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Advancing Dam Safety in Central Asia: The Contribution of the UNECE Water Convention¹

Bo Libert and Iulia Trombitcaia*

1. Introduction

For quite some time dam safety has been an area of work and active involvement of the United Nations Economic Commission for Europe (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*.² The Recommendations focus primarily on measures to be taken at the national level. However, they also 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 amongst basin States.

Large dams represent a very important segment of the water management infrastructure in Central Asia. According to the classification of the International Commission on Large Dams (ICOLD), out of the more than 1,200 dams in the region, 110 are large dams. Many of these dams are located in the basins of transboundary rivers such as the Amu Darya, the Syr Darya, the Ili and the Irtysh.

Most of the large dams and associated reservoirs were constructed in the mountainous upper reaches of the Kyrgyz and Tajik Soviet Republics in the 1950s-1970s to accumulate the flow of rivers during the non-irrigation season. The major dams also provide hydropower. The highest dam in the world, the Nurek Dam, a 300-m-high rockfill dam, is located on the Vakhsh River, a tributary of the Amu Darya, in Tajikistan. At the same time, irrigation systems were developed on millions of hectares of land in the lower reaches, i.e. in the Uzbek, Kazakh and Turkmen Soviet Republics.

In Kyrgyzstan and Tajikistan, new major hydropower stations are being planned, one example being the Rogun hydropower station³ in Tajikistan on the Vakhsh River. With a 335-m high-rockfill dam and a water volume of 13.8 km³, Rogun is designed to have the installed capacity of 3.6 MW. In Kyrgyzstan, the Kambarata-1 hydropower station on the Naryn River is planned to be 275 m high and have a water volume of 4.65 km³. The projected capacity is 1.9 MW.

But most of the dams in Central Asia were built 40 to 50 years ago, and due to limited resources for their maintenance and sometimes an inadequate national legal framework and institutions for their safe operation, there are risks of accidents. With a couple of exceptions there are also no established procedures for notification of co-basin countries in the case of accidents or emergency situations. With dams on the transboundary rivers crisscrossing the region, the failure of a dam could have disastrous consequences in densely populated downstream regions and countries.

¹ This article is devoted to the memory of Timur Kamalov who passed away on 26 March 2013. Timur Kamalov was head of the State Inspection on Control and Supervision of the Technical Condition and Safe Operation of Large and High-Security Waterworks of the Republic of Uzbekistan 2002-2010 and played a central role for the initiation and implementation of the work described in this article.

* Secretariat, United Nations Economic Commission for Europe. The views expressed in the article are those of the authors and do not necessarily represent the views of the United Nations or its Member States.

² 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.

³ Data on Rogun, Kambarata and other dams in the region can be found in Dam safety in Central Asia: Capacity-building and regional cooperation, Water Series No. 5, UNECE, Geneva, 2007.

A recent accident of the Kyzyl-Agash Dam in the Almaty province of Kazakhstan has contributed to a sense of urgency. The dam failure took place in a dam located outside the village of Kyzyl-Agash. On 11 March 2010, the dam burst, flooding the village. At least 43 people were killed, an additional 300 people were injured, and over 1,000 residents were evacuated from the village. In conditions of high volumes of rain and melting snow, badly maintained infrastructure was the main cause of the disaster.

Dam safety as a concept goes beyond measures to prevent a ‘dam failure’ and includes broadly speaking measures to achieve safe operation of dams. This includes such safety objectives as to control the release of damaging discharges downstream of the dam, to restrict the likelihood of events that might lead to a loss of control over the stored volume and the spillway and other discharges, to mitigate through on-site accident management and/or emergency planning the consequences of such events if they were to occur.⁴ Achieving safe management of reservoirs and ensuring that population downstream is fully informed⁵ also falls under the dam safety objectives. A holistic approach – which considers dams and reservoirs as subsystems of large complex physical systems including catchments, dams, appurtenances, slopes and river beds, junctions and environment – is often advocated in the efforts to increase dam efficiency and safety.⁶

