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STUDY ON COHERENCE OF THE LEGAL FRAMEWORK GOVERNING CONSERVATION OF FRESHWATER ECOSYSTEMS AND USE OF WATER RESOURCES IN ARMENIA WITH THE RELEVANT EU ENVIRONMENTAL LEGISLATION

NATIONAL REPORT

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Front cover photo: Ararat Valley, Armenia ©Inessa Gabayan

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ABBREVIATIONS

AEWA	Agreement on the Conservation of African-Eurasian Migratory Waterbirds
BD	Birds Directive
Bern Convention	Council of Europe Convention on the Conservation of European Wildlife and Natural Habitats
CBD	Convention on Biological Diversity
CMS	Convention on Migratory Species
EIA	Environmental Impact Assessment
EQSD	Environmental Quality Standards Directive
EU	European Union
IUCN	International Union for Conservation of Nature
FD	Floods Directive
HD	Habitats Directive
MEA	Multilateral Environmental Agreement
ND	Nitrates Directive
NVZ	Nitrate Vulnerable Zone
PPP	Public Private Partnership
Ramsar Convention	Convention on Wetlands of International Importance Especially as Waterfowl Habitat
SEA	Strategic Environmental Assessment
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice
UBA	Federal Environment Agency (Germany)
UN	United Nations
UN Watercourses Convention	UN Convention on the Law of the Non-Navigational Uses of International Watercourses
UNECE	United Nations Economic Commission for Europe
UNECE Water Convention	UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes
UWWTD	Urban Waste Water Treatment Directive
WFD	Water Framework Directive
WSSD	World Summit on Sustainable Development
WRMA	Water Resources Management Authority
WSC	Water and Sewage Company
WUA	Water Users Association

INTRODUCTION

This report represents a national component of the Regional Study on Coherence of the Legal Frameworks Governing Conservation of Freshwater Ecosystems and Use of Water Resources in South Caucasus Countries with the relevant EU Environmental Legislation.

The study was implemented in the framework of the regional project – "Advise to Governments in the development of Strategies to protect Freshwater Ecosystems in the South Caucasus", financially supported by the German Federal Environment Ministry's Advisory Assistance Programme (AAP) for environmental protection in the countries of Central and Eastern Europe, the Caucasus and Central Asia and other countries neighbouring the European Union. The project was supervised by the German Federal Environment Agency (UBA) and implemented by WWF Caucasus Programme Office, WWF Armenia and WWF Azerbaijan in close cooperation with WWF Germany.

The regional project aimed to (i) review the existing national legal frameworks governing conservation of freshwater ecosystems and use of water resources in the South Caucasus countries; (ii) analyse their coherence with the relevant EU environmental legislation; and (iii) elaborate recommendations for further harmonization. The project also highlighted the importance of regional cooperation for the protection of transboundary freshwater ecosystems and sustainable use of shared water resources in the South Caucasus.

The Regional Study on Coherence of the Legal Frameworks Governing Conservation of Freshwater Ecosystems and Use of Water Resources in South Caucasus Countries with the relevant EU Environmental Legislation comprises three National Reports (Armenia, Azerbaijan, Georgia) and a Regional Report.

METHODOLOGY

This report assesses the extent of coherence between legislative and governance mechanisms for the conservation of freshwater biodiversity in Armenia with that in the European Union. The EU frameworks represent not only a comprehensive and detailed system for freshwater ecosystem management, but are themselves based on internationally-agreed standards and principles set out in international agreements on transboundary water and/or environmental cooperation which – to the extent that it is a Party or intends to become a Party to the relevant agreements –also apply to Armenia.

This study considers the coherence of national legislation, policy and institutional arrangements with two groups of EU legislation, with a focus on the requirements needed to support effective freshwater ecosystem conservation:

1. The Water Framework Directive (WFD), including an assessment of coherence with the administrative arrangements foreseen by the WFD and the key steps to be taken under the river basin planning and management approaches; additionally, consideration is given to some of the specific water Directives, including those dealing with urban waste water, environmental quality standards, nitrates and flooding; and
2. Key environmental legislation – the Habitats and Birds Directives and the Directives on Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA) and access to environmental information.

Given the scale of this report, the overall complexity and level of EU legislation, the present stage of development of legislation in these sectors in Armenia and the need to provide a standard methodology across the other reports in Armenia and Georgia, the analysis of EU legislation is necessarily high level and focusses on key and indicative measures which might form the future foundations of legislative development in the South Caucasus. The key and indicative measures relate to establishment of the main institutional structures for river basin management under the WFD; measures for attaining good environmental quality ("good status") of waters, including by taking conservation measures and/or limiting environmental threats and impacts under environmental legislation.

For each key element selected for analysis, a benchmarking process is used to highlight the general level of coherence. This benchmarking is carried out through three main steps:

Step 1: Does equivalent national legislation exist?

Step 2: Is the EU obligation partly or extensively met in national legislation?

Step 3: Is the EU obligation partly or extensively met (or capable of being so) in national implementation?

Against these basic criteria, a benchmark is applied as follows:

Low Equivalence	There is no legislation covering the EU measure being compared, or legislation exists covering the same measure-type exists but the specific provisions do not correspond to the measures contained in EU legislation. Achieving close equivalence would require completely new legislation to be introduced.
Partial Equivalence	Legislation exists covering the same measure-type as that in the EU legislation being compared, and some of the elements of the EU measure can be identified in the national measure. Implementation may be limited. Achieving close equivalence would need amendments to be made to existing legislation and/or institutional, administrative or capacity strengthening to improve implementation.
Close equivalence	Legislation exists covering the same measure-type as that in the EU legislation being compared, and elements which are likely to achieve or mostly achieve similar results to the EU measure can be identified in the national measure. Amendments to achieve closer equivalence might still be envisaged, but do not significantly impact the effect of the national measure.

EXECUTIVE SUMMARY

Coherence with the Water Framework Directive

Designation of Competent Authority	Close Equivalence
Establishment of administrative arrangements for international rivers, lakes and coastal waters	Close Equivalence
Identification of river basin districts	Close Equivalence
Analysis of the characteristics of river basin districts	Partial Equivalence
Establishment of programmes for monitoring water quality	Partial Equivalence
Preparation of river basin management plans	Partial Equivalence
Preparation of a programme of measures	Low Equivalence

In principle, the national legislation reflects the general institutional framework of the WFD. In particular, there is a designation of the competent authority, which is supported by a comprehensive institutional framework. Arguably, the institutional framework is overly complex, since there is a wide number of bodies which appear at times to overlap, and it is also arguable that the framework is "top heavy" in that institutions tend to be centralised and do not function primarily at the river basin level.

As regards river basin planning, although Armenia is moving towards this progress to date has been largely project based. There is a need to formalise river basin management and planning.

Coherence with the Urban Waste Water Treatment Directive

Assessment of the status of UWW collection and treatment	Low Equivalence
Identification of sensitive areas and agglomerations	Low Equivalence
Establishment of systems of prior regulation or authorisation	Low Equivalence
Monitoring programmes	Partial Equivalence

Under the current legal framework there appears to be little equivalence with EU legislation. In particular, there are no detailed assessments of UWW collection and treatment systems, and the legislation does not currently make provision for identifying sensitive areas and agglomerations. Key initial actions to bring the legal and administrative framework in line include: developing a fuller assessment of the status of urban waste water collection and treatment; formalizing systems to generate, analyse and exchange data from assessments in particular so that they may be used in river basin management planning; and defining sensitive areas and defining the processes to manage and monitor them. In addition, the anticipated extension of current licensing controls to deal with discharges of urban wastewater will be an important step in controlling pollution.

Coherence with the Environmental Quality Standards Directive

Application of environmental quality standards to water bodies	Close Equivalence
Identification of "priority" (polluting) substances and limits on concentrations	Close Equivalence
Inventory and review	Low Equivalence

The legislation anticipates the need for water quality standards, and provides that compliance with any standards established is obligatory. Moreover, water quality norms have been defined for all river basins. This covers quality elements such as thermal conditions, oxygenation conditions, biological, hydro-morphological, chemical and physico-chemical, specific synthetic and non-synthetic pollutants, etc.; priority substances defined by EU WFD are also included in the list of quality standards. Although various monitoring activities take place in Armenia, which could in principle generate much of the data needed, there is no fully-fledged and active system for inventory and review. Legislation should be adopted to introduce a regular process for conducting (and then reviewing and updating) and inventory, including maps, if available, of emissions, discharges and losses of all monitored substances and pollutants for each river basin district including their concentrations in sediment and biota, as appropriate.

Coherence with the Nitrates Directive

Identification of polluted waters and designation of nitrate vulnerable zones	Low Equivalence
Establishment of action plans and codes of good agricultural practices for nitrate vulnerable zones	Partial Equivalence
Monitoring programme	Partial Equivalence

There is no system for identifying polluted waters or waters at risk of nitrate pollution and therefore no system of nitrate vulnerable zones (the designation of nitrate vulnerable zones is not implemented). Although there are no NVZs in Armenia connected with agricultural activities, the Government plans to implement programmes aimed at applying best irrigation practices and certain minimum standards apply to nitrate use in agricultural activities, and nitrates are monitored within the general monitoring programme.

Coherence with the Floods Directive

Undertaking of preliminary flood assessment	Low Equivalence
Preparation of flood hazards maps, flood risks maps and flood risk management plans	Low Equivalence

While the need for flood assessments is recognized, and while a Ministry has responsibility for undertaking them, little has been done to form flood assessments. There are no specific legal requirements to prepare flood hazards maps, flood risk maps or flood risk management plans. Moreover, in practice there is no regular or system process for preparing such maps or plans, although various studies and assessments have been conducted, primarily through various project interventions.

Coherence with the Birds and Habitats Directives

Designation of protected areas for species and habitats	Partial Equivalence
Establishment of a register of protected areas for freshwater sites	Low Equivalence
Undertake surveillance of habitats and species	Partial Equivalence

A system of protected areas exists, and is set out in a series of legislation, but the overall system of protection does not fully reflect EU legislation. In particular, there appears to be no detailed procedures for assessing and designating protection sites, habitats or species. Although there is provision in legislation for the establishment of State registration of protected flora and fauna, no such register appears to be kept up to date, and in any case there is no register of protected areas for freshwater sites. Systems exist to monitor protected habitats and species, and to undertake enforcement actions where necessary, but these provisions are not subject to detailed implementing requirements, and in practice do not take place regularly.

Coherence with Other Legislation

Environmental impact assessment	Close Equivalence
Strategic environmental assessment	Partial Equivalence
Public participation and access to information	Partial Equivalence

The EIAE law provides (mostly) a framework through which effective (EU and EIA Convention consistent) EIA systems could be developed in Armenia. However, more detailed procedures need to be developed – particularly to identify the role and duties of government in making information available, in publicizing the environmental report, in enabling public participation in the EIA process and in reviewing and publishing decisions.

Recommendations

Recommendation 1 | Strengthen river basin management planning.

The critical recommendation is to formalise the legal basis for RBM planning. Currently, plans have developed informally through project activities, but the requirement to develop RBMPs, the means of their development and adoption, their form and content and their legal effect all need to be set out in legislation. Government endorsement of such plans is needed to ensure that all levels of government have a consistent planning vision and a clear prioritization of future investments.

Recommendation 2 | Strengthen monitoring of water quantity and quality.

Overall, improved coordination and harmonization of surface water and groundwater quantity and quality monitoring activities will be critical. Obtaining reliable, timely, good-quality, and publicly available data on water quantity and quality are precursors to a functioning integrated water management and planning system. Key recommendations related to defining surface water quality norms, renewing investment in the monitoring infrastructure, improving coordination and harmonization across the various departments responsible for monitoring and, as pre-requisite to increased integration, development of a monitoring strategy and a national program.

Recommendation 3 | Improve urban and rural waste water management.

While the precise impact of waste water discharge on freshwater ecosystems has not been quantified, it is clear that there is a need to improve the collection and treatment of waste water. Key recommendations are: Recognition of the need for major investment to rehabilitate and modernize wastewater treatment facilities and expand their coverage to rural areas; construction of sewer collectors; and construction of simple and easy-to-operate wastewater treatment facilities.

Recommendation 4 | Develop a regular process for conducting inventories of environmental quality data.

Legislation should be adopted to introduce a regular process for conducting (and then reviewing and updating) and inventory, including maps, if available, of emissions, discharges and losses of all monitored substances and pollutants for each river basin district including their concentrations in sediment and biota, as appropriate.

Recommendation 5 | Improve flooding and disaster risk assessment and management.

Flood risks and mitigation plans need to be given a higher priority with national Disaster Risk Assessment and Management. Effective mechanisms of Disaster RM in Armenia need to be implemented in four main directions: improvement of legislation; creation and further development of necessary databases; selection of methods for determination of consequences of disasters, andmodeling of DRM.

Recommendation 6 | Strengthen licensing and control.

As the permitting process is the main regulatory tool for IWRM, strengthening the Water Permit System is essential. The Water Resources Management Agency (WRMA) is the agency responsible for issuing permits. This function is expected to be devolved to the basin management organizations (BMOs) as their capacities develop. Ensuring compliance of water permits is currently insufficient due primarily to lack of resources and agency capacity.

Compliance involves a monitoring function and an enforcement action function. These roles and responsibilities have been separated under the current legislative framework. Greater cooperation (preferably legislated) on inspection and enforcement is needed between the WRMA and the SEI to reduce duplication and overlap in functions and increase monitoring efficiency.

Compliance history should be made a more explicit part of the permitting process. Compliance promotion (and more reliance on self-monitoring) is weak. Categorizing the size of water uses and pollution discharges, including establishing a limit for which a water use permit (WUP) is not required, would help to enhance agency efficiency.

Recommendation 7 | Develop stronger working partnerships with industry.

It is essential that public bodies improve their relationships with industry and that industry better understands the need to protect the environment and the rationale (including benefit to them) behind environmental protection measures. At a general level, this can be achieved by enhancing cooperation and improving staffing practices in the responsible ministries but there are also a number of specific steps that could be taken, for example improving monitoring practices, enforcement and data collection, analysis and disclosure by working together with industry to develop specific guidelines and to develop government and industry approved Environmental Management Systems (EMS) and best practices. Such practices could focus initially on key polluting activities and/or sectors.

PART 1 | BACKGROUND

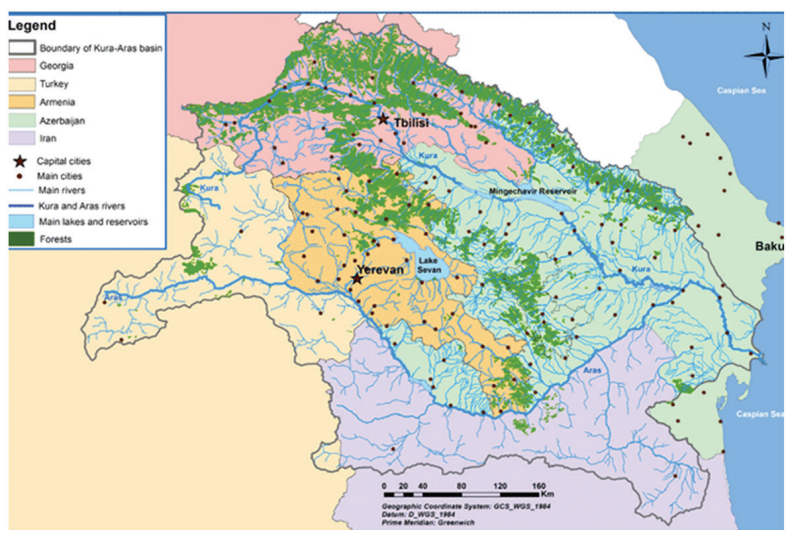
1.1 Water Sector in Armenia

1.1.1 Water resources in Armenia

The Republic of Armenia is a small, landlocked country, with a total area of 29,800km², mountainous terrain and a semi-arid climate. About 75% of the total area is located at a height over 1500m above sea level.

