Guidelines for Long term Cross Border Water Supply Planning

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Date last release	29.08.2016
State of document	Final

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Adriatic IPA
Cross Border Cooperation 2007-2013

DRINK ADRIA

The project is co-funded by the European Union, Instrument for Pre-Accession Assistance

Contributor/s	LB (Area Council for Eastern Integrated Water Service of Trieste), FB1 (Veritas S.p.A.), FB2 (Optimal Territorial Area Authority N. 3 Marche Centro - Macerata), FB4 (Water Utility of Nova Gorica), FB5 (University of Ljubljana),FB7 (Water Utility of Istria), FB8 (Faculty of Civil Engineering – University of Rijeka), FB9 (Croatian Geological Survey), FB10 (Institute for Development of Water Resources 'Jaroslav Černi' – The department of Water Supply, Sewerage and Water Protection), FB11 (Water Supply and Sewerage Association of Albania), FB12 (Hydro-Engineering Institute of Sarajevo Faculty of Civil Engineering), FB13 (P.C. UTILITY NEUM), FB14 (Public Utility 'vodovod I kanalizacija' Niksic – Technical Department), FB16 (University of Thessaly)

The project is co-funded by the European Union
Instrument for Pre-Accession Assistance

REPUBLIC OF SLOVENIA
GOVERNMENT OFFICE FOR DEVELOPMENT
AND EUROPEAN COHESION POLICY

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1 Background

Access to safe drinking water is recognized as a basic human need and a pre-condition for economic and social development at the global level. More and more countries and cities are becoming aware of importance for long term water supply planning [1–5]. Thus, effectiveness and quality of drinking water supply is essential for future development of society in general. Public water supplies in mainland Europe, with few exceptions, has commenced between 1850 and 1900 in some cases using private companies [6, 7]. Cross border water supply systems (hereinafter CB WSS) are not very typical in Europe. Majority of them have occurred on territories where the wars have occurred in last 100 years together with major political changes. Specifics regarding differences in legislation and different agencies are even more evident in case of countries involved in DRINKADRIA project [8].

The most common issues, problems and constrains for WSS and consequently, CB WSS, are: (1) aging infrastructure, (2) decline/growth of population, (3) chemical or biological contamination, (4) climate and land use changes, (5) terrorism, (6) water losses and (7) no available guidelines long term planning [9–15].

Problems that are characteristics of CB WSS in the Adriatic region, are: (1) no existing/poorly defined legislation, (2) CB WSS unsettled legal heritage (3) some parts of CB WSS are not identified, (4) financial problems due to non-payment from customers or legal obstacles (no or poor contracts, validity of contracts, no regulation of payment, no bilateral committees for dispute resolution) and (5) no long term planning mechanisms [16–21].

Benefits of strategical planning on national level are numerous - from guidance through infrastructure improvements, focus on limited resources and improved decision making.

Based on comprehensive literature review and elaboration of the present situation with Water Utility Managers involved in DRINKADRIA project it is concluded that at the present no mechanisms exist in national legislations that would enable relevant stakeholders to cooperate in definition and development of Guidelines for long term cross border drinking water supply at the national level [1, 2, 5, 11, 22].

In case of existing CB WSS this might imply difference with respect to connection pipe between two countries operating and shutting down protocols (as an example connection between Vrgorac (CRO) and Ljubuški (BiH), [20, 21]).

The aim of these Guidelines is to outline essence of relevant stakeholders involvement in the process to ensure adequate long term cross border water supply planning, to propose principles and include the specific elements of CB WSS based on literature review [23–25].

2 Identification of relevant stakeholders in Adriatic Region

DRINKADRIA is a strategic project that incorporates ambitious goals and objectives regarding cross-border (CB) and regional drinking water supply (CR WS). Work on WP 3 started with identification of stakeholders. It is deliberately based on facts that experience capitalization should be future oriented and aims at a change in collective institutional practice [26].

All DRINKADRIA project team members are stakeholders (have interest from different points of view) and are relevant for CB/CR Water Supply. Table 1 presents project partners (final beneficiaries) specific expertise and skills that are identified as key contributes to the project.

Table 1: Specific expertise and skills of DRINKADRIA team members (Adapted after DRINKADRIA project Application Form)

Final Beneficiary type	Specific expertise and skills
Authority *(LB & FBs: 2, 6, 15*)	Inputs and skills regarding regional authorities hand on experience
Water Utilities *(FBs: 1, 4, 7, 13, 14)*:	Identification of long term capitalization from their point of view, particularly inputs to processes that will be supported by networking
Research and education *(FBs: 3, 5, 8, 9, 10, 11, 12 and 16)*	Integration of research institution know-how into capitalization methodology framework
Associate	Verification of the capitalization methodology

The next step was to identify relevant stakeholders that are not involved in project implementation but can contribute significantly in accomplishment of DRINKADRIA main goals and objectives. It is done in line with identified issues key issues significant for cross border / regional water management and water supply [27].

Following groups of stakeholders are identified to be important for DRINKADRIA project:

- Bilateral commissions for water management;
- Institutes for public health or other relevant;
- Professional associations and non-government organizations (NGOs);
- Other (e.g., Water Supply Utilities, etc.).