In addition to these basic considerations, new challenges, first and foremost of which is climate change, bring other dimensions to the issue of dam safety. The 2009 Guidance on water and adaptation to climate change, endorsed by the Meeting of the Parties to the 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), highlights the vulnerability to climate change of water infrastructure, since this infrastructure was designed on the assumption of unchanging climatic conditions.⁷ The vulnerability of dams, the need for respective adaptation measures and the re-evaluation of dam safety in the changing hydrological regime is getting increased attention in the national communications on climate change submitted by Parties to the United Nations Framework Convention on Climate Change.⁸ The Guidance document ‘River Basin Management in a Changing Climate’, published by the European Commission in 2009 as a contribution to Common Implementation Strategy for the Water Framework Directive, further highlights the role of dams in adaptation to climate change, including flood risk management, and describes efforts to address the vulnerability of existing dams to climate change.⁹

Terrorism is another new challenge, which requires dam safety to be placed high on the agenda. Efforts to prevent infrastructure from being targeted in a terrorist attack have taken place in most parts of the world.

⁴ David S. Bowles, Francisco L. Giuliani, Desmond N.D. Hartford, J.P.F.M. (Hans) Janssen, Shane McGrath, Michel Poupart, David Stewart, Przemyslaw A. Zielinski, ICOLD Bullentin on Dam Safety Management, Dams – Securing Water for Our Future, IPENZ Proceedings of Technical Groups 33/2 (LD).

⁵ ICOLD Code of Ethics 2006, para.2.4.

⁶ M.Mauro, G.Curto, S.Giunta, I. Melisenda Giambertoni, R.Jappelli, M.Cassara, D. Di Ferro, C.Gambino, M.Loria, F.Piazza, A.Catalano, V.Pascucci, Holistic approach to dam safeguard and reservoir operation in Sicily, in Dams and Reservoirs, Societies and Environment in the 21st Century, Berga et al (eds.), 2006 Taylor and Francis Group, London, pp.69-79.

⁷ Guidance on water and adaptation to climate change, ECE/MP.WAT/30, UNECE (2009), p.69.

⁸ See e.g. responses by Finland and Romania in SUBMISSION BY GERMANY ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES. Subject: Nairobi Work Programme on impacts, vulnerability, and adaptation to climate change, Information on approaches, strategies, practices and technologies for Adaptation

http://unfccc.int/files/adaptation/sbsta_agenda_item_adaptation/application/pdf/eu_app_22_may_to_be_inserted_in_misc_doc.pdf; Sweden’s Second National Communication on Climate Change, UNFCCC p.114

<http://unfccc.int/resource/docs/natc/swenc2.pdf>; Sweden’s Third National Communication on Climate Change, UNFCCC p.149 <http://unfccc.int/resource/docs/natc/swenc3.pdf>; Finland’s Third National Communication on Climate Change, UNFCCC p.21, 147 <http://unfccc.int/resource/docs/natc/finnc3.pdf>.

⁹ Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance document No.24, River Basin Management in a Changing Climate, Luxemburg: Publications Office of the European Union, 2009, pp. 88-90.

The overarching dam safety objective is to protect people, property and the environment from the harmful effects of misoperation or failure of dams and reservoirs.¹⁰ Ensuring the safety of hydraulic structures includes a set of measures of legal, institutional and technical nature aimed at minimizing the risk of incident and failure. Such measures also involve continuous stimulation and application of progressive methods in design, construction, operation, maintenance, and surveillance of dams. National regulatory frameworks for dam safety have been developed in many countries - some rely on specific dam safety legislation, others deal with dam safety as one aspect in more general legislation dealing with water, dams, energy or natural resources.¹¹

Work to compile and study relevant information on past incidents of inadequate performance and dam failures and to develop approaches and methodologies in the area of dam safety has been going for the last decades in the framework of the ICOLD, starting from the ICOLD report on ‘Deterioration of Dams and Reservoirs’ of 1984. Additionally, in 1987 ICOLD published Dam Safety Guidelines.¹²

2. Dam safety: major obligations under UNECE environmental conventions

There are a number of issues regarding dam safety that are primarily regulated by international law. This is not surprising taking into account the large number of river basins in the world are transboundary basins. Dams built on transboundary rivers are potentially the source of transboundary impact. In some cases, dams are built and later operated by riparian countries together.