Natural water resources amount to 4 billion m³/year from which about 1.6 billion m3/year comes from springs, 1.4 billion m³/year from drainage outflow and almost 1 billion m³ - from ground water. There are more than 700 natural and artificial sources of mineral water. All the rivers in Armenia are tributaries of the Ara(k)s and Kura Rivers. Most rivers are small, rapid, and fed by melting snow, springs and groundwater. The overall river flow (originating within the country) has been estimated at 6.8 billion m³.[1] This is in part driven by the estimated 16.7 billion m³ of precipitation, with less than 10.8 billion m³ lost by evaporation. An available 1.19 billion m³ originates from outside the country via the transboundary Ara(k)s and Akhuryan Rivers. Groundwater contributes an estimated 4 billion cubic metres. These water resources are not evenly divided in space and time. In order to address temporal variations in river runoff, the country has built 87 dams with a total capacity of 1.4 billion m³. Most of these dams are single purpose, mainly for irrigation.

There are more than 100 lakes in the territory of Armenia, some of which are without water during the dry season. By size and economic significance, Lake Sevan and Lake Arpi are the most significant ones. The Hrazdan and Akhuryan Rivers originate from these two lakes. There are 14 large river basins within the country.



Armenia also has considerable groundwater resources, which play an important role in the overall water balance. About 96% of the water used for drinking purposes and about 40% of water abstracted in the country comes from groundwater. In the critical Ararat valley, deep groundwater resources are estimated to be about 1.8 billion m³ per year. This supports drinking water supply, irrigation, fish farming and other economic activities in the area. At present, however, knowledge on availability and quality of groundwater resources in the country is limited due to the lack of monitoring. Armenia has a number of transboundary waters. It is the most upstream country in the Kura basin, neighbouring with Georgia, Turkey, Azerbaijan and Iran, and a major “exporter” of water. Transboundary watercourses include the large rivers Debed (Armenia-Georgia), Akhurian (Armenia-Turkey), Ara(k)s (Armenia-Turkey-Azerbaijan) and Voghji (Armenia-Azerbaijan). In addition, Lake Sevan – while located entirely within the territory of Armenia – is a unique strategic reserve of freshwater in the region (being the largest freshwater body in the Southern Caucasus) and has interconnection with several transboundary freshwater aquifers used from drinking and irrigation abstractions.

1.1.2 Economic use of water

Agriculture in Armenia is heavily dependent on irrigation. More than 80% of the gross crop output is produced on irrigated lands. Returns are higher on irrigated lands. Water user associations (WUAs)[2] play an important role in agricultural water management. Since WUAs have become operational, water supply has improved, the collection of water fees has increased and there is an increasing conversion from low-value crops (e.g., wheat) to higher value crops (e.g., fruits and vegetables). However, water user associations are not yet financially sustainable

1. RA Law on National Water Program.
2. WUAs are organizations of farmers/irrigators that have been established legally to operate secondary and tertiary irrigation canals, small pumping stations and reservoirs. The Government has transferred operation and management responsibilities of these structures from the State to WUAs.

and continue to depend on State subsidies. Moreover, agricultural water management is still subject to various inefficiencies. These include the widespread use of high-lift pump irrigation systems built during Soviet times but are now uneconomical due to high energy costs.

Domestic water consumption, which used to be the second-largest water user after irrigation, sharply decreased in the 1990s. This dramatic drop is attributed to the introduction of water metres and a volumetric billing system. Moreover, while water supply has greatly progressed, sanitation has fallen behind. Wastewater collection and treatment systems are not sufficiently provided or operational.

Water resources also play a critical role in the Energy Sector. Armenia has great potential for hydropower from its mountains and fast-flowing rivers. There are two large cascades and a number of small hydropower plants. The last decade has witnessed a major growth in the numbers of private small hydropower plants (SHPPs), spread throughout the country. Some have raised concerns regarding the impact of existing and future SHPPs on water resources and environmental sustainability.[3]

The growth of the mining industry has resulted in another potential source of pollution (for example, heavy metals) to water bodies. The subsurface of Armenia is rich in certain mineral resources. More than 480 deposits of a range of mineral resources have been discovered here. Mining is a key contributor to the Armenian economy and is one of the fastest growing exporting sectors in recent years, with ores and metals accounting for over half of the country's exports. Armenia has rich deposits of iron, copper, molybdenum, lead, zinc, gold, silver, aluminium and nepheline syenite. Currently there are seven copper-molybdenum mines, three copper mines, thirteen gold and gold-poly-metallic mines, two poly-metallic mines and two iron-ore mines operating in Armenia. Environmental safety is among the key challenges for the sector. In view of this, the State will give preference to the use of most up-to-date and safe technologies when approving mine development programmes.[4]

1.1.3 Freshwater biodiversity

The aquatic biodiversity of Armenia has not been sufficiently studied. Among the most studied territories are Lake Sevan and Lake Arpi, as well as Gavaraget, Makenis, Masrik, Dzknaget, Argichi, Lichq and Hrazdan rivers. Lake Gosh and Lake Parz, as well as near-border Debed and Voghdji rivers have been studied only partially.

124 species of water invertebrates have been found in the aquatic ecosystems of Armenia, including 46 species of Rotatoria and 78 species of crustaceans (Crustacea). Benthic animals are also widely spread (316 species). In the aquatic ecosystems of Armenia, there are 39 species of fish, which belong to the Salmonidae, Coregonidae, Ciprinidae, Cobitidae, Balitoridae, Siluridae, Ictaluridae, Poeciliidae, and Gobiidae families. Ara(k)s River in the Ararat valley is famous for its fish diversity (32 species). There are 31 species of fish in Metsamor River, 25 species in Akhurian, 25 species in Hrazdan, 14 species in Arpa and 9 species in Aghstev.

About 62% of the fish in the aquatic ecosystems of Armenia belong to the Carp family the representatives of which are famous for their adaptability to the environment. In several small aquatic ecosystems, e.g. Lakes Gosh and Parz, they are the only representatives of the fish fauna. Nine of the fish species in Armenia are endemic, and 16 are acclimatized or occasionally introduced.

417 plant species of 67 families have been found in the rivers and lakes of Armenia. The majority of those (58%, i.e. 246 species) belong to ten families. About 10% of these species can be found in the mountain lakes and rivers located at an altitude of more the 2 700 meters; the bulk of the plant species (50%) can be found in aquatic ecosystems at medium altitudes (1 200 – 2 700 meters); and about 40% of plants can be found in ecosystems located at an altitude of less than 1 200 meters.

The flora of wetland ecosystems is quite diverse and includes 245 species of algae and more than 600 species of vascular plants. Wetland ecosystems are considered as important conservation sites for endemic and threatened freshwater plant species in the country.

1.2 Key Threats, Challenges and Opportunities

There are growing concerns with respect to the declining quality of water in the country. One main driver for this is the discharge of untreated or insufficiently treated wastewater into surface water bodies. From 2008 to 2012, the total wastewater volume doubled and untreated discharge increased seven times. Some of this increase can

3. RA Law on Water User Associations and Federations of Water User Associations, 2002.
4. Information taken from <www.investmentguide.am> and <www.minenergy.am>.

be attributed to improved measurement and the increase in discharge from fish farming. All wastewater treatment plants were built during Soviet times and are now out-dated, in need of rehabilitation, and are energy intensive and expensive to operate. Most plants have stopped operating and a few are applying mechanical treatment only. The growth of the mining industry has resulted in another potential source of pollution (for example, heavy metals) to water bodies.

Although there are several different agencies with responsibility for water monitoring (both quantity and quality, both surface water and groundwater), at the management level a key challenge concerns the difficulty in obtaining reliable, timely, good-quality and publicly available data on water quantity and quality. These are precursors to a properly functioning water management and planning system. Neither future investments nor environmental impact assessment can be fully prepared without a sufficient knowledge base on water resources in place. Moreover, day-to-day operations of the various water systems both for productive purposes (for example, irrigation, urban supply, environmental flows) and risk mitigation purposes (for example, flood warning) cannot be optimized without a robust near real-time monitoring network. Finally, management of the overall resource sustainability (for example, through permitting) and various competing pressures is only possible when data are being monitored over time and resource assessments updated regularly.

Regulation of surface runoff is of strategic importance to the irrigation sector in Armenia. Increasing the strategic water reserves and regulation of river flows is a key action highlighted in the National Water Program. This may be even more critical in the context of future climate change and impacts on the potential frequency and severity of droughts and floods.

1.3 Policy and Legislative Context

Over the last 15 years, Armenia has achieved significant legislative and institutional reforms in terms of water resources management and protection. Notable among these are the adoption of the updated Water Code in 2002, the Law on Water User Associations and Federations of Water User Associations in 2002, the Law on the Fundamental Provisions of the National Water Policy in 2005, the Law on the National Water Program in 2006 and the Law on Environmental Impact Assessment and Expertise in 2014.

Following the adoption of the Water Code, the Law on the Fundamental Provisions of the National Water Policy was adopted in 2005 to provide greater definition and clarity on key aspects, including setting water resource use and protection priorities, establishing a broad procedure for demand estimation and water resources assessment, outlining additional water policy principles (not covered in the Water Code) and highlighting the centrality of the water basin management plan. Water allocation is clearly defined in this law in the following order: national water reserve (this is defined more clearly in the subsequent National Water Program); traditional (historical, non-extractive uses); water resource uses under current contractual arrangements; and domestic, agricultural, hydropower and energy generation, industrial and recreational use. The law also establishes that water allocation among users should aim to maximize the total (economic, social, and environmental) value of the water resource.

Additional water policy principles to guide water management include the use of good science, meeting basic needs, use of water pricing and economic instruments, integrated assessment (including environmental, cultural, social, and economic values), ecological balance of the environment, user pays and polluter pays principles, cost recovery, use of water quality norms, and transparency and public participation. Finally, this law establishes guidance on the development of a National Water Program of activities.

In addition to water legislation, Armenia has various environmental legislation. Armenia became a party to the Convention on Wetlands of International Importance, particularly as a Waterfowl Habitat (Ramsar Convention) on July 6, 1993 and two sites are designated in the List of Wetlands of International Importance: Lake Sevan with its basin and Lake Arpi and surrounding bogs. More widely, nature conservation and the protection of biodiversity falls within the ambit of three main laws: the RA Law on Nature Special Protected Areas (2006), RA Law on Flora (1999) and RA Law on Fauna (2000).

The other key legal mechanism for ensuring environmental protection and sustainability in Armenia is the Law on Environmental Impact Assessment and Expertise (2014), which replaces an earlier law that was adopted in 1995. The law requires certain projects to be subject to EIA on a case by case basis, but there are widely perceived to be a number of inadequacies in the environmental protection the law provides.

Rules on public participation in environmental decision-making and access to environmental information are mainly provided through the Law on Environmental Impact Assessment and Expertise (2014) and other measures taken to implement the Aarhus Convention (Armenia became a Party of Aarhus Convention on 01.08.2003).

PART 2 | INTERNATIONAL AND EUROPEAN LEGAL FRAMEWORK

This report assesses the extent of coherence between legislative and governance mechanisms for the conservation of freshwater biodiversity in Armenia with that in the European Union. The starting point for any analysis of the legal frameworks governing freshwater ecosystem conservation, however, must necessarily be the various international legal rules. These rules represent not only internationally-agreed standards and principles but also set out the framework that EU law seeks to implement in its freshwater policies, and also – to the extent that they are Parties to the relevant agreements - the framework for the South Caucasus countries.

The international rules relevant to freshwater ecosystem conservation fall into three broad categories: international water conventions; conservation and biodiversity conventions; and other environmental conventions, for example dealing with environmental impact assessments. In general, the participation of Armenia in these types of agreements is high for conservation/biodiversity and environmental conventions, but Armenia has yet to ratify either of the water conventions.

Table 1. Participation in international treaties

Instrument	Status
Water Conventions	
Convention on the Protection and Use of Transboundary Watercourses and International Lakes	-
Protocol on Water and Health	signed
Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters	signed
UN Convention on the Law of the Non-Navigational Uses of International Watercourses	-
Conservation Conventions	
Convention on the Conservation of European Wildlife and Natural Habitats	14.04.2008
Convention on Biological Diversity	14.05.1993
Convention on Migratory Species	01.03.2011
Agreement on the Conservation of African-Eurasian Migratory Waterbirds	-
Convention on Wetlands of International Importance Especially as Waterfowl Habitat	06.11.1993
Other Environmental Conventions	
United Nations Framework Convention on Climate Change	14.05.1993
Convention on Environmental Impact Assessment in a Transboundary Context	21.02.1997
Protocol on Strategic Environmental Assessment	24.01.2001
Convention on Access to Information, Public Participation in Decision Making	01.08.2001

Key	Party	Non-Party / Signatory only

2.1 International Water Conventions

There are principally two international conventions that set out the frameworks for international cooperation in the management and use of transboundary waters:

- the **UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes** (UNECE Water Convention, or Helsinki Convention), which establishes a framework for cooperation between the member countries of the United Nations Economic Commission for Europe (UNECE) on the prevention and control of pollution of transboundary watercourses by ensuring rational use of water resources with a view to sustainable development;
- the **UN Convention on the Law of the Non-Navigational Uses of International Watercourses** (UN Water Convention), which aims to deal with "the problems affecting many international watercourses resulting from, among other things, increasing demands and pollution" (Preamble, para. 4).

Whilst addressing cooperation in transboundary waters both Conventions contain principles of good environmental governance and management that can be applied in national waters. For example, whilst differently stated, both Conventions include requirements to manage water in a rational, environment-friendly manner; to use water in a reasonable and equitable way; and to conserve and restore ecosystems. The UNECE Water Convention emphasizes a number of key environmental principles, such as the precautionary principle, the polluter pays principle and the principle that water resources must be managed so that the needs of the present generation are met without compromising the ability of future generations to meet their own needs.

The UN Water Convention also adds the key principle that in the absence of agreement or custom to the contrary, no use of an international watercourse enjoys inherent priority over other uses and as such considers in-stream water uses just as important as other types of water utilization. The UN Water Convention also lays down a framework for planning measures, including exchange of information concerning planned measures and notification of other riparian States of potential adverse effects and procedures for the urgent implementation of planned measures.

