whole system as a long-term goal.

The capacity and understanding of Central Asian countries regarding international water law — including international treaty law and international customary law — and its application need to be strengthened. In particular, it is important to achieve the appropriate understanding of the provisions and principles of the UNECE Water Convention. Central Asian States should be fully aware of the balanced approach of the Water Convention, based on equality and reciprocity, which offers benefits and places similar demands on upstream as well as downstream countries.

Central Asian States should improve their cooperation on transboundary waters to prevent and control significant transboundary impacts, strengthen environmental protection, promote sustainable and equitable use of water resources and prevent differences and disputes. Such cooperation should also address issues which present risks to security, e.g., ageing dams and other water infrastructure, or tailings management facilities.

The subregional institutional and legal frameworks for water cooperation in Central Asia need to be improved and better enforced. As a first step, measures could be taken to strengthen the legal basis of IFAS and its institutions — a task already given to the Executive Committee of IFAS and Central Asian Governments by the Heads of the five Central Asian States at the IFAS Summit in April 2009. The experience of the Water Convention and other UNECE instruments in the field of institutional arrangements for transboundary cooperation could greatly benefit this process.

Notification and consultations among Central Asian countries on planned projects and activities are prerequisites for cooperation and conflict prevention and should become a common practice in this subregion. Specific provisions regulating notification and consultations spelled out in the UNECE Conventions could be used for these purposes. Pilot projects, including those under the auspices of the Espoo and Water Conventions, are important tools to promote such practices. Consultations should also be the primary tools to address daily issues and existing activities which tend to provoke tension among countries of the region (e.g., reservoir regimes).

Central Asian States are to adhere to peaceful means of dispute settlement for all differences, controversies and disputes in the management of water resources in the subregion. International law offers a wide spectrum of means for dispute settlement, also spelled out in the UNECE environmental instruments.

Step-by-step involvement of Afghanistan into regional cooperation on water resources should start as soon as possible, in order to implement a basin approach to the management of water resources and to prevent differences over water use. Possible future steps and directions could include the development of cooperation at the multilateral level with all Aral Sea Basin countries and/or with all Amu Darya co-riparians, as well as at the bilateral level with Tajikistan, Turkmenistan and Uzbekistan. Some softer forms of cooperation (cooperation on technical aspects, cooperation at the expert level, joint trainings, observer status of Afghanistan in regional structures) could be attempted as starting points.

It is of the utmost urgency that the amendments to the Water Convention enter into force, as this will open new perspectives for cooperation of Central Asian countries with neighbouring Afghanistan, the Islamic Republic of Iran, and the People's Republic of China, as well as nearby Mongolia.


Aral Sea

STRENGTHENING WATER MANAGEMENT AND TRANSBOUNDARY WATER COOPERATION IN CENTRAL ASIA: the Role of UNECE Environmental Conventions

The shrinking of the Aral Sea — one of the greatest man-made environmental disasters — has affected the livelihoods and health of millions of people in Central Asia. It is a shocking example of the disastrous consequences of the unsustainable use of water resources. Today, the efficient and sustainable management of available water resources in the five countries of Central Asia — Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan — is essential and should be a priority in the context of regional political, economic and environmental cooperation.

Faced with the challenges of finding long-term, mutually acceptable and sustainable solutions for cooperation over shared water resources, the countries of Central Asia need to develop their inter-State relations on the basis of international law and best practices in the management and protection of water resources and transboundary cooperation. This being said, solid legal frameworks and a great body of experience are offered by the UNECE environmental conventions, in particular by the Convention on the Protection and Use of Transboundary Watercourses and International Lakes — an effective legal framework fostering transboundary water cooperation all over the UNECE region.

This publication aims to strengthen the understanding and application of the UNECE environmental instruments in the countries of Central Asia, and shows the value of these instruments as an appropriate overarching legal framework for water management and transboundary water cooperation in the subregion.

Strengthening Water Management and Transboundary Water Cooperation in Central Asia: the Role of UNECE Environmental Conventions also demonstrates the synergies between the UNECE environmental instruments, thus providing useful information for States, international partners, non-governmental organizations and academia, including those outside of the Central Asia subregion.

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