There are few international legal instruments, especially at global and regional level, which directly address dam safety. However a number of international legal frameworks are, to a greater or lesser degree, relevant to construction and maintenance of dams and set up specific rights and obligations in the area of dam safety.

The general principles and norms of international environmental law are of importance for dam safety. First of all, this refers to the responsibility of States not to cause damage to the environment of other States or areas beyond national jurisdiction – a counterpart of the State’s sovereignty over natural resources and the cornerstone of international environmental law. This general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States, is reflected in the Principle 21 of the Stockholm Declaration.

Secondly, the principle of prevention obliges States to take action in order to prevent and minimize possible environmental damage from dams. This principle requires States to take action at an early stage before the damage to the environment has actually occurred by means of appropriate regulatory, administrative, technical measures and authorization regimes mostly at the domestic level. The precautionary principle further obliges States to take action to protect the environment from serious or irreversible damage even in the circumstances of scientific uncertainty. For dam safety, where high costs may often prevent achieving the greater degree of safety, the precautionary principle may be of direct relevance.

The UNECE Water Convention¹³ does not explicitly mention dams. However its cornerstone obligations — to prevent, control and reduce transboundary impact, to ensure equitable and reasonable use, and to cooperate — 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, it obliges Riparian

¹⁰ David S. Bowles, Francisco L. Giuliani, Desmond N.D. Hartford, J.P.F.M. (Hans)Janssen, Shane McGrath, Michel Poupart, David Stewart, Przemyslaw A. Zielinski, ICOLD Bulletin on Dam Safety Management, Dams – Securing Water for Our Future, IPENZ Proceedings of Technical Groups 33/2 (LD), p.3.

¹¹ Bradlow, Daniel D.; Palmieri, Alessandro; Salman, Salman M. A. 2002. Regulatory frameworks for dam safety : a comparative study. Law, justice and development series. Washington, D.C. : The World Bank. <http://documents.worldbank.org/curated/en/2002/10/2058274/regulatory-frameworks-dam-safety-comparative-study>, p.58.

¹² Dam Safety Guidelines, ICOLD bulletin 59 (1987), p.13.

¹³ The overview of how UNECE conventions are to be applied with regard to dams and dam safety is adapted from: Strengthening Water Management and Transboundary Water Cooperation in Central Asia: the Role of UNECE Environmental Conventions, UNECE, Geneva, December 2011.

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’, and requires Riparian Parties to hold consultations at the request of any such Party.¹⁴ 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 Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) includes ‘large dams and reservoirs’ in appendix I.¹⁵ This means that when a large dam and/or reservoir become the ‘proposed activity’ under the meaning of the Espoo Convention,¹⁶ the Party of origin (the Party which plans an activity) has the following major obligations. First, it must ensure that an Environmental Impact Assessment (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 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.¹⁷ 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)¹⁸. The development of a national strategy or action programme to develop hydropower could fall under these provisions of the Protocol.

The Convention on the Transboundary Effects of Industrial Accidents (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’.¹⁹ 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, of the Industrial Accidents Convention, referred only to water dams while the Protocol on Civil Liability clearly defined its scope to include tailings dams.²⁰ 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’) which has become a common principle also in national legislation on dam safety.

The Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (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 public participation, with respect to decisions on whether to permit such proposed activities.²¹

¹⁴ Convention on the Protection and Use of Transboundary Watercourses and International Lakes (17 March 1992, Helsinki), 1936 UNTS 269. Articles 9, 10.

¹⁵ Convention on Environmental Impact Assessment in a Transboundary Context (25 February 1991, Espoo), 30 ILM (1991) 1461.

¹⁶ ‘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)).

¹⁷ Espoo Convention, articles 2(3), 3, 5, 6(1).

¹⁸ Protocol on Strategic Environmental Assessment, ECE/MP.EIA/2003/2; available from <http://www.unece.org/fileadmin/DAM/env/eia/documents/legaltexts/protocolenglish.pdf>

¹⁹ Convention on the Transboundary Effects of Industrial Accidents (17 March 1992, Helsinki) 31 ILM (1992) 1333, article 2(2)(c).

²⁰ 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>.

²¹ Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (25 June 1998, Aarhus), 38 ILM 517 (1999).