2.2 International Conservation Conventions

There are several international conventions that touch on conservation of freshwater ecosystems to varying extents. The key instruments include:

- The **Convention on Biological Diversity** (CBD), which provides wide obligations to protect and use sustainably biological diversity and its components. There has been significant work within the CBD programme of work on inland waters biodiversity, covering the roles both of water availability and water quality (and pollution prevention) in sustaining healthy aquatic ecosystems. For example, under goal 1.1, objective (b) refers to the adoption of integrated river basin management strategies, aimed at restoring or improving the quality, supply, functions and values of inland water resources. Activities 1.1.2 (for Parties) and 1.1.10(a) (for SBSTTA) relate to the development of management strategies for inland water ecosystems that aim to secure the environmental flows required for maintaining ecosystem functioning and integrity.
- The **Convention on Wetlands of International Importance Especially as Waterfowl Habitat** ("Ramsar Convention") seeks to maintain the ecological character of Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in member States' territories. The Convention has three main 'pillars' of activity: the designation of wetlands of international importance as Ramsar sites; the promotion of the wise-use of all wetlands in the territory of each country; and international co-operation with other countries to further the wise-use of wetlands and their resources. Currently there are nearly 2200 designated sites, covering a total area of more than 200 millionhectares. There are 7 Ramsar sites in the South Caucasus countries with three of them in Armenia.
- The **Convention on the Conservation of Migratory Species of Wild Animals** (Bonn Convention), which promotes cooperation in the conservation of migratory species, and in particular those species the conservation status of which is unfavourable. As with the Bern Convention, lists of species to be protected are provided in Appendices. Appendix I lists species for which parties are required to provide "immediate protection". In order to protect the species listed in Appendix I, the Range State parties are required to conserve or restore the habitats of endangered species; to prevent, remove, compensate for or minimize the adverse effects of activities or obstacles that impede the migration of the listed species; and to the extent feasible and appropriate, to prevent, reduce or control factors that are endangering or are likely to further endanger the species.

- Appendix II of the Bonn Convention lists species for which parties are to conclude multilateral agreements for their conservation and management. Such agreements include the **Agreement on the Conservation of African-Eurasian Migratory Waterbirds** (AEWA), which covers over 250 species of birds ecologically dependent on wetlands for at least part of their annual cycle. The range of the agreement covers 118 countries, including the South Caucasus countries. Parties to the Agreement are called upon to engage in a wide range of conservation actions which are described in a comprehensive Action Plan which addresses issues such as species and habitat conservation, management of human activities, research and monitoring, education and information and implementation.
- The **Council of Europe Convention on the Conservation of European Wildlife and Natural Habitats** (Bern Convention), which aims "to conserve wild flora and fauna and their natural habitats [… and in particular…] endangered and vulnerable species, including endangered and vulnerable migratory species." The Convention lists protected species on four Appendices: Appendix I lists strictly protected flora species, Appendix II lists strictly protected fauna species, Appendix III lists protected fauna species, while Appendix IV lists prohibited means and methods of killing, capture and other forms of exploitation.

2.3 Other International Environmental Conventions

Various other international conventions and instruments are potentially relevant to freshwater ecosystem conservation. Several of these do not address (at least to any significant extent) freshwater ecosystem conservation directly, but nevertheless are of considerable significance – for example, the UN Framework Convention on Climate Change (and other instruments addressing climate change impacts). For the purposes of this study, particular attention is given to three key instruments (each adopted under the auspices of the UNECE) which address environmental decision-making and planning:

- The UNECE **Convention on Environmental Impact Assessment in a Transboundary Context** (EIA Convention) requires parties to assess the environmental impact of certain activities (essentially, development projects) at an early stage of planning.
- The **Protocol on Strategic Environmental Assessment** requires its Parties to evaluate the environmental consequences of their official draft plans and programmes (and also addresses policies and legislation, though the application of SEA to these is not mandatory).
- The **Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters** (Aarhus Convention) establishes a number of rights of the public with regard to the environment, in particular:the right of everyone to receive environmental information that is held by public authorities;the right to participate in environmental decision-making; and access to justice in environmental matters, i.e. the right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general.

2.4 EU Legislation

2.4.1 The Water Framework Directive

The Water Framework Directive is the EU's overall legal framework for matters related to water policy. From both legislative and policy perspectives it has a number of notable features, which are founded in general principles of integrated water resources management (IWRM), the most important of which for the purposes of the present study are as follows.

First, it is designed to operate as a single, integrated code for water resources management – its scope covers all inland waters, and the Directive streamlined or integrated existing European water and water-related legislation (replacing – either by incorporation or adoption into the framework – old water Directives, and integrating provisions of other relevant Directives into the framework).

Second, it is target based: it imposes a general requirement for ecological protection and a minimum chemical standard for all surface waters (achieving "good status" for all waters by a set deadline). This target is legally binding, which means that Member States must not only comply with the specific legislative requirements of EU water legislation, but must also take additional measures at the national level to ensure that "good status" is achieved.

Third, and most significant from the perspective of this study, the Directive introduced a new model for water management based on 'river basins', or geographical areas, rather than on administrative or political boundaries. According to this approach, water characteristics, human impacts, management needs, etc. are all assessed at the river basin level, and planning and institutional arrangements are set up at the river basin level, involving all stakeholders connected to the particular river basin. The key actions that Member States need to take include:

- identifying the individual river basins lying within their national territory and assign them to individual River Basin Districts (RBDs);
- identifying competent authorities, with responsibility for each RBD;
- characterising river basin districts in terms of pressures, impacts and economics of water uses (including a register of protected areas lying within the river basin district);
- establishing and implementing monitoring programmes and networks;
- based on the monitoring programme and the analysis of the characteristics of the river basin, identifying a programme of measures to ensure “good status” for the waters in the RBD can be achieved;
- producing and publishing River Basin Management Plans (RBMPs) for each RBD.

2.4.2 The Habitats and Birds Directives

The Habitats and Birds Directives are the EU instruments designed to implement nature conservation and protection measures within the Union. They implement, in particular, EU and Member States obligations under the key biodiversity instruments (Convention on Biological Diversity, Convention on Migratory Species and the Bern Convention). In total, the Directives protect over 1,000 animals and plant species and over 200 so-called “habitat types” of European importance (e.g. special types of forests, meadows, wetlands, etc.).

The legislation is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. Article 6 of the Habitats Directive defines how Natura 2000 sites are managed and protected and require that EU Member States:

- take appropriate conservation measures to maintain and restore the habitats and species for which the site has been designated to a favourable conservation status;
- avoid damaging activities that could significantly disturb these species or deteriorate the habitats of the protected species or habitat types.

Any plan or project likely to have a significant effect on a Natura 2000, either individually or in combination with other plans or projects, shall undergo an appropriate assessment (in effect, an EIA) to determine its implications for the site. The competent authorities can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site concerned (unless the plan or project is considered to be of overriding public interest).

As part of its integrated approach, the WFD builds in close links with the two nature directives. Both the nature directives and the WFD aim at ensuring healthy aquatic ecosystems while at the same time ensuring a balance between water/nature protection and the sustainable use of natural resources. Indeed there are many synergies as the implementation of measures under the WFD will generally benefit the objectives of the nature directives.

Article 1 (a) of the WFD clearly mentions the protection and enhancement of the status of aquatic ecosystems and with regard to their water needs also the protection of terrestrial ecosystems and wetlands directly depending on them. In Article 6.1, the WFD stipulates the establishment of a register of protected areas "which have been designated as requiring special protection … for the protection of their surface water and groundwater or for the conservation of habitats and species directly depending on water". The register must contain "areas designated for the protection of habitats or species where the maintenance or improvement of the status of water is an important factor in their protection" (Annex IV, (v) WFD).

Any Natura 2000 site with water-dependent (ground- and/or surface water) habitat types or species protected under the nature Directives has to be considered for the register of protected areas under the WFD. These areas are summarised as "water-dependent Natura 2000 sites" and for such sites, the objectives of Birds/Habitats Directives and WFD both apply.

2.5 Other Legislation

The Birds and Habitats Directives form the cornerstone of Europe's nature conservation policy. A number of other instruments are potentially relevant to some extent, and are included to some degree in this study. These include sectoral legislation, such as fisheries (although inland/freshwater fisheries are on the whole not regulated by EU legislation under the Common Fisheries Policy and are subject to national-level rules).

Of general relevance in an environmental context are the instruments dealing with environmental impacts assessment (EIA) and strategic environmental assessment (SEA). The EIA Directive establishes an environmental assessment procedures for projects likely to have an impact on the environment. The EIA procedure can be summarized as follows: the developer may request the competent authority to say what should be covered by the EIA information to be provided by the developer (scoping stage); the developer must provide information on the environmental impact (EIA report – Annex IV); the environmental authorities and the public (and affected Member States) must be informed and consulted; the competent authority decides, taken into consideration the results of consultations. The public is informed of the decision afterwards and can challenge the decision before the courts.

The SEA Directive applies to a wide range of public plans and programmes (e.g. on land use, transport, energy, waste, agriculture, etc.). Certain types of plan or programme are subject to mandatory SEA requirements, while others are go through a screening process to determine whether there are likely to be “significant environmental effects”. The screening procedure is based on criteria set out in Annex II of the Directive. The SEA procedure can be summarized as follows: an environmental report is prepared in which the likely significant effects on the environment and the reasonable alternatives of the proposed plan or programme are identified. The public and the environmental authorities are informed and consulted on the draft plan or programme and the environmental report prepared.

PART 3 | COHERENCE ANALYSIS OF NATIONAL LEGISLATION AND POLICY

3.1 Coherence with the Water Framework Directive

This section will consider the coherence of national legislation, policy and institutional arrangements with the Water Framework Directive, and it's associated Directives, with a focus on the requirements needed to support effective freshwater ecosystem conservation. The review includes an assessment of coherence with the administrative arrangements foreseen by the WFD and the key steps to be taken under the river basin planning and management approaches. Consideration will then be given to some of the specific water Directives, including those dealing with urban waste water, environmental quality standards, nitrates and flooding.

3.1.1 Administrative Arrangements

The administrative and planning framework lie at the heart of integrated water management in the WFD. Planning, management and environmental protection is organized around river basin districts (RBDs), and each RBD has an authority (the "competent authority") with general responsibility for ensuring the Directive is given effect.

The competent authority has certain specific responsibilities under the WFD (for example, approving draft River Basin Management Plans, approving proposals for environmental objectives and programmes of measures, etc.), as well as ensuring coordination and consistent implementation across other public bodies.

The **Water Code** contains a detailed definition of the bodies responsible for water management in Armenia. Article 3 (Authorities of the Government of the Republic of Armenia) confirms the general responsibility of the Government, through its corresponding state governmental bodies, to uphold the purposes of this Code, ensure that water is conserved, protected from harm and utilized for the benefit and security of all persons. The following bodies are established under the **Water Code**:

- **National Water Council (Art. 8)** chaired by the prime minister of Armenia, is the highest advisory body for water resources management. It provides guidance on issues concerning the National Water Policy, National Water Program, and other legal aspects. Draft laws and amendments are submitted to this body. The potential power of this council is unique and singular. However, the National Water Council does not have direct staff (or a secretariat) to coordinate information, policy, and program recommendations.
- **Dispute Resolution Commission (Art. 9)**, responsible for resolving disputes related to the issuance of water use permits, is under the National Water Council.
- **Water Resources Management Authority (Art. 10)** (WRMA) under the MoNP has the responsibility for implementing the government's water resources management and protection plans (for both surface water and groundwater) under the Water Code (2002). This includes providing water availability and use estimates, water use regulation and allocation, issuing water use permits, monitoring, developing river basin management plans (RBMPs), ensuring that environmental needs for water are being met, and classifying water bodies. The WRMA is also responsible for the maintenance of the State Water Cadastre. The WRMA (and sub-organizations) requires the most technical and financial support to fulfil its mandate.
- **Water Basin Management Organizations (Art. 11)** Under the WRMA, there are six basin management organizations(BMOs) responsible for interfacing between the WRMA and the local communities in the basins. The six BMOs are Sevan BMO, Hrazdan BMO, Northern BMO, Akhuryan BMO, Ararat BMO, and Southern BMO. Many of the BMO mandates are shared with other existing water resources management institutions, particularly the WRMA, in the areas of water use planning, permitting, compliance, and enforcement. The current interpretation is that the BMOs are subordinate to the WRMA and support the WRMA in administering its water protection and conservation responsibilities.

Thus, BMOs are responsible for participating in development of water basin management plans, recording water use permits, ensuring water resources protection, assuring compliance with conditions set in water use permits, developing extraction regimes, and participating in the development of water allocation plans for their respective basin management areas. Further legislative clarity may be required as the capacity and role of BMOs evolves.

Also established under the National Water Program are basin public councils, which are meant to be advisory bodies to the BMOs and to provide an avenue for public participation. These, however, have no well-defined mission, structure, or procedures.

- **Water Policy Division** was established in 2010 under the Ministry of Nature Protection. It is in charge of formation of State policy on water resources protection, development of policy programs and strategic directions, and monitoring of their implementation. This includes serving as the lead agency to initiate the development of new laws and regulations as required by the Water Code. In June 2015, structural changes took place and responsibilities of Water Policy Division were transferred to the Department of policy of environmental impact assessment and water resource protection under the Division of Policy on Environmental Protection.
- **Water Systems Management Body (Art. 12), known as the State Committee on Water Economy**, under the Ministry of Agriculture, is another State body that is responsible more specifically for the management and operational use of State-owned water systems (for example, irrigation, water supply, and sanitation). There are also two closed joint stock companies (Sevan-Hrazdan and Akhuryan-Ara(k)s irrigation intake companies) that are responsible for the management and operation of irrigation systems in these areas, including the reservoirs, main canals, and major pumping stations.

Following the 2001 Law on Water User Associations and Federations of Water User Associations, and Resolution 314-N dated March 13, 2003, State-owned irrigation systems and property were transferred to water user associations (WUA), of which there are currently 42 responsible for an irrigated area of around 195,000 hectares. The tasks envisioned for water user associations include operation and maintenance of the irrigation system and distribution of water among its members, water supply to member and non-member water users located in the service area, implementation of construction works and restoration of water resources located in the service area, obtaining irrigation water from a water supplier (the State Committee on Water Economy) or the intake of water from natural water bodies, levying of fees from members and non-members for provided services, and procuring hydro-technical equipment. These water user associations are still in the early stages of capacity development.

- **Regulatory Commission (Art. 14)** implements tariff policy in the water sector. In particular, it issues water system use permits to non-competitive water suppliers and defines the tariff to these users. Thus, the commission approves the retail tariffs for potable water supply, discharge, and wastewater treatment for the consumer services provided by the drinking water supply companies, as well as the tariffs for irrigation water supply to water user associations, federations of water user associations, and other users.
- **Environmental Impact Monitoring Center**. This department is responsiblefor the collection of surface water quality data. The central office is in Yerevan, where the main laboratory is housed. After 1992 water quality monitoring was drastically reduced, making long-term time series data unavailable. Since 2006, the EIMC has been in full operation, with 1,200 samples gathered from 131 observation posts (6–12 samples per year). The EIMC also has a specific procedure for data verification and validation.
- **State Environmental Inspectorate (SEI)**. The Ministry of Nature Protection designated the SEI responsible for the enforcement of water use permit (WUP) requirements. The SEI monitors the following: actual water extraction points or water supply systems; actual extracted water quantities; quantity of water actually used for various needs; quantity of actual water returned; description of the outflow, including volume of hazardous chemicals in the water used and returned; content of harmful substances in wastewater discharged to water resources by basins, marzes and communities; and wastewater discharge to water resources, categorized by basins, marzes and communities.

3.1.1.1 Designation of competent authority

One of the fundamental obligations in the WFD is to "ensure the appropriate administrative arrangements, including the identification of the appropriate competent authority, for the application of the rules of this Directive within each river basin district" (WFD, Art. 3(2)). This does not imply the need to create a specific body – the WFD confirms that MemberStatesmayidentifyanexistingnationalorinternational body as competent authority (WFD, Art. 3(6)).

Under the Water Code, a structured system of institutional bodies is created, which includes the Water Resources Management Authority (WRMA) – which in the context of the WFD could be designated as the competent authority – and which is supported by the basin management organizations which support the WRMA in administering its water protection and conservation responsibilities in the individual river basin districts.

Benchmarking	Close Equivalence
The legislation and institutional framework reflects a river basin approach, and an established body – the Water Resources Management Authority – performs the functions of a "competent authority".	

3.1.1.2 Establishment of administrative arrangements for international rivers, lakes and coastal waters

Where river basin districts comprise rivers, lakes or coastal waters that transcend national boundaries, integrated (and effective) water management requires international cooperation. Article 3(3) of the WFD requires Member States to ensure that a river basin covering the territory of more than one Member State is assigned to an international river basin district and that for such areas, the appropriate administrative arrangements are established, including the identification of the appropriate competent authority. While (by necessity), a Member State has responsibility to ensure application of the Directive only with respect to the portion of any international river basin district lying within its territory, the Competent Authority has certain additional responsibilities concerning international cooperation.

The question of transboundary waters is addressed extensively in Armenian legislation. Article 63 of the Water Code ("Conditions of Use and Protection of Transboundary Water Resources") provides that the Code applies to transboundary water resources originating within the territory of Armenia before crossing the State frontier. Moreover, under Article 63 conditions of use and protection of transboundary water resources are to be established by inter-state agreements and/or treaties between the RA and neighbouring countries. Solution of operational problems for joint use and protection of transboundary water resources are to be implemented by permanent inter-state committees. At the national level, authority for inter-state cooperation is to be undertaken by a Commission, established by the Prime Minister.

Reduction in water availability due to the ongoing developments by Turkey isa major concern for the Armenian government. Existing and planned hydraulic infrastructure in the Araks basin by Turkey for consumptive (irrigation and watersupply) and nonconsumptive (hydropower) uses will result in changes in the river flow regime as well as river dynamics and morphology (UNECE 2011). According to long-term river discharge records of hydrological stations along the Akhuryan and Araks Rivers, a decreasing trendis observed in the flow from the Araks River at the Surmalu station, located downstream of the confluence with the Akhuryan River, even though theYervandashat station, located upstream of the confluence, shows an increasing trend. As limited information is available on water extractions upstream of theSurmalu station over time, at present it is not possible to categorically concludethat the declining trend in the Araks River is due to upstream extractions for consumptive uses (Hannan, Leummens, and Matthews 2013).

Deterioration of water quality in transboundary rivers is also a concern, forexample due to nonpoint source pollution from agriculture and livestockactivities in the Araks and Akhuryan Rivers. Mining is also problematic as itrelates to shared aquifers, such as the Aghstev-Tavush and Pambak-Debed aquifers.

In these two transboundary aquifers, potential conflicts over the use of readilyavailable resources are also expected as water demand in the riparian countriesis increasing. In addition to transboundary rivers and groundwater, there are importanttransboundary ecosystems shared by Armenia and Turkey in the Araks/ArasRiver valley. According to UNECE (2011), the Araks/Aras valley harbors severalnatural and artificial wetlands that provide important nesting areas for waterbirds. During the past decade, these wetlands have been under intensive pressurefrom the increasing development of fish farming. A particularly important site inArmenia is the Khor Virap marsh, which was designated a Ramsar site in 2007.

Article 64 (“Authorities and Obligations of the Commission of the Republic of Armenia of Transboundary Water Resources”) specifies the authorities and obligations of the Commission:

- drawing up and submitting to the Government drafts of inter-state agreements;
- drawing up and submitting to the Government proposals on establishing joint permanent inter-state commissions for operation of transboundary water systems;
- informing authorized bodies of the RoA on transboundary impacts;
- presenting the decisions of the Permanent Inter-State Committee to the Water Systems Management Body;
- submitting to authorized bodies the issues brought up at the Permanent Inter-State Committee, which are not regulated by inter-state agreements and/or treaties, and require appropriate solutions;
- informing authorized bodies of disputes.

Article 112 of the Water Code (“Resolution of Disputes Evolved Over Transboundary Water Resources Use and Protection”) confirms that disputes are to be resolved pursuant to the norms established by international agreements, and Article 113 (“Invalidity Of Transactions Inconsistent With This Code”) confirms that transactions violating other rights – including state property rights, water-supply and wastewater discharge systems rights, water use rights, etc. – shall be considered as invalid.

Formal implementation of these provisions, through the establishment of inter-state agreements is rather limited, and where it exists is focused on specific issues rather than overall basin management.

Armenia has an agreement with Turkey on the use of the Ara(k)s and Akhuryan Rivers. The Kars Protocol, concluded in 1927, includes provisions on the right to use a 50:50 allocation of the flow of the transboundary rivers, small rivers, and streams, as well as several basic regulations on infrastructure and dam construction. A protocol to the above-mentioned agreement was concluded in 1964 on the joint construction of the Akhuryan dam, which provided the basic rules for the joint construction of the dam and the sharing of its water on a 50:50 basis as well as the quantitative regulation of water use downstream of the dam up to the Iranian border. A permanent acting commission was established for the purpose of joint water use and technical exploitation of the Akhuryan reservoir. Another agreement was signed in 1973 on the construction of bridges and border issues on the Akhuryan River, which established basic rules on the regulation of the tributaries. In 1987 a technical and economic report was issued on a proposed reservoir on the Ara(k)s River to promote the comprehensive utilization of water resources (for irrigation and power generation) and prevention of channel erosion along the entire length of the Turkish-Armenian border.

In 1990 an agreement was signed with Turkey to address technical issues associated with the construction of joint hydropower facilities, which have not yet materialized, as well as changes in the riverbed and technical cooperation. An agreement also exists between Armenia and the Islamic Republic of Iran on the joint utilization of the border areas of the Ara(k)s River for irrigation, power generation, and domestic use. According to the treaty, the two countries share the waters of the transboundary Ara(k)s River on a 50:50 basis. Cooperation schemes were also developed for the construction of joint hydrotechnical facilities, which did not materialize, and the collection of data. There have also been decrees issued and agreements signed between Armenia and Georgia concerning the use of the Debed River. Similar decrees were passed between Armenia and Azerbaijan concerning the transfer of Arpa River waters into Lake Sevan; the regulation of the Vorotan River flow, which divides the Vorotan flow equally between the two countries and regulates the minimum flow during dry years; and the use of the Aghstev and Tavush Rivers.

Informally, however, there has been more extensive cooperation, in particular through donor-funded projects. There have been several activities by the EU/EC, UNDP/GEF, UNDP/Sida, and OSCE to promote regional dialogue and cooperation on monitoring and management of transboundary water resources. Efforts to date have been mostly focused on the Kura River basin (with Armenia, Azerbaijan, and Georgia).

Much of this work has been focused on introducing the principles and approaches of the European Union Water Framework Directive, development of common approaches and methodologies for water quality monitoring and assessment, development of river basin plans in transboundary basins, and the introduction of integrated surface water and groundwater monitoring systems. For example, the EU implemented projects on transboundary river management for the Kura River (Armenia, Azerbaijan, and Georgia) during 2002–04 and 2008–13. These projects supported the development of a common monitoring and information management system to improve transboundary cooperation in the Kura River basin. No donor activity has been successful in engaging Iran or Turkey.

Benchmarking	Close Equivalence
While in practice inter-state cooperation is rather limited, the provisions of the Water Code provide very detailed legislative and institutional arrangements for transboundary cooperation which can be considered to fully meet the formal requirements of the WFD.	

3.1.2 River basin management

The central feature of the WFD, around which all its other elements are arranged, is the use of river basins as the basic unit for all water planning and management actions. This recognises that water respects physical and hydrological boundaries, but not political and administrative limits. Member States are required to identify the individual river basins lying within their national territory and assign them to individual river basin districts. Having done this, a range of obligations arises including requirements to carry out analyses of the characteristics of the river basins, including environmental and economic analyses, to establish monitoring programmes and to ensure that a River Basin Management Plan (RBMP) is produced for each RBD.

Essentially the Plans perform the following functions:

- They act as an inventory and documentation mechanism for the information gathered including: environmental objectives for surface and ground waters, quality and quantity of waters, and the impact of human activity on water bodies;
- They co-ordinate programmes of measures and other relevant programmes within the river basin district;
- They form the main progress reporting mechanism.

An important feature of the planning process before a RBMP can be finalised is that stakeholders and the general public must be consulted on its content and the proposals in it.

3.1.2.1 Identification of river basin districts

Article 3(1) WFD requires that Member States identify the individual river basins lying within their national territory and, for the purposes of this Directive, shall assign them to individual river basin districts. Small river basins may be combined with larger river basins or joined with neighbouring small basins to form individual river basin districts where appropriate.

In principle, the river basin management approach is contained within the Armenian legislative system. Thus, Article 10 of the Code requires the WRMA to “provide for development of water basin management plans and implementation thereof” and Article 17 provides a framework for Water Basin Management Plans:

> *Based on the National Water Program, the Water Resources Management and Protection Body shall develop Water Basin Management Plans that shall be approved by the Government.*
>
> *Water Basin Management Planning shall balance the interconnected relationship of all water users, including communities, power generation, industry, agriculture and environment.*

Moreover, the grant of Water Use Permits is to be tied specifically to Water Basin Management Plans. For example, under Articles 28 and 40, respectively, each water use permit and each water system use permit must conform to relevant Water Basin Management Plans.

If investment costs may warrant, and in case of positive conclusion of the National Water Council, the Water Resources Management and Protection Body based on the water basin management plans may allocate a water use permit for a longer duration not exceeding forty (40) years(Articles 33).

River basin districts have been identified in Armenia. The approach that has been developed reflects WFD provisions closely, and is formalised in the Water Code. Thus, Article 5 of the Water Code identifies 14 major river basins, which correspond to seven river basin management districts in the territory of Armenia, which in turn are divided administratively into six territorial basin management divisions (Northern BMO, Hrazdan BMO, Sevan BMO, Ararat BMO, Akhuryan BMO, and Southern BMO).

Benchmarking	Close Equivalence
River basin management is applied in Armenia, with river basin districts and river basin management areas identified in the Water Code.	

3.1.2.2 Analysis of the characteristics of river basin districts

Article 5 of the WFD requires that each EU Member State carries out, for each of its river basin districts:

- an analysis of its characteristics (including the type of water body);
- a review of the impact of human activity on the status of surface waters and on groundwater; and
- an economic analysis of water use.

Annex II and III set out the detailed technical specifications for the analysis of environmental and economic characteristics including the assessment of significant anthropogenic pressures and impacts in surface waters and groundwater. This analysis forms the basis for the assessment of the status of surface waters and groundwater and illustrates, which water bodies are “at risk” of failing the environmental objectives. The future developments of monitoring networks and of the programme of measures are based on the results of this analysis.

To some extent these types of assessment are anticipated in Armenian legislation, although they are not called for specifically. For example, the Law on Fundamental Provisions of National Water Policy, 2005 calls for the development of guidance on the assessment of water resources, water demand assessment, priorities for the use and the protection of water resources, emergency situations, river basin planning and management and the preparation of the NWP. There are also rules for water monitoring contained within the Water Code, and the Armenian State Hydrometeorological and Monitoring Service (ASHMS) has certain functions and duties with respect to analysing water characteristics. The MNP also carries out some assessments, in particular through its Environmental Impact Monitoring Center (EIMC) which has a mandate to:

- help to develop and implement state policy and strategy for organizing the monitoring of the state of the environment, environmental impact and consequences;
- ensure data accuracy for collection and impact analysis;
- develop monitoring observation network and technical protocols, etc.

In order to elaborate and enforce of water quality standards to adjust and introduce of an internationally accepted methodology for determination of norms for the limitation of impacts on water resources and standards for ensuring water quality, taking into consideration best international practices, the Government adopted Resolution 75-N on Defining Water Quality Norms for Each Water Basin Management Area Taking into Consideration the Peculiarities of the Locality on January 27, 2011, which is based on internationally accepted methodologies and has been assessed as a relatively progressive document.

The government has also developed and approved the following decisions:

1. Resolution 927-N of June 30, 2011, on Defining Drinking-Household and Agricultural Water Demand and Assessing the Environmental Flow According to River Basin Management Area.
2. Resolution 118-N of January 14, 2010, on Defining Measures for Application of Modern Technologies, Improving Water Resources Monitoring, and Reducing and Preventing Pollution.

These decisions regulate the assessment of water resources quantity and quality according to sectoral water uses, and define the methodology for assessment of the environmental flow to ensure safe ecological condition of water resources. However, the defined criteria for the flow relate more to hydrological than to environmental flow, whereas the fundamental concept in environmental flow is the recognition that water quality and quantity are intimately related.

Benchmarking	Partial Equivalence
Various legal requirements exist concerning the assessment of water resources and other matters, such as water demand assessment, priorities for the use and the protection of water resources, emergency situations, etc. However, these are not necessarily specifically tied RBM planning, and there is no legislative requirement or policy directive for conducting an analysis of the characteristics of river basin districts, as anticipated by the WFD. Moreover, institutions exist with the mandate to conduct the analyses it is doubtful if they currently have the financial or technical capacity. Given the underlying importance of these analyses for effective water policy, increased attention should be paid to developing the capacities required.	

3.1.2.3 Establishment of programmes for monitoring water quality

Article 8 of the WFD establishes the requirements for the monitoring of surface water status, groundwater status and protected areas. Monitoring programmes are required to establish a coherent and comprehensive overview of water status within each river basin district.

The objective of monitoring is to establish an overview within each river basin district. It should also permit the classification of all surface water bodies into one of five classes and groundwater into one of two classes. Detailed (minimum) specifications for the monitoring programmes are set out in Annex V, and cover:

- Chemical status of all groundwater bodies or groups of bodies determined to be at risk;
- Reliable assessment of quantitative status of all groundwater bodies or groups of bodies;
- Estimates of the direction and rate of flow in groundwater bodies that cross Member States boundaries. This should be used in the assessment of long term trends, both as a result of changes in natural conditions and through anthropogenic activity;
- Estimates of pollutant loads transferred across international boundaries or discharged into seas;
- Assessments of changes in status of water bodies;
- Causes of water bodies failing to achieve environmental objectives;
- The magnitude and impacts of accidental pollution;
- Compliance assessments with the standards and objectives of Protected Areas;
- A quantification of reference conditions (where they exist) for surface water bodies.

The need for monitoring programmes is recognised as an integral component of water management within the Water Code. Article 1 of the Code, for example, includes as general concepts:

Monitoring of Water Resources: A regulated system of observations of hydrological, hydrogeological, hydro-physical and hydro-chemical indices, which ensures collection and analyses thereof (and is a subject to dissemination).

State Water Cadastre: A permanent operating system, which keeps comprehensive record of quantitative and qualitative indices on water resources, water intake, watersheds, composition and quantities of materials and biological resources, which are extracted from water basin beds and coasts, as well as record of water users, water use permits and water systems use permits.