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 other 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 ILC Draft Articles on the Law of Non-Navigational Uses of International Watercourses, and subsequently in the 1997 UN Watercourses 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’,²² 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.

The obligation to maintain and protect installations, facilities and other works is often specified in the bilateral and multilateral transboundary water agreements and arrangements. 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.

3. Dam Safety Project: development and achievements

Under the United Nations Special Programme for the Economies of Central Asia (SPECA) a regional strategy *Strengthening Cooperation for Rational and Efficient Use of Water and Energy Resources in Central Asia*²³ was developed and approved on different levels by the five Central Asian states and published in 2004. While some of the directions of work outlined in the regional strategy have been difficult to initiate, the safety of hydraulic structures including dams was a more promising area. In the meeting of the SPECA Project Working Group on Water and Energy Resources in Almaty 2005 participating country representatives decided to initiate cooperation in collaboration with UNECE and the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).²⁴

Since 2006, the UNECE and partners implement the Project ‘Capacity building for cooperation on dam safety in Central Asia’,²⁵ as a part of the programme of work of the Water Convention.

The project aims to assist the 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 as well as bilateral cooperation on specific dams. The project is implemented in cooperation with the national responsible authorities on the safety and management of water infrastructure as well as the International Fund for the Saving of the Aral Sea.

a. Inception phase

²² 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; Convention on the Law of Non-Navigational Uses of International Watercourses, 21 May 1997, (1997) 36 ILM 700, article 26.

²³ Strengthening Cooperation for Rational and Efficient Use of Water and Energy Resources in Central Asia, UNECE, UNESCAP, New York 2004: http://www.unece.org/fileadmin/DAM/SPECA/documents/wer/effuse_e.pdf

²⁴ Some previous work on dam safety in Central Asia was done by the World Bank in the framework of component C of the project Aral Sea Basin Program (ASBP) Water and Environmental Management Project initiated in 1998 supporting the first Aral Sea Basin Programme. The corresponding project document is found on http://www-wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/1999/06/03/000009265_3980625101714/Rendered/PDF/multi_page.pdf

²⁵ Details on project implementation including meeting reports can be found online at: <http://www.unece.org/env/water/damsafety.html>

The project's Phase I, an inception phase completed over nine months in the end of 2006, aimed to prompt the countries first to consider setting up or revising national dam safety regulatory frameworks to achieve their harmonization and secondly to pursue regional cooperation on information exchange and notification in the event of accidents or emergency situations with dams. This resulted in two major outcomes: (i) a model national law on safety of large hydraulic facilities, including dams, intended to be a base of national harmonized legal frameworks for dam safety and (ii) a draft regional agreement on cooperation on dam safety, which stipulates, inter alia, the exchange of information and the notification of other countries in the event of accidents with dams.

In this phase, national reports on the issues related to various aspects of dam safety were prepared. It could be concluded that with some exceptions national legislation and institutions as well as cooperation between countries sharing transboundary basins were weakly developed. On the basis of the reports, a publication on dam safety in Central Asia was issued.²⁶ The publication, covering the current national legal, institutional and financial modalities in the area of dam safety as well as the existing cooperative arrangements in that sector as well as the model law and draft regional agreement, also includes a list of large dams in Central Asia, updated for the first time since the end of 1980s.

b. Project framework and directions

Project implementation with the main funding coming from Finland and the Russian Federation started in 2008, with a second phase initiated in 2012. At this stage, the project was implemented in close cooperation with the Executive Board of the International Fund for the Saving of the Aral Sea (EC-IFAS). Cooperation has also developed with the Eurasian Development Bank, Euro-Asian Economic Community (EurAsEC), the German Agency for International Development (GIZ) as well as other partners.

The project includes activities in four areas:

- Legislation and institutions at the national level;
- Development of transboundary cooperation between the five Central Asian states;
- Capacity building on the safe operation of hydraulic structures; and
- Safer operations of individual dams on transboundary rivers.

c. National legislation and institutions

In all the participating countries, action has been taken to formulate legislation on dam safety or to improve the existing regulatory framework for dam safety and institutions in the light of the model national law on the safety of hydraulic structures formulated in the inception phase of the project.