Moreover, in practice various monitoring activities are carried out. The Environmental Impact Monitoring Centre (EIMC), under the direction of the MNP, has functions to:

- Help develop and implement state policy and strategy for organizing the monitoring of the state of the environment, environmental impact and consequences;
- Ensure data accuracy for collection and impact analysis;
- Develop monitoring observation network and technical protocols, etc.

To these ends, EIMC provides surface water monitoring at 131 sampling points covering the country's 50 large and medium-sized rivers, 6 reservoirs and Sevan Lake. Surface water samples taken from the 1000-1200 annual basis (7-12 times the annual samples are taken from each section). Each collected sample is determined by 40-65 indicators, including hydro chemical main components, heavy metals, organochlorine pesticides, etc.

The chemical quality of the surface water monitored to be in line with the principles of the EU Water Framework Directive. This evaluation system, which is set in accordance with the Government Decree from January 27, 2011 N 75-N, applies since January 2013. According to RAG Decree, chemical water quality assessment norms were established for 14 basin management area based on local peculiarities. A classification scheme was developed for each element of water chemical quality, distinguishes 5 classes: the excellent status (Class 1), good (Class 2), medium (Class 3), unsatisfactory (Class 4) and bad (Class 5). No environmental assessment of water quality takes place according to WFD. The ASHMS is the main authorized body for surface water quantity and meteorological monitoring in the country. The department is under the Ministry of Territorial Administration and Emergency Situations. The department currently operates and maintains 47 meteorological stations (including 6 high-altitude stations and 3 specialized stations), 33 agrometeorological stations, 7 hydrological stations, and 94 hydrological observation

posts. One critical function of the ASHMS is with respect to forecasting. This is critical for water management both in the short term (in the case of flooding or droughts) and in the longer term (for seasonal agriculture planning, for example).

However, obtaining reliable, timely, good-quality, and publicly available data on water quantity and quality are key challenges to a functioning integrated water management and planning system in Armenia. Insufficient investment over decades in the monitoring infrastructure (including institutional capacity building) is evident, with opportunities to introduce new technologies and approaches to data collection, verification, and management. Improved coordination and harmonization across the various departments responsible for monitoring will be critical.

Benchmarking	Partial Equivalence
The need for monitoring programmes is recognized within the water policy framework, and some monitoring programmes are carried out. These are not tied to specific river basins, however, and are hampered in practice by lack of technical and financial capacities.	

3.1.2.4 Preparation of river basin management plans

A key component of the WFD is the development of river basin management plans which are reviewed on a six yearly basis and which set out the actions required within each river basin to achieve set environmental quality objectives.

Every Member State must ensure that a River Basin Management Plan (RBMP) is produced for each RBD wholly within its territory (Article 13). This effectively provides the delivery mechanism for the Programme of Measures to achieve “good status”. In the case of transboundary river basins, the Member States concerned must work jointly, with the aim of producing a single International RBMP. If a single plan is not produced, each Member State is responsible for preparing a RBMP for at least the portion of the RBD that lies in its territory.

Annex VII sets out the elements that must be covered by each RBMP (see below for a summary). The information required is extensive (see table below), covering every aspect of the river basin planning process and, if requested by the Commission, access to supplementary information must be made available by the Member State. Within the plan, there must also be a so-called gap analysis where, for each water body, any discrepancy between its existing status and that required by the Directive is identified.

A key element in the WFD for the development of RBMPs concerns public participation.

Article 14 of the WFD specifies that Member States shall encourage the active involvement of all interested parties in the implementation of the Directive and development of river basin management plans. Member States are required inform and consult the public, including users, in particular for:

- the timetable and work programme for the production of river basin management plans and the role of consultation;
- the overview of the significant water management issues in the river basin; and
- the draft river basin management plan.

At least six months is to be allowed for comments, in order to allow active involvement and consultation, and the RBMP must contain a summary of the public information and consultation measures taken, their results and the changes to the plan made as a consequence (WFD, Annex VII).

Table 2. Summary of the issues to be covered in the River Basin Management Plan

- General description of the characteristics of the river basin district, including a map showing the location and boundaries of the surface and ground water bodies and a further map showing the types of surface water bodies within the basin.
- Summary of the significant pressures and the impact of anthropogenic activity on the status of surface and ground waters, including point source pollution, diffuse pollution and related land use, the quantitative status of water including abstractions and an analysis of other impacts of human activity on water status.
- Map showing any protected areas.
- Map of the monitoring network.

- Map of the results of the monitoring programme showing the status of all water bodies and protected areas.
- List of the environmental objectives set for all water bodies, including those where the use has been made of derogations.
- Summary of the economic analysis of water use.
- Summary of the programme or programmes of measures.
- Register of any more detailed programmes and management plans and a summary of their contents.
- Summary of the public information and the consultation measures taken, their results and the changes to the plan as a consequence.
- List of competent authorities.
- Contact points and procedures for obtaining background documentation and information, including actual monitoring data.

Based on Guidance Document No 1, Common Implementation Strategy for the Water Framework Directive (2000/60/EC).

Various river basin planning efforts have been completed or have been ongoing since 2007 under various international donor funded projects. Following the requirements established in the Water Code, a model guideline for the formulation of the RBMP was developed in 2008 with the support of USAID. The model guideline was based on the principles of IWRM and the provisions of the European Union Water Framework Directive. However, this model has no formal status and the extent to which it is applied and followed in actions under the other donor programmes varies.

Coverage of RBMPs in Armenia

In terms of coverage, almost all river basin management areas of Armenia have been covered (see map below). None of the plans has been approved by government, however, and therefore they have no binding legal basis. Government endorsement of such plans is needed to ensure that all levels of government have a consistent planning vision and a clear prioritization of future investments.

The results of these early planning efforts (2008–10) have certainly provided valuable lessons and information for water resources planning in Armenia. Moreover, given the need to adopt further the existing model guideline to local conditions, in 2011 a protocol describing the elements that should be included in each RBMP was adopted by the government. The Content of Model Water Basin Management Plan Protocol, which drawsheavily on the European Union Water Framework Directive, currently provides the basis for the development of RBMPs in the country.

The protocol, however, is not fully consistent with the Water Code, which specifically stipulates that the basin plans "shall balance the interconnected relationship of all water users, including communities, power generation, industry, agriculture, and environment." The European Union Water Framework Directive takes a narrower approach and focuses mainly on the protection of the aquatic ecosystem.

Benchmarking	Partial Equivalence
River basin management planning is in practice being carried out under various donor programmes, but these plans are not required by legislation and do not have any formal legal status. As a result, the plans have not developed in a completely uniform manner (despite the adoption of a model RBMP Protocol by the government in 2011). There is a need to formalise RBM planning more fully, and to frame RBM plans in legal terms and give them legal effect (which should include formal requirements on consultation and review).	

3.1.2.5 Preparation of a programme of measures

The **programme of measures** is at the heart of river basin management planning, as it sets out the actions to be taken during the plan period to secure WFD objectives. It builds on the gap analysis and includes the following considerations:

- Proposals for any modification of the current procedures for licensing abstractions and consenting discharges should they not prove sufficient for Directive requirements;
- **Basic measures** required to implement Community legislation for the protection of water in the river basin district as set out in the related Directives (UWWTD, ND, etc.);
- Any pricing measures or other economic instruments intended to provide incentives to encourage more sustainable and efficient water use;
- If the above is not sufficient to meet Directive requirements, Member States may need to employ **supplementary measures** such as those listed in Table 3;
- In exceptional cases additional measures may be needed to protect the aquatic environment. This may be so for international river basins.

The **programme of measures** will also identify:

- Any heavily modified and artificial water bodies within the river basin districts and the actions necessary to secure and maintain their lesser objective of good ecological potential; and
- Any derogations, permanent or temporary, that are sought in respect of individual water bodies.

Table 3. Measures to be included in the Programme of Measures

Measures required under the following Directives	Supplementary measures that may be included
• Bathing Water Directive - (76/160/EEC) • Birds Directive - (79/04/EEC) • Drinking Water Directive - (80/778/EEC) • as amended by Directive - (98/83/EC) • Major Accidents (Seveso II) Directive - (96/82/EC) • Environmental Impact Assessment Directive - (85/337/EEC) • Sewage Sludge Directive - (86/278/EEC) • Urban Wastewater Treatment Directive - (91/271/EEC) • Plant Protection Products Directive - (91/414/EEC) • Nitrates Directive - (91/676/EEC) • Habitats Directive - (92/43/EEC) • Integrated Pollution Prevention and Control Directive - (96/61/EC) *Based on Annex VI (Part A) of Directive 2000/60/EC*	• Legislative, administrative, economic and fiscal instruments. • Abstraction and emission controls. • Negotiated environmental agreements. • Codes of good practice. • Demand management measures. • Efficiency and re-use measures. • Artificial recharge of aquifers. • Recreation and the restoration of wetlands. • Construction projects. • Desalination plants. • Rehabilitation projects. • Education projects. • Research, development and demonstration projects. • Other relevant measures. *Based on Annex VI (Part B) of Directive 2000/60/EC*

The river basin management plans that have been developed in Armenia, under the various donor funded projects, include a programme of measures within them, as a set of measures designed to achieve the environmental and other aims of the plan. However, these measures do not have the effect intended by the WFD. First, because the RBMPs themselves have no legal status, the programme of measures have no legal status. A key element of the WFD is the obligatory nature of the basic measures, in all cases, and the secondary obligation to implement supplementary measures if needed to meet binding environmental targets.

Since river basin management planning has no formal legislative status in Armenia, and moreover since many of the legal provisions listed in the WFD basic measures do not exist and no binding targets exist from which supplementary measures can be identified, the programme of measures that are included with RBMPs do not have any formal effect.

Benchmarking	Low Equivalence
While the RBMPs that have been developed do identify a program of measures, these do no have any legal effect. There is a need, once RBM planning is formalised in legislation, to identify those legislative provisions in national legislation which must be applied within a RBMP and to introduce legal obligations to consider supplementary measures, as set out in the WFD.	

3.2 Coherence with the Urban Waste Water Treatment Directive

Pollution from urban waste water discharged into freshwater ecosystems can be substantial threat to conservation. The Urban Waste Water Treatment Directive (UWWTD)[5] aims to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors (identified in Annex III of the Directive). It concerns the collection, treatment and discharge of domestic waste water or the mixture of domestic waste water with industrial waste water and/or run-off rain water.

Specifically the Directive requires:

- The Collection and treatment of waste water in all agglomerations of >2000 population equivalents (p.e.);[6]
- Secondary treatment of all discharges from agglomerations of > 2000 p.e., and more advanced treatment for agglomerations >10 000 population equivalents in designated sensitive areas and their catchments;
- A requirement for pre-authorisation of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems;
- Monitoring of the performance of treatment plants and receiving waters; and
- Controls of sewage sludge disposal and re-use, and treated waste water re-use whenever it is appropriate.

It is based on four main principles: planning; regulation; monitoring; and information and reporting.

3.2.1 Assessment of the status of urban waste water collection and treatment

Connections to wastewater collection systems are only available in the main urban centers, with only limited primary treatment and no secondary treatment. Characteristics of wastewater collection/disposal services and coverage for urban areas include:

- Only Yerevan has a well extended wastewater collection system with a connection rate of about 96%. The wastewater is discharged into the Hrazdan River at 8 outlet points after no or pre-treatment only. Previously constructed primary and secondary wastewater treatment works are dysfunctional/non-operational, but are now proposed to be rehabilitated to, in a first phase, the level of primary treatment;
- In other urban areas waste water collection systems have been extended for a total coverage of 70 - 80%. There are 12 old treatment plants concentrated in 4 urban areas but these can all be assessed as not functioning. Presently, 3 treatment plants for primary treatment only are planned for construction and collection systems will be rehabilitated or extended in another 2 urban areas (around lake Sevan);

5. Council Directive 91/271/EEC concerning urban waste-water treatment, 21 May 1991.
6. “Agglomeration” is defined as an area where the population and/or economic activities are sufficiently concentrated for urban waste water to be collected and conducted to an urban waste water treatment plant or to a final discharge point. A population equivalent of 1 means the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60g of oxygen per day.

- The wastewater is mainly discharged untreated into surface water courses with outlets into lakes and the population in urban and rural areas not connected to a wastewater collection system typically relies on use of on-site facilities consisting of septic tanks and soak-away or other arrangements such as latrines still prevalent in rural areas.

The sanitary and environmental conditions caused by on-site facilities and discharges of untreated wastewater into water streams cannot currently be assessed to any degree of accuracy because of lack of data.

Current schemes have limited programs for expansion of sewer systems. The high investment costs for wastewater treatment and disposal mean that this is a part of the development that will only be addressed once the major investments on the water systems have been established. This is not explicitly dealt as a major issue in the current or proposed contracts. Village wastewater collection and disposal can be considered as communities that have either house connection to some form of wastewater collection system and those that rely on onsite wastewater disposal (e.g. through latrines and septic tanks).[7]

Benchmarking	Low Equivalence
Waste water provision collection and treatment is well-extended in Yerevan, but limited outside; wastewater is mainly discharged untreated into surface water courses with outlets into lakes and the population in urban and rural areas not connected to a wastewater collection system typically relies on use of on-site facilities consisting of septic tanks and soak-away or other arrangements such as latrines still prevalent in rural areas. For more effective service provision, there may be scope for connection of existing or embryo village disposals system to existing utility systems, where practical. Additionally, the effectiveness of on-site systems would be improved through provision of an adequate service for regular emptying of septic tanks, as part of their satisfactory operation	

3.2.2 Identification of sensitive areas and agglomerations

Benchmarking	Low Equivalence
The Environmental Impact Monitoring Centre implements water quality monitoring programs and publishes monthly and annual reports, where sensitive areas of 5 categories are presented (www.armmonitoring.am)	

3.2.3 Establishment of systems of prior regulation or authorisation

One of the key methods of control in the UWWTD (Art. 11) is a requirement for pre-authorisation of all discharges of urban wastewater, of discharges from the food-processing industry and of industrial discharges into urban wastewater collection systems. This requirement necessarily needs to be established, administered and enforced by means of legislation and needs to be supported by effective and appropriate administrative and decision-making procedures.

The RA Government Decree № 218-N dated March 7, 2003 on Approval of Water Use Permit Sample Form provides requirements not only for water abstraction, but for water discharges as well. It is a requirement to present data on wastewater quality, including volume, wastewater discharge regime established by individual norms, maximum permissible discharge, etc.

In addition, based on the Law on State Statistics (04.04.2000), the Order of the Minister of Nature Protection No 452-N dated 16 December 2008 was made approving Appendix N 1- "Water use" Form N 2-TA (Water) (annual) administrative statistical report; and Appendix N 2 - Administrative instruction for completing the report "Water use" Form N 2-TA (Water). According to this Order, all permitted water users are required to submit to the MNP annual reports on the volume of used water and quality of discharges.

Benchmarking	Low Equivalence
While there is currently no licensing or authorization system in place to deal with discharges of urban wastewater from any sector, other than a basic licensing system which requires information to be provided on water discharges, the extension of existing licensing frameworks to regulate urban waste water discharges is foreseen.	

7. WATER SECTOR NOTE, Report No.: 61317-AM, The World Bank, May 2011

3.2.4 Monitoring programmes

Article 15 of the UWWTD requires Member States to establish monitoring programmes for urban waste water, in particular to monitor (i) discharges from urban waste water treatment plants to verify compliance with the requirements of the Directive and (ii) amounts and composition of sludges disposed of to surface waters. Additionally, in the case of a discharge in less sensitive areas and in the case of disposal of sludge to surface waters, Member States are required to monitor and carry out any other relevant studies to verify that the discharge or disposal does not adversely affect the environment.