In Kazakhstan, a draft of a national law proposing incorporation of amendments related to the safety of hydraulic structures in the national Water Code was reviewed within the framework of the project. Some of these suggestions to the draft law were accepted to be included in the approved legislation. However, it is still obvious that the national legislation needs strengthening to adequately handle safety issues. An important step was made with the approval of national 'Rules for the safety of water management systems and structures' by the Government of Kazakhstan on 12 May 2009. In Kyrgyzstan a commission for the safety of hydrotechnical structures has been established in order to strengthen institutional framework for intersectoral cooperation on dam safety in the country. On the basis of the model law national legislation for Tajikistan was prepared and approved in 2010. An institution responsible for the implementation of the legislation has been established. A draft law for Turkmenistan has been prepared along the lines of the model law, but the draft needs revision to

²⁶ Dam safety in Central Asia: Capacity-building and regional cooperation, Water Series No. 5, UNECE, Geneva, 2007: http://www.unece.org/env/water/publications/documents/Water_Series_Publication5_r.pdf

comprehensively reflect the specifics of water infrastructure management in the country. Finally, Uzbekistan was initially the only country with a national law on the safety of water management infrastructure. A draft law containing provisions aiming to improve the existing law has been prepared and reviewed by project experts. This draft still has to be submitted to the Parliament.

Another direction of work to harmonise the work on dam safety in Central Asia is the development of a model set of uniform technical norms and regulations. A draft structure of such a set of documents has been proposed, and the idea of preparing a model technical directive (*reglament*) on the safety of hydro-technical structures, comprising both model law provisions and some technical norms, has been discussed. If accepted, the proposed approach is likely to speed up the revision and introduction of regulatory frameworks in the Central Asian countries. An outline of the model technical directive has been prepared and submitted to all the Central Asian countries for comments.

d. Formalizing regional cooperation on dam safety

The development of a regional five-party agreement on cooperation in the field of the safety of hydro-technical structures in Central Asia is a central objective of the project activities. Such an agreement would establish a unique formal framework for cooperation that does not seem to be present elsewhere in the world. Several drafts have been discussed at regional and national meetings and circulated to relevant ministries in the countries.

The latest draft incorporating changes and amendments proposed by countries was distributed in October 2009 to the five Governments for approval. Its structure is found in Table 1. The principles reflected in the draft agreement are not disputed and the countries continue the efforts to finalise the agreement. However, the details in some of the articles are being discussed. One of the contentious issues is whether a separate institution should be set up to implement the Agreement. Draft Charters for proposed alternative bodies for cooperation, namely an international commission on the safety of hydro-technical structures or a regional centre on the safety of hydro-technical structures, have been prepared. An alternative that is being discussed is that the EC IFAS could serve as the Secretariat for the Agreement. It should also be noted that the present political situation defers an immediate conclusion of the negotiations.

In the absence of a signed Agreement the Central Asian countries have nevertheless formalised the cooperation by including the safety of hydraulic structures as a direction of work in the third Aral Sea Basin Programme for 2011-2015.

Table 1. Structure of the draft Regional Agreement on Cooperation in the Field of the Safety of Hydraulic Structures

<i>Preamble</i>
<i>Article 1: Objective of the Agreement</i>
<i>Article 2: Scope of the Agreement</i>
<i>Article 3: Definitions</i>
<i>Part I: Provisions related to the safety of all hydraulic structures</i>
<i>Article 4: General principles and obligations</i>
<i>Article 5: Actions to achieve the safety of hydraulic structures</i>
<i>Article 6: Directions and organization of cooperation</i>
<i>Part II: Provisions related to the safety of hydraulic structures of intergovernmental status</i>
<i>Article 7: List of hydraulic structures of intergovernmental status</i>
<i>Article 8: Exchange of information</i>
<i>Article 9: Consultations</i>
<i>Article 10: Inspections</i>
<i>Article 11: Contributions to reimbursement of costs</i>
<i>Article 12: Emergency situations</i>
<i>Article 13: Environmental Impact Assessment</i>
<i>Part III: Organizational mechanisms</i>

Article 14: Competent organs

Article 15: International Commission on the safety of hydraulic structures

Article 16: The mandate of the Commission

Part IV: Concluding provisions

Article 17: Responsibility

Article 18: Settlement of differences and disputes

Article 19: Amendments and additions

Article 20: Validity of the agreement

e. Training and capacity building

As in other areas of water management in Central Asian countries there is an increasing lack of expertise on the safe management and operation of hydraulic structures. One reason is while during Soviet time there was ample access to education and scientific institutions with various disciplines, presently it is difficult for the countries to keep a high educational and scientific standard in all needed areas. Cooperation between the countries in this field consequently makes a lot of sense. Another problem is that the low status and salaries in the water sector do not make corresponding workplaces very attractive.

To build capacity in the region a number of training courses – for many countries for the first time since the Soviet times - have been organized. Experiences from several countries such as Germany, Russian Federation and Slovakia have been highlighted during the training events. CDs and printed booklets with materials generated at the training courses held have been produced and distributed in the region.

In 2013-2014 a textbook is being developed with joint efforts of experts from all Central Asian countries. The textbook will provide an improved basis for future training efforts by universities and other institutions.

The project has also provided support to institutions responsible for training. The State Inspection on Control and Supervision of the Technical Condition and Safe Operation of Large and High-Security Waterworks of the Republic of Uzbekistan (Gosvodkhozadzor) was supported in the development of its training centre. A training centre for the safety of hydrotechnical structures has also been established at the Ministry for Land Reclamation and Water Resources in Tajikistan. Support has also been provided to an International Training Centre that is being set up in Taraz, Kazakhstan, as part of the Scientific Research Institute for Water Management.

f. Transboundary work on specific dams

An important emerging area is the establishment of bilateral cooperation to ensure the safety of individual dams or dam systems on transboundary rivers. Kazakhstan raised concerns in 2009 about the safety of the Kirov Dam, which is situated on the Talas River on Kyrgyz territory upstream of the major Kazakh city of Taraz. This dam was built about 40 years ago.

In response to this concern, Kyrgyz authorities agreed to review the safety of this dam. With the support of UNECE, a bilateral Kazakh-Kyrgyz working group under the Chu and Talas Rivers Commission was set up to evaluate the safety of the dam of the Kirov reservoir. The joint safety assessment, released in April 2011, concluded that the dam is in a satisfactory technical condition. However, the repair and rehabilitation works required for maintaining the dam in a safe technical condition were not carried out in full over the last decades. Therefore, a sharp increase in expenses for repair and rehabilitation activities at the dam and other structures of the Kirov Reservoir is currently required to ensure its further safe operation.

Presently with the support of the project preparations are being made for the installation of remote-controlled surveillance and measuring equipment allowing automatic data reading to Kyrgyz as

well as Kazakh responsible authorities. This would ensure the continuous control over the condition of the Kirov dam.

A similar joint safety assessment was made in May 2013 of the Orto-Tokoi dam on the Kyrgyz part of the Chu river. A renovation and update of the safety monitoring is underway also of this dam with funding from the Swiss Government.

4. Conclusion

Contrary to some other areas for water cooperation in Central Asia, the maintenance and safety of hydraulic structures lend itself to constructive cooperation between the countries. The work on dam safety has been part of the work programs of the Water Convention since 2007 and it illustrates very well the strengths of the Convention. First, the focus on working together: authorities in countries, stakeholders, the public and international organizations. Presently there is a solid group of partners from all countries that has a common interest and that is working together. The project also shows that the Convention not only serves as a framework for developing specific basin agreements but also can help, through projects and activities on the ground, interested countries to deepen their cooperation on specific issues. It is also an important advantage demonstrated by the Convention that important work identified can be supported by Parties of the Convention such as Finland and Russian Federation situated in other parts of the UNECE region.

The UNECE and the Water Convention will continue to work on the safety of hydraulic structures with the countries and regional organizations if so requested and if further funding for this project is made available. There are major challenges remaining. These challenges are found on the national level – weaknesses of legislation and institutions as well as technical capacity – as well as in the lack of progress with regard to transboundary cooperation. A lack of proper financing for the maintenance and renovations of the hydraulic structures is a serious draw-back.