According to Article 21 (on Water Resources monitoring) of the RA Law on the National Water Programme:

- Monitoring of water resources in Armenia is to be carried out by monitoring programmes. Monitoring programs should be compiled based on information needs and strategy, based on the data requirements for development and implementation of basin management plans.
- Monitoring programs for surface and groundwater resources are implemented at the national and basin levels.
- Monitoring programmes can include:
    1. The choice of group of indicators;
    2. Selection of water resource sector to be investigated, selection of sampling, monitoring or metering point;
    3. Selection of environment for study (water, bottom sediments, and biotin, etc.;
    4. Setting of sampling or measurement frequency;
    5. Selection of laboratory analysis and measurement techniques in compliance with international standards;
    6. Development of data quality monitoring and evaluation system and its implementation plan;
    7. Comprehensive and operational data processing, development of a scheme of data conversion into targeted information;
    8. Development and (or) selection of the main forms of information presentation;
    9. Coordination of data providing procedure and time to interested persons;
    10. Planning of expenses and identifying sources of financing;
    11. Program implementation and criteria for evaluation of the results;
    12. Development and adoption of the schedule for implementation, evaluation and updating of the program.

With the support of the European Union Kura River Phase II project, a monitoring system compliant with the European Union Water Framework Directive has been proposed for the Aghstev and Debed River basins of Armenia, which includes biological, hydro-morphological, and physical-chemical monitoring. The proposed monitoring has been successfully tested in the Debed River basin with the support of the European Union Kura River Phase III Project (in 2012) and the European Union Environmental Protection of International River Basins Project. However, this does not include groundwater resources. In 2014 the Environmental Protection of International River Basins Project tested a Water Framework Directive compliant surface water and groundwater monitoring system in the Akhuryan and Metsamor (Sevjur) River basins of Armenia.

Benchmarking	Partial Equivalence
The general monitoring programme for water resources is subject to wide, but not detailed, legislation provision, which in principle includes assessment of urban waste water within the programme. However, there is no specific requirement to monitor discharges from urban waste water treatment plants.	

3.3 Coherence with the Environmental Quality Standards Directive

Article 16 of the WFD requires the European Commission to identify priority substances among those presenting significant risk to or via the aquatic environment, and to set EU Environmental Quality Standards (EQSs) for those substances in water, sediment and/or biota. In 2001 a first list of 33 priority substances was adopted (Decision 2455/2001) and in 2008 the EQSs for those substances were established (Directive on Environmental Quality Standards (Directive 2008/105/EC) or EQS Directive / EQSD; last amended by Directive 2013/39/EU).

The EQS Directive establishes the maximum acceptable concentration and/or annual average concentration for 33 priority substances and 8 other pollutants. (These are derived at European level and apply to all Member States, and are referred to as Annex X substances of the WFD). In addition, the WFD (Annex V, section 1.2.6) establishes the principles to be applied by the Member States to develop EQSs for Specific Pollutants that are 'discharged in significant quantities'. (These are also known as Annex VIII substances of WFD).

According to Annex V, point 1.4.3 of the WFD and Article 1 of the EQSD, good chemical status is reached for a water body when it complies with the EQS for all the priority substances and other pollutants listed in Annex I of the EQSD.

3.3.1 Application of environmental quality standards to water bodies

The key obligation under the WFD / EQSD is to determine and apply environmental quality standards to surface water, sediment and/or biota, based on the identification of "priority" polluting substances (EQSD, Art. 3). Since, the priority substances are determined at European level and apply to all Member States coherence with EU legislation strictly speaking implies that the same substances be identified and subjected to EQS. In practical terms, however (at least initially), the South Caucasus countries should identify and determine their own priority polluting substances.

The water legislation in Armenia contains various provisionsrelated to monitoring of environmental standards in water. In particular, Article 66 of the Water Code (on Water Quality Standards) places a requirement on the relevant State management bodies to develop water quality standards drafts, which are to be included in the National Water Program and such standards are to conform to the established classification system.

Water quality standards may vary according to the specifics of various locales. According to the rules established by legislation water quality standards can be established in each water basin management area. Standards based on water use also can be established, including: agricultural, industrial and household standards. The water standards must depict the terms of degradation, depletion, and contamination prevention of water resources, as well as the terms of establishment of minimum environmental flows.

The standards are also given legal effect in the legislation. Article 67 (Compliance with Standards) states that in case of violation of the established water standards the water use is considered illegal and a liability, established by legislation, shall apply.

Water quality management is being implemented in accordance with the RA Government adopted Resolution 75-N on "Defining Water Quality Norms for Each Water Basin Management Area Taking into Consideration the Peculiarities of the Locality" on January 27, 2011. The allowable limits of potential pollutants, impacting the surface water quality, are defined for all six basin management areas, taking into consideration the peculiarities of the locality. Water quality norms are defined for all river basins, taking account of the requirements of the European Union Water Framework Directive, as well as the hydro-morphological, hydro-geographical, hydro-physical, environmental, and other peculiarities of the country (Annexes N3 to N25).

Benchmarking	Close Equivalence
The legislation anticipates the need for water quality standards, and provides that compliance with any standards established is obligatory. Moreover, water quality norms have been defined for all river basins.	

3.3.2 Identification of "priority" (polluting) substances and limits on concentrations in surface waters

A system for classifying, monitoring and limiting polluting substances exists in Armenia. Decree of the Government of RA from January 27, 2011 N 75-N on "Defining Water Quality Norms for Each Water Basin Management Area Taking into Consideration the Peculiarities of the Locality" provides a system of mutual relations of categories of water use purpose or quality of water resources as below:

Purpose/ Function	Category by quality	I category High	II category Good	III category Moderate	IV category Poor	V category Bad
National water reserve		√	√	√	√	√
Protection of water streams		√	√	-	-	-
Ecosystemac-tivities; fishbreeding/ protection	Salmon fish	√	√	-	-	-
	Carpfish	√	√	√	-	-
Irrigation*		√	√	√	√	-
Industrial water use		√	√	√	√	√
Energy production		√	√	√	√	√

√ applicable
- notapplicable
* applicable for Irrigationif thepH-valuedoes not exceed8.5, and conductivity less than 1000 uS/cm

Along with quality elements such as thermal conditions, oxygenation conditions, biological, hydro-morphological, chemical and physico-chemical, specific synthetic and non-synthetic pollutants, etc., priority substances defined by EU WFD are also included in the list of quality standards. Annexes 3-25 provide environmental quality standards for 14 River Basins, their sections and Basin Management areas as below:

Quality elements	Ecological status category					Unit
	I	II	III	IV	V	

Benchmarking	Close Equivalence
A system for classifying, monitoring and limiting polluting substances exists in Armenia. This covers quality elements such as thermal conditions, oxygenation conditions, biological, hydro-morphological, chemical and physico-chemical, specific synthetic and non-synthetic pollutants, etc.; priority substances defined by EU WFD are also included in the list of quality standards.	

3.3.3 Inventory and review

On the basis of the information collected while carrying out analyses and monitoring under the WFD and other available data, Member States are required to establish an inventory, including maps, if available, of emissions, discharges and losses of all priority substances and pollutants for each river basin district or part of a river basin district including their concentrations in sediment and biota, as appropriate. The inventories are to be updated along with the updating of analyses of characteristics in the WFD, and Member States are to report on progress towards WFD objectives in respect of the standards in the EQSD.

Various monitoring activities take place in Armenia, but there is no fully-fledged and active system for inventory and review. EIMC provides surface water monitoring at 131 sampling points covering the country's 50 large and medium-sized rivers, 6 reservoirs and Sevan Lake. Surface water samples taken from the 1000-1200 annual basis (7-12 times the annual samples are taken from each section).

Each collected sample is determined by 65 indicators, including hydro chemical main components, heavy metals, and organochlorine pesticides and so on.The EIMC implements water quality monitoring programs and publishes Monthly and Annual Reports in www.armmonitoring.am. Monitoring of air, atmospheric precipitation and surface waters is presented in the Monthly Report.

Under Article 66 of the Water Code, the Water Resources Management and Protection Body, in consultation with the National Water Council, shall is supposed to conduct a thorough bi-annual inspection (review) of standards, including social and environmental impacts, and propose amendments to them and present this information to the Government as part of the “National Water Program”. In practice, however, this does not occur. Moreover, the legislation does not in any case establish a process for conducting a specific inventory.

Benchmarking	Low Equivalence
Although various monitoring activities take place in Armenia, which could in principle generate much of the data needed, there is no fully-fledged and active system for inventory and review. Legislation should be adopted to introduce a regular process for conducting (and then reviewing and updating) and inventory, including maps, if available, of emissions, discharges and losses of all monitored substances and pollutants for each river basin district including their concentrations in sediment and biota, as appropriate.	

3.4 Coherence with the Nitrates Directive

3.4.1 Identification of polluted waters and designation of nitrate vulnerable zones

The two fundamental steps under the Nitrates Directive are to identify polluted waters or waters at risk and designation of nitrate vulnerable zones (Article 3).

1. Identification of water polluted, or at risk of pollution, such as:

- surface freshwaters, in particular those used or intended for the abstraction of drinking water, containing or that could contain (if no action is taken to reverse the trend) a concentration of more than 50 mg/l of nitrates;
- groundwater containing or that could contain (if no action is taken to reverse the trend) more than 50 mg/l of nitrates;
- freshwater bodies, estuaries, coastal waters and marine waters, found to be eutrophic or that could become eutrophic (if no action is taken to reverse the trend).

2. Designation as "Nitrate Vulnerable Zones" (NVZs) of:

- areas of land which drain into polluted waters or waters at risk of pollution and which contribute to nitrate pollution. (Member States can also choose to apply measures to the whole territory instead of designating NVZs.

Very little is known about the present agricultural practices and the loss of nutrients and pesticides to surface waters as a result of agricultural activities. Particularly, disaggregated data on the use of pesticides and impact of nitrates is largely absent. No system of designating NVZs exists.

Benchmarking	Low Equivalence
Efforts to identify polluted waters or waters at risk and designation of nitrate vulnerable zones do not occur.	

3.4.2 Establishment of action plans and codes of good agricultural practices for nitrate vulnerable zones

Although there are no NVZs in Armenia connected with agricultural activities, the Government plans to implement programmes aimed at applying best irrigation practices (installation of drip irrigation systems, etc.), which will result with effective use of water resources as well as minimizing of water/land pollution by nitrates. Furthermore, under RA Government Decree No 1692-N dated from 18 November, 2004 on approval of the technical regulation of mineral fertilizers, sanitary rules and norms for production and realization of mineral fertilizers, as well as permissible levels of contained toxic elements are established. Requirements for mineral fertilizers to ensure environmental protection, including saltpetre, were provided.

Benchmarking	Partial Equivalence
Although there are no NVZs in Armenia connected with agricultural activities, the Government plans to implement programmes aimed at applying best irrigation practices and certain minimum standards apply to nitrate use in agricultural activities.	

3.4.3 Establishment of a monitoring programme

For the purpose of designating and revising the designation of vulnerable zones, Member States are required to implement a monitoring programme, including monitoring the nitrate concentration in freshwaters and reviewing the eutrophic state of their fresh surface waters, estuarial and coastal waters. The monitoring surveys are to be reviewed at least every four years, and must use reference methods of measurement set out in the Directive (Annex IV).

Monitoring of nitrates within water quality is required under Decree of the Government of RA of January 27, 2011 N 75-N on "Defining Water Quality Norms for Each Water Basin Management Area Taking into Consideration the Peculiarities of the Locality". Implementation of a monitoring programme, including monitoring the nitrate concentration in freshwaters is being carried out by EIMC (as presented above).

Benchmarking	Partial Equivalence
While the monitoring of nitrates does not form part of a specific programme connected to the designation and management of NVZs, nitrate levels are at least monitored within the general monitoring programme.	

3.5 Coherence with the Floods Directive

3.5.1 Undertaking of preliminary flood assessment

This activity falls under this responsibility of the Ministry of Territorial Administration and Emergency Situations, which in this regard relies extensively on the ASHMS which has specific responsibilities with respect to forecasting. While such assessments are recognized as criticalfor water management both in the short term (in the case of flooding ordroughts) and in the longer term (for seasonal agriculture planning, for example), little has been done to form flood assessments.

Benchmarking	Low Equivalence
While the need for flood assessments is recognized, and while a Ministry has responsibility for undertaking them, little has been done to form flood assessments.	

3.5.2 Preparation of flood hazards maps and flood risks maps and establishment of flood risk management plans

There is no regular or system process for preparing flood hazard maps, flood risk maps or flood risk management plans, although various studies and assessments have been conducted, primarily through various project interventions. These include:

- The Armenia National Atlas, published in 2007, which provides maps for Spring Overflow of the Rivers (Overflow, Turbid, Floods and Flood Basins);
- The Final Report on Country Situation Review, under the UNDP "Strengthening of National Disaster Preparedness and Risk Reduction Capacities" programme, which recognized that Armenia was prone to floods, as a natural hazard;
- Flood studies in 2007 within the framework of the project "Upgrade and Restructuring of GIS Databases, Development of Databases and Management Programmes for the Water Resource Management Agency of the RA Ministry of Nature Protection". The studies mapped actual flooded areas and actual mudflows, rather than using natural indicators to assess flood risks, and showed the names of the overflowing rivers, flood dates, flooded areas (zones covered by water) and damages caused;

- Research and studies on hazards related to reservoirs and hydrological structureshave been conducted since 2005. In particular, the Water Resource Management Agency of the Ministry of Nature Protection has been using constantly updating GIS of State Water Cadastre since 2005. In addition, the threat of collapsing reservoir strongholds was investigated with World Bank funding, the area that could be flooded in case of a full collapse of the reservoir was estimated and mapped. A map for general risks was not created. Nevertheless, with consideration of their size and economic significance, 23 reservoirs have been included in the list of water systems of special importance.

There are many general geographical maps that are not directly connected with hazards. However, such maps are a necessary requirement a good basis for having a complete GIS, such as relief, river network, water objects, forest coverage, various climatic maps, etc. All of the above-mentioned maps are available in digital format, and therefore can be modified and incorporated into GIS.

Benchmarking	Low Equivalence
There are no specific legal requirements to prepare flood hazards maps, flood risk maps or flood risk management plans. Moreover, in practice there is no regular or system process for preparing such maps or plans, although various studies and assessments have been conducted, primarily through various project interventions.	

3.6 Coherence with the Birds and Habitats Directives

3.6.1 Designation of protected areas for species and habitats

The fundamental obligation under the Habitats Directive (both Directives is to establish a coherent ecological network of special areas of conservation, composed of sites hosting the natural habitat types and the habitats of the species identified nationally as needing protection. The natural habitat types and the species' habitats concerned are to be maintained or, where appropriate, restored at a favourable conservation status in their natural range. In order to create these protections, Member States must designate sites as special areas of conservation. The Directive sets out detailed criteria for selecting sites eligible for designation (HD, Annex III).

For the last decade, several actions have been carried out in Armenia which aimed at improving the state of the components of biodiversity and which have already given positive results. The legislation and the institutional structure of bio-resources management have been substantially improved. Armenia has joined a number of nature protection conventions - the Bern Convention, CITES, etc.

Armenia has three main laws[8] on conservation and biodiversity protection: **Law on Nature Special Protected Areas** (2006), **Law on Flora** (1999), **Law on Fauna** (2000). These regulate species and habitat protection (based on the Red Book of Armenia) and also provide for protected areas. Armenia became a member of the Convention on Wetlands of International Importance, particularly as a Waterfowl Habitat (Ramsar Convention) on July 6, 1993. Two sites are designated in the List of Wetlands of International Importance: Lake Sevan with its basin, and Lake Arpi and surrounding bogs.

The main provisions on the protection of species comes in the Red Book provisions of the laws on flora and fauna (Article 14 in each). The animal Red Book is defined as:

> *a composite document that satisfies the needs of the international agreements. It includes information on the status, geographical prevalence, environmental conditions, biological specialties, current condition and protection measures concerning the vanishing and rare animal species. The objective of the Red Book is to develop and implement scientifically motivated special measures for protection, registration and use of rare and vanishing animal species, as well as provide for public awareness on measures performed.*

Similarly, the plant Red Book:

> *is maintained in order to develop and implement scientifically motivated special measures for protection, registration and use of rare and vanishing plant species, as well as provide for public awareness on measures performed. The information on plant quantity decrease, prevalence limitation, degradation of the living conditions and danger of vanishing serves the basis for registration in the Red Book.*

8. A number of laws of some relevance also exist. For example, the RA Law on Hunting and Hunting Farms Management (HO-176, 09.04.2007) regulates public relations of the sphere in the territory of the Republic of Armenia, providing protection, reproduction and sustainable use of fishing and hunting animals, conservation and improvement of hunting areas, legal basics of hunting and hunting farm management, and state policy for settlement of legal rights of the hunt user.

The Red Book is formed on the results of State registration of the fauna and flora, and a Commission on Red Book is established to take the final decisions concerning registration and exclusion of certain species in and from the Red Book.

Regarding specially protected nature areas, two Resolutions have been adopted to implement the main law: the "Methodological guidelines to developing management plans for specially protected nature areas" was adopted by the decree of the Minister of Nature Protection (27.10.2008, N364-A); and the Resolution "On the procedure of establishment of specially protected nature areas" (22.01.2009, N 72-N) which provides standards for the establishment of protected areas of different categories and designation, in accordance with the guidelines of the IUCN.

Benchmarking	Close Equivalence
A system of protected areas exists, and is set out in a series of legislation, but the overall system of protection does not fully reflect EU legislation. In particular, there appears to be no detailed procedures for assessing and designating protection sites, habitats or species.	

3.6.2 Establishment of a register of protected areas for freshwater sites

Article 6 of the WFD requires that a register is maintained, and kept under review, of protected areas for freshwater sites designed under the Habitats or Birds Directives. This is an administrative measure designed to ensure that a proper link is maintained between nature protection legislation and water legislation, and that the need to designate freshwater sites is kept under review.

While the Armenian laws on flora and fauna protection require the implementation of a system of State registration,[9] and while sectors of rivers falling within the boundaries of Nature Special Protected Areas are protected and applied in line with the general requirements of the law, there appears to be no formal register of sites and no formal mechanism for ensuring nature protection legislation and water legislation are connected.

Benchmarking	Low Equivalence
Although there is provision in legislation for the establishment of State registration of protected flora and fauna, no such register appears to be kept up to date, and in any case there is no register of protected areas for freshwater sites.	

3.6.3 Undertake surveillance of habitats and species

Article 12 (respectively) of the laws on protected fauna and flora contain general provisions on monitoring and surveillance. Article 12 on State monitoring of the fauna states:

> *The monitoring of the fauna contributes to the maintenance of animal diversity and definition of norms for stable use.*
>
> *The State monitoring of the fauna is aimed at timely determination, prevention and elimination of negative phenomena in the prevalence, quantity and current condition of the fauna, as well as animal settlements, nesting areas, migration ways, ecosystem quality and integrity assessment.*

While Article 12 on State monitoring of the flora provides:

> *The State monitoring of the flora is implemented on the purpose of flora protection and contiguous use. Monitoring activities are also organized for plant growing areas and the condition of the ecosystems.*

The Bio-resources Management Agency of the MNP is responsible for ensuring scientific investigation, conservation, and sustainable use of natural ecosystems, including forests, biological diversity of landscape, flora and fauna, natural heritage, while the State Environmental Inspectorate of MNP has inspection and regulatory monitoring responsibilities. In respect of freshwater biodiversity, this is carried out primarily through two divisions: the Biodiversity, land, wastes and hazardous substances management Division and the Forest control division.

The Government has also approved the resolution "On defining the procedure of organizing and implementing the monitoring of specially protected nature areas" (30.08.2007, N1044-N). By the decree of the Minister of Nature

9. Article 13 in each states: The goal of the State registration and cadastre is the observation of plant species and co-existences, the quantitative and qualitative changes in their growing areas. The State registration of the flora shall be implemented regularly and not later than once in 10 years.

Protection (14.02.2008, N62), the “Activities ensuring the implementation of the program of introducing a biodiversity monitoring system in “Sevan” and “Dilijan” national parks and ensuring GIS exploitation” has been confirmed. The Government draft resolution on “Defining the procedure of using the specially protected nature areas of Armenia” has been developed and is currently being discussed.

Benchmarking	Partial Equivalence
Systems exist to monitor protected habitats and species, and to undertake enforcement actions where necessary, but these provisions are not subject to detailed implementing requirements, and in practice do not take place regularly.	

3.7 Coherence with other Legislation

The other instruments considered in this study comprise EU rules on environmental impact assessment; strategic environmental assessment; and access to information, public participation and access to justice in environmental matters.

The EU’s EIA Directive establishes environmental assessment procedures for projects likely to have an impact on the environment, which are very closely modelled on the UNECE EIA Convention. The EIA procedure can be summarized as follows: the developer may request the competent authority to say what should be covered by the EIA information to be provided by the developer (scoping stage); the developer must provide information on the environmental impact (EIA report – Annex IV); the environmental authorities and the public (and affected Member States) must be informed and consulted; the competent authority decides, taken into consideration the results of consultations. The public is informed of the decision afterwards and can challenge the decision before the courts, something which frequently occurs in Member States.

The SEA Directive applies to a wide range of public plans and programmes (e.g. on land use, transport, energy, waste, agriculture, etc.). Certain types of plan or programme are subject to mandatory SEA requirements, while others are go through a screening process to determine whether there are likely to be “significant environmental effects”. The screening procedure is based on criteria set out in Annex II of the Directive. The SEA procedure can be summarized as follows: an environmental report is prepared in which the likely significant effects on the environment and the reasonable alternatives of the proposed plan or programme are identified. The public and the environmental authorities are informed and consulted on the draft plan or programme and the environmental report prepared.

Certain requirements concerning public participation and access to information are built in to the WFD and other EU instruments discussed in this report, such as the Habitats Directive and the EIA and SEA Directives. In addition, however, there exists overarching EU legislation on access to environment information and public participation in decision-making (designed to implement the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters). These instruments provide duties and rights which go beyond those in the WFD and other Directives, but which nevertheless form an important part of the governance framework for water and environmental management. The two instruments concerned are:

- Directive 2003/4/EC on public access to environmental information, which requires Member States to make certain information on the environment available to the public and provides certain rights to citizens to request information on environmental matters; and
- Directive 2003/35/EC providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment, which sets out various requirements to ensure citizens are properly consulted in environmental decision-making.

3.7.1 Environmental impact assessment

Armenia has had laws on environmental impact assessment for some years, although the law was recently reviewed and a new **Law on Environmental Impact Assessment and Expertise** (EIAE Law) was adopted in 2014.

The new law is a relatively thorough framework for conducting EIA. In general, the procedure for EIA (and expertise) reflects to a significant extent the main requirements of the EU Directive on EIA and the EIA Convention on the national procedures of environmental impact assessment (for example, most of the stages described above are present). Nevertheless, the law requires some clarifications and additions in order to align more fully with these

instruments, and in particular the procedures for public notification and participation are largely absent. Moreover, in practice implementation of EIA procedures appears to be inconsistent and not always effective. In this context, it is important that detailed procedures for implementing EIA are set out in legislation and/or administrative protocols, which can ensure the routine effective conduct of EIA procedures.

It is to be noted that several procedures and methodologies, according to the new law, are to be approved by the Governmental decisions, such as: the procedure of expertise, the methodology of impact assessment, the methodology of the assessment of potential economic losses for environment, procedure of the compensation of the economic damage, the procedure for notification and public hearings, and the procedure for rejection of the expertise conclusion. As these have not yet been developed, comprehensive evaluation of the EIA procedures is not currently possible – a key factor, however, will be to ensure these procedures are developed effectively, in line with EU and EIA Convention models.

Benchmarking	Partial Equivalence
The EIAE law provides (mostly) a framework through which effective (EU and EIA Convention consistent) EIA systems could be developed in Armenia. However, more detailed procedures need to be developed – particularly to identify the role and duties of government in making information available, in publicising the environmental report, in enabling public participation in the EIA process and in reviewing and publishing decisions.	

3.7.2 Strategic environmental assessment

A framework for strategic environment assessment was included in the Law on Environmental Impact Assessment and Expertise, 2014. Until now, SEA has not been carried out formally in Armenia. The framework in the EIAE Law provides a framework for SEA, although it leaves much still to be determined and does not appear to be closely aligned to the methodological approach found in EU Directives and the SEA Protocol (in particular, there appears to be no clear distinction between EIA and SEA in many aspects of the law).

Further legislation is likely to be required in order to fully develop and guarantee the SEA procedures, along with a full development of administrative protocols for conducting SEA and capacity-building (both in government and in the non-government sectors) to support the roll-out of SEA procedures. Some capacity building activities have commenced. Also, the Ministry of Nature Protection selected the master plan for the town of Dilijan as a candidate for a pilot project on SEA, but due to changes in the Government in spring 2014, the state financing of the project was suspended and the pilot was postponed.

Benchmarking	Low Equivalence
Armenia has taken important first steps towards implementing SEA, and has a framework for developing it in the EIAE Law. However, implementing regulations or by-laws are needed to specify more detailed procedures and administrative protocols need to be developed by the government on the conduct of SEA procedures. These steps should be supported by capacity building programmes. In the longer-term, and taking into account initial experiences in conducting SEAs, consideration should be given to revising the provisions on SEA and elaborate them in a form of separate Law or a separate section in the current Law.	

3.7.3 Public participation and access to information

Rules on public participation in environmental decision-making and access to environmental information are mainly provided through the Law on Environmental Impact Assessment and Expertise (2014) and other measures taken to implement the Aarhus Convention. The latter includes the maintenance of 15 Aarhus Centres (established under OSCE support), which have made significant progress in raising public awareness of environmental issues, in facilitating their participation in decision-making and in promoting dialogue among NGOs, the public and State officials.

In addition, rules on information provision and public notification are contained in various other laws. Article 20 of the Water Code (on public participation) requires the following to be subject to "public notice" by the State authorized bodies:

- Draft National Water Policy General Concepts;
- Draft National Water Program;
- Draft Water Basin Management Plans;
- Pending Water Use Permits;
- Pending Water System Use Permits;
- Draft Water Standards;
- Draft Water Tariff Strategy.

Article 1 of the Code defines "public notice" as:

> *Informing of stakeholders about impact of proposed activity, which shall be published in a printing source having at least 1000 printings. The notice shall include the introduction of a decision on the proposed activity or the issue and a brief description of their possible effect; the location, where information on proposed activity or decision can be obtained; written comments on proposed activity or decision; the location, where the notices can be submitted and realistic terms of their submission, as well as the dates and places of public hearings of notices.*

Moreover, Article 13 of the RA National Water Policy (concerning water basin management) states:

> *13(4). While designing Water Basin Management Plans public participation shall be ensured by means of arranging public hearings and discussions, and communicating respective information through mass media.*

The specifics on public consultation are fixed in government Resolution 217-N of March 7, 2003, on "Approving the Procedures for Ensuring Public Notification and Transparency of Documents Developed by the Water Resources Management and Protection Body", and its subsequent amendment of March 3, 2005. The current permit guidelines require public notification and comment at the initial review process and then after a final decision.

Finally, RA Law "On Freedom of Information" (adopted on 23 September 2003) contains various general provisions on ensuring access to information and public awareness (see, e.g. Articles 12 and 13).

While information is made available to the public on certain environmental matters (mostly EIA procedures, which are increasingly being notified) and while access to environmental information is certainly subject to various legislative provisions in Armenia, the legislation does not deal comprehensively with the specifics of when, what and how information is to be made available (and in this regard, falls short of comparable EU legislation) and there are no agreed administrative procedures, on access to information and public participation.

In particular, there are no procedures providing rights of access to environmental information for citizens, only limited legal duties on government bodies to make environmental information available to the public and virtually no legal requirements on consultation and decision-making in environmental matters outside of EIA.

Benchmarking	Partial Equivalence
While there have been some significant first steps in Armenia (notably the establishment of the Aarhus Centres and some progress in access to information and public participation, particularly in the context of EIA) the level of information provision and public participation in practice, and the existence of procedures to guarantee such rights in law, remains relatively low. Specific legislation and administrative protocols should be developed, setting out in particular the rights of citizens to request information and the procedures for government to deal with such requests and setting out agreed procedures governing when and how to conduct public consultations on environmental policy and planning decisions.	

PART 4 | CONCLUSIONS AND RECOMMENDATIONS

4.1 Commentary and Conclusions

At a very general level, it is clear that Armenia has made progress over the past ten years in reforming environmental and water legislation in order (among other things) to better protect freshwater ecosystems. However, despite significant progress and development of over 120 bylaws to ensure the smooth implementation of the Water Code, National Water Policy, and National Water Program, as well as ratification of many international environmental conventions, there are some discrepancies between certain legal acts.

Moreover, there is a gap between the vision of the legislation and the reality of implementation. Further strengthening is needed to fulfil the vision of this legislative framework. In particular, many of the newly created institutions for IWRM— for example, the Water Resources Management Agency (WRMA) and the basin management organizations (BMOs)—require substantial technical and resource support. This is now even more important in the context of emerging challenges in the water sector. These include continued deterioration of the country's water monitoring network (both quantity and quality), increased concerns over transboundary issues, continued weak enforcement under the water permit system (the main regulatory function), unsustainable water usage in the important Ararat valley, and weak water resources planning (from the river basin perspective).

While the USAID-proposed revised model RBMP is a step in the right direction toward improving the structure of the RBMP, there remain additional adjustments to consider in the overall planning framework. This includes ensuring that the framework addresses issues of competition between different users to ensure efficient water use, the balancing of available water supply and demand during the dry season, effective flood management during the wet season, climate change resilience and adaptation, river basin transfers, and protection and conservation. Most importantly, the RBMPs must be clear on how various planning and investment choices in the water sector (across all subsectors) link with other economic sectors in the Armenian economy, such as energy, agriculture, and mining. These planning efforts are also opportunities for the government of Armenia to examine water resource allocation scenarios across the full range of departments involved.

The text below summarises the current state of play in Armenia against the key markers analysed in this study, and is followed by some general conclusions and recommendations.

4.1.1 Coherence with the Water Framework Directive

Designation of Competent Authority	Close Equivalence
Establishment of administrative arrangements for international rivers, lakes and coastal waters	Close Equivalence
Identification of river basin districts	Close Equivalence
Analysis of the characteristics of river basin districts	Partial Equivalence
Establishment of programmes for monitoring water quality	Partial Equivalence
Preparation of river basin management plans	Partial Equivalence
Preparation of a programme of measures	Low Equivalence

In principle, the national legislation reflects the general institutional framework of the WFD. In particular, there is a designation of the competent authority, which is supported by a comprehensive institutional framework. Arguably, the institutional framework is overly complex, since there is a wide number of bodies which appear at times to overlap, and it is also arguable that the framework is "top heavy" in that institutions tend to be centralised and do not function primarily at the river basin level.

As regards river basin planning, although Armenia is moving towards this progress to date has been largely project based. There is a need to formalise river basin management and planning.

4.1.2 Coherence with the Urban Waste Water Treatment Directive

Assessment of the status of UWW collection and treatment	Low Equivalence
Identification of sensitive areas and agglomerations	Low Equivalence
Establishment of systems of prior regulation or authorisation	Low Equivalence
Monitoring programmes	Partial Equivalence

Under the current legal framework there appears to be little equivalence with EU legislation. In particular, there are no detailed assessments of UWW collection and treatment systems, and the legislation does not currently make provision for identifying sensitive areas and agglomerations. Key initial actions to bring the legal and administrative framework in line include: developing a fuller assessment of the status of urban waste water collection and treatment; formalizing systems to generate, analyse and exchange data from assessments in particular so that they may be used in river basin management planning; and defining sensitive areas and defining the processes to manage and monitor them. In addition, the anticipated extension of current licensing controls to deal with discharges of urban wastewater will be an important step in controlling pollution.

4.1.3 Coherence with the Environmental Quality Standards Directive

Application of environmental quality standards to water bodies	Close Equivalence
Identification of “priority” (polluting) substances and limits on concentrations	Close Equivalence
Inventory and review	Low Equivalence

The legislation anticipates the need for water quality standards, and provides that compliance with any standards established is obligatory. Moreover, water quality norms have been defined for all river basins. This covers quality elements such as thermal conditions, oxygenation conditions, biological, hydro-morphological, chemical and physico-chemical, specific synthetic and non-synthetic pollutants, etc.; priority substances defined by EU WFD are also included in the list of quality standards.Although various monitoring activities take place in Armenia, which could in principle generate much of the data needed, there is no fully-fledged and active system for inventory and review. Legislation should be adopted to introduce a regular process for conducting (and then reviewing and updating) and inventory, including maps, if available, of emissions, discharges and losses of all monitored substances and pollutants for each river basin district including their concentrations in sediment and biota, as appropriate.

4.1.4 Coherence with the Nitrates Directive

Identification of polluted waters and designation of nitrate vulnerable zones	Low Equivalence
Establishment of action plans and codes of good agricultural practices for nitrate vulnerable zones	Partial Equivalence
Monitoring programme	Partial Equivalence

There is no system for identifying polluted waters or waters at risk of nitrate pollution and therefore no system of nitrate vulnerable zones (the designation of nitrate vulnerable zones is not possible).Although there are no NVZs in Armenia connected with agricultural activities, the Government plans to implement programmes aimed at applying best irrigation practices and certain minimum standards apply to nitrate use in agricultural activities, and nitrates are monitored within the general monitoring programme.

4.1.5 Coherence with the Floods Directive

Undertaking of preliminary flood assessment	Low Equivalence
Preparation of flood hazards maps, flood risks maps and flood risk management plans	Low Equivalence

While the need for flood assessments is recognized, and while a Ministry has responsibility for undertaking them, little has been done to form flood assessments. There are no specific legal requirements to prepare flood hazards maps, flood risk maps or flood risk management plans. Moreover, in practice there is no regular or system process for preparing such maps or plans, although various studies and assessments have been conducted, primarily through various project interventions.

4.1.6 Coherence with the Birds and Habitats Directives

Designation of protected areas for species and habitats	Close Equivalence
Establishment of a register of protected areas for freshwater sites	Low Equivalence
Undertake surveillance of habitats and species	Partial Equivalence

A system of protected areas exists, and is set out in a series of legislation, but the overall system of protection does not fully reflect EU legislation. In particular, there appears to be no detailed procedures for assessing and designating protection sites, habitats or species. Although there is provision in legislation for the establishment of State registration of protected flora and fauna, no such register appears to be kept up to date, and in any case there is no register of protected areas for freshwater sites. Systems exist to monitor protected habitats and species, and to undertake enforcement actions where necessary, but these provisions are not subject to detailed implementing requirements, and in practice do not take place regularly.

4.1.7 Coherence with Other legislation

Environmental impact assessment	Close Equivalence
Strategic environmental assessment	Partial Equivalence
Public participation and access to information	Partial Equivalence

The EIAE law provides (mostly) a framework through which effective (EU and EIA Convention consistent) EIA systems could be developed in Armenia. However, more detailed procedures need to be developed – particularly to identify the role and duties of government in making information available, in publicizing the environmental report, in enabling public participation in the EIA process and in reviewing and publishing decisions.

4.2 Recommendations

Recommendation 1 | Strengthen river basin management planning, including by formalising the legal basis.

Despite the various initiatives supported by the donor community, the water sector in Armenia still faces many challenges in terms of RBM planning. The critical recommendation is to formalise the legal basis for RBM planning. Currently, plans have developed informally through project activities, but the requirement to develop RBMPs, the means of their development and adoption, their form and content and their legal effect all need to be set out in legislation. Government endorsement of such plans is needed to ensure that all levels of government have a consistent planning vision and a clear prioritization of future investments. In addition, a number of more specific recommendations can be made with a view to strengthening RBMP:

- Increase the technical and human resources capacity needed for planning, in particular by developing the the skills and data collection techniques needed to carry out the modelling and planning work that are not currently adequately available within the basin management organizations (BMOs).
- Promote broader inter-sectoral planning that takes into account municipal, agriculture, energy, and environment linkages and includes each of the the various State and local governmental bodies responsible (and, as necessary, other stakeholders).
- The assessments foreseen in the WFD need to be carried out to gain a better understanding of the status of freshwater ecosystems and the impact of human activities on them. In particular, analysis and knowledge on what would be the best allocation (both in economic and efficiency terms) for the different water users in the basin is needed.
- Lack of State-level budget is likely to undermine on-going planning efforts and the full participation of BMOs in river basin planning. Efforts need to be made to recognize the priority of conserving freshwater ecosystems, and other aspects of ensuring good environmental status of water, and to generate political support for proper funding.

Recommendation 2 | Strengthen monitoring of water quantity and quality.

Overall, improved coordination and harmonization of surface water and groundwater quantity and quality monitoring activities will be critical. Obtaining reliable, timely, good-quality, and publicly available data on water quantity and quality are precursors to a functioning integrated water management and planning system. In order to strengthen the monitoring of water quantity and quality:

- The surface water quality norms for the Ara(k)s Transboundary River and for the lakes and reservoirs of the country need to be defined. In addition, there is a need to develop internationally acceptable water quality standards for groundwater resources.
- Renewed investment needs to be made in the monitoring infrastructure (including institutional capacity building), with opportunities to introduce new technologies and approaches to data collection, verification, and management. In many cases, equipment could also be modernized with greater automation and real-time monitoring added.
- Improvements in the coordination and harmonization across the various departments responsible for monitoring is essential, so as to avoid duplication and make the information collected more widely available. This may include the use of integrated monitoring approaches such as joint water quantity and quality stations.
- As a pre-requisite to increased integration, there should be development of a monitoring strategy and a national program, which would include technical capacity building of the regional subdivisions of monitoring services, needs assessment, structural improvements and technical modernization, and establishment of an electronic data exchange system and a biomonitoring programme to identify river system health based on the plants and animals that live in and near freshwater bodies.

Recommendation 3 | Improve urban and rural waste water management.

While the precise impact of waste water discharge on freshwater ecosystems has not been quantified, it is clear that there is a need to improve the collection and treatment of waste water. Key recommendations are:

- Recognition of the need for major investment to rehabilitate and modernize wastewater treatment facilities.
- Construction of sewer collectors in those streets that do not have sewerage; connection of those households that are willing to pay an additional fee in their water bills for wastewater collection.
- Construction of simple and easy-to-operate wastewater treatment facilities (given the residents of the community are willing to pay a higher water fee for improved environmental conditions). A good option here could be the use of bio-treatment ponds.

Recommendation 4 | Develop a regular process for conducting inventories of environmental quality data.

Although variousmonitoring activities are anticipated in the legislation to monitor and limit (classified) polluting substances in water, there is no fully-fledged and active system for inventory and review of this data. Having a regularly updated inventory is necessary in order to allow policy, planning and licensing decisions to be taken effectively. Legislation should be adopted to introduce a regular process for conducting (and then reviewing and updating) and inventory, including maps, if available, of emissions, discharges and losses of all monitored substances and pollutants for each river basin district including their concentrations in sediment and biota, as appropriate.

Recommendation 5 | Improve flooding and disaster risk assessment and management.

Flood risks and mitigation plans need to be given a higher priority with national Disaster Risk Assessment and Management. Effective mechanisms of Disaster RM in Armenia need to be implemented in four main directions: improvement of legislation; creation and further development of necessary databases; selection of methods for determination of consequences of disasters, andmodeling of DRM.

Recommendation 6 | Strengthen licensing and control.

As the permitting process is the main regulatory tool for IWRM, strengthening the Water Permit System is essential. The Water Resources Management Agency (WRMA) is the agency responsible for issuing permits. This function is expected to be devolved to the basin management organizations (BMOs) as their capacities develop. Ensuring compliance of water permits is currently insufficient due primarily to lack of resources and agency capacity.

Compliance involves a monitoring function and an enforcement action function. These roles and responsibilities have been separated under the current legislative framework. Greater cooperation (preferably legislated) on inspection and enforcement is needed between the WRMA and the SEI to reduce duplication and overlap in functions and increase monitoring efficiency.

Compliance history should be made a more explicit part of the permitting process. Compliance promotion (and more reliance on self-monitoring) is weak. Categorizing the size of water uses and pollution discharges, including establishing a limit for which a water use permit (WUP) is not required, would help to enhance agency efficiency.

Recommendation 7 | Develop stronger working partnerships with industry.

Notwithstanding any legislative, regulatory, technical or management changes that might be introduced, at a practical level it is also essential that public bodies improve their relationships with industry and that industry better understands the need to protect the environment and the rationale (including benefit to them) behind environmental protection measures. At a general level, this can be achieved by enhancing cooperation and improving staffing practices in the responsible ministries (Ministry of Energy and Natural Resources, Ministry of Economy and Ministry of Nature Protection) but there are also a number of specific steps that could be taken, for example improving monitoring practices, enforcement and data collection, analysis and disclosure by working together with industry to develop specific guidelines and to develop government and industry approved Environmental Management Systems (EMS) and best practices. Such practices could focus initially on key polluting activities and/or sectors (for example, establishing sound environmental management of industrial wastes, facilities or depots or developing industrial wastes /mine tailings facility or depot registry).

REFERENCES

1. Water Resources Management in Armenia, National Report

2. Fourth National Report to the Convention on Biological Diversity Republic of Armenia, 2009

3. Guidance Document №31, Ecological flows in the implementation of the Water Framework Directive, February 2015

4. Europe's environment — An Assessment of Assessments. Water and Related Ecosystems

5. ԱՂԵՏՆԵՐԻՒԻՍԿԵՐԻԿԱՌԱՎԱՐՈՒՄԸ ՏԵՂԱԿԱՆՄԱԿԱՐԴԱԿՈՒՄ. Ուսումնամեթոդական ձեռնարկ, Հայաստան, Երևան, 2011

6. Mining in Armenia, ZOÏ REPORT 3/2012

7. “Debed Pilot River Basin Management Plan – Armenia” (2011), prepared in the framework of the “Trans- Boundary River Management Phase II for the Kura River –Armenia, Georgia, Azerbaijan” EU Project (2007/1341398).

8. Republic of Armenia. Water Sector Note. Report No.: 61317-AM, Sustainable Development Department Europe and Central Asia Region, The World Bank, May 2011

9. USAID Clean Energy and Water Program. Needs and Opportunities Assessment Report for Selection of Demonstration Projects, August 2012

10. USAID Clean Energy and Water Program. Assessment Study of Ground Water Resources of Ararat Valley: Progress and Next Steps, October, 2012

11. USAID Clean Energy and Water Program. Conceptual Framework for River Basin Management Planning Process, June, 2012

12. Armenia: Enhancing Environmental and Social Sustainability of Mining in Armenia; IBRD/WB, June 2014

13. «Рациональное использование вторичного сырья и отходов в птицеводческой отрасли Республики Армения», Международная конференция «Практические решения по рациональному использованию сырья и вторичных продуктов в птицеводческом комплексе» - Степанян Сергей Галустович – председатель Союза птицеводов Армении; 17 марта 2015 г.

14. Development of Environmental Flow Assessment Methodology for the RA Rivers: Using the example of Argichi River Basin, May 2015

15. Study on Institutional and Legislative frameworks of Disaster Management in Armenia. UNDP, Armenia, 2009.

16. Final Report on Country Situation Review in the Context of National Disaster Risk Assessment and Management in Armenia

17. Guidelines for Groundwater monitoring in the Pilot Rivers of Caucasus Countries (Armenia, Azerbaijan and Georgia), EPIRB Contract No 2011/279-666, May 2014

18. The EU Directive on the management of waste from extractive industries. J Rizo , European Commission DG ENVIRONMENT Brussels, June 2014

19. Toward Integrated Water Resources Management in Armenia, Winston Yu, Rita E. Cestti, and Ju Young Lee, 2015 International Bank for Reconstruction and Development

20. RIVER BASIN MANAGEMENT PLAN FOR AKHURYAN BASIN MANAGEMENT AREA (AKHURYAN AND METSAMOR RIVER BASINS) WATER BODY AT RISK REPORT, September 2014

21. Քաջարան ք. էկոլոգիական իրավիճակի հետազոտում, ՀՀ գիտությունների Ազգային Ակադեմիա, Էկոլոգանոոսֆերային հետազոտությունների կենտրոն, Երևան 2005

22. Հանքարդյունաբերության պոչամբարների և Կապանի պղնձի կոմբինատի գործունեության ազդեցության գնահատումը Կապան քաղաքի շրջակա միջավայրի վրա (Սյունիքի մարզ), ՀՀ գիտությունների Ազգային Ակադեմիա, Էկոլոգանոոսֆերային հետազոտությունների կենտրոն, Երևան 2007

23. www.parliament.am

24. www.arlis.am

25. http://netedu.xauat.edu.cn/jpkc/netedu/jpkc2009/szylyybh/content/wlzy/2/Armenia.pdf

26. file:///C:/Users/UserH/Downloads/2_water.pdf

27. http://www.unece.org/fileadmin/DAM/env/europe/monitoring/Armenia/en/Part%20I%20-%20Ch.3.pdf

28. http://www.gwp.org/Global/GWP-CACENA_Files/en/pdf/armenia.pdf

29. https://openknowledge.worldbank.org/handle/10986/20459

30. http://armwater.am/en/home.html

31.http://www.kura-aras.org/EU-Armenian_Language_files/Water_Quality_Assessment_Guideline_Document_Draft%20Final_ARMENIAN.pdf

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