The full list of Relevant stakeholders underlined by DRINKADRIA project partners [27] is included in Annex 1 and is also available at the DRINKADRIA shared platform http://drinkadria.fgg.uni-lj.si/. The main group of stakeholders identified by DRINKADRIA as final beneficiaries are water utilities. However, given the scope of the project and the

main objectives that will result in long term sustainable CB/CR drinking water supply, other relevant stakeholders are designated and divided in the before mentioned categories.

As presented in table in Annex 2, the various stakeholders at different levels are identified to be crucial in CB WSS, planning and management within the project area. Data and information provided in Annex 2 are based on inputs provided by all DRINKADRIA project Final Beneficiaries and LB.

Given the main categories of stakeholders identified during the project implementation it is obvious that CB/CR drinking water supply is complex and requires careful and comprehensive planning and management.

3 Proposal of Guidelines for long term cross border water supply planning

This proposal is prepared based on knowledge of experts involved in DRINKADRIA project despite the fact that main principles for CBWS (cross border water supply) planning guideline are excerpted from literature [23]. Some principles that are available in literature are modified since the topic – CBWS – is very specific. Furthermore, specifics in several partners' countries, involved in DRINKADRIA project, result in introduction of the term Cross Regional Water Supply Systems (CR WSS). Everything that is applied on CB WSS long term planning is applicable also on CR WSS.

3.1 Developing a strategic plan for CB WSS in Adriatic region

A strategic plan should help to determine the purpose of strategic proposal for CB WSS, and what results and outputs are intended to gain from the process.

The first step is the definition of goals that need to be set for different levels of stakeholders:

- European Union (EU);
- National;
- Regional;
- Municipal and
- Utility level.

Stakeholders' involvement in drinking water supply systems is crucial for the successful management and improvement of drinking CB WSS. However, there is no agreement on stakeholders, their interests, and levels of importance, especially in drinking CB WSS. To achieve efficient stakeholder management, the first step is to understand who are the major stakeholders' groups and what are their interests, influence, and relationships among them.

3.1.1 Identification of legislation regarding CB/CR WSS in Adriatic Region

One of very challenging task was to provide an overview of past and existing legislation regarding CB and CR WSS for all countries involved in DRINAKDRIA project [28]. Following tables (Annex 3 and Annex 4) provide a quick overview of all collected

legislation that relates to water supply and is defined at different levels. The main problem lies in the fact that the documents are not synchronized between different countries on the same level.

3.2 Identification of all known CB and CR WSS in Adriatic region

In the early stages of DRINKADIA project a list of active, inactive and potential CB/CR WSS started to assemble (Annex 5 and Annex 6). The final list is available on: http://drinkadria.fgg.uni-lj.si/ [16]. Detailed description of all cases is available in Deliverable 5.1: Joined report on historical development of cross-border drinking water supply systems [17].

3.2.1 Long term planning regarding water supply between neighbouring countries in Adriatic region

Most CB WSS complain that there are no guidelines for the future planning. Water utility managers uniformly agree that plans should be defined and confirmed by higher level institutions – government, regional authorities, municipalities etc.

Some CB/CR WSS have reported about their current status on developed plans for the future [17]:

- CB WSS from Mrzlek (Slovenia) to Gorizia (Italy). The WSS is an example of CB WSS with long history, which is based upon a good framework of institutions and legal acts. The utility managers would like a more active role from the national level regarding the long term delivery/demand planning and the issue of pricing [17].
- CB WSS Tomislavgrad (Bosnia and Herzegovina) – Imotski (Croatia) has problems because of contract, not yet established pricing mechanisms and no joint supervision of WSS and water resource. After this will be established, they will start working on plan for long term water supply [17].
- CB WSS from Vrgorac (Croatia) to Ljubuški (Bosnia and Herzegovina). This connection was closed in 2015 due to problems with the price for supplied water and local politics [20, 21].
- CB WSS from Posušje (Bosnia and Herzegovina) to Imotski (Croatia). Their Long term planning includes building of drinking water treatment plant in the future. For now, there is only water chlorination available at water sources. Water resources management is ensured from Bosnia and Herzegovina side by PU Posušje and there is joint supervision of the WSS. Unfortunately, there doesn't exists contingency plan.
- Cross Regional WSS Kruševac (Serbia) has a long term development plan defined on national level. Strategy program for Water supply in Serbia predicts that the city Kruševac will build connections to almost all surrounding municipalities - Aleksandrovac and Trstenik. Municipalities Varvarin and Ćićevac should be supplied from the reservoir to the WSS of WTP "Majdevo". The local government has agreed with this concept, and great majority of objects of this regional system are already built.

3.2.2 DRINKADRIA Project Pilot areas

In the DRINKADRIA project there are 9 pilot areas in 6 countries. All water utility managers of pilot areas had to prepare their plan for investment and planned system improvements. Tremendous work is done on:

- Providing and reviewing the data that was being used in the planning studies – making sure it was reliable;
- Knowledge sharing and learning from experiences of all involved stakeholders;
- Knowledge that was provided by the external consultant has been transferred to the service providers;
- The outputs provided by all involved stakeholders are available on http://www.drinkadria.eu/ and shared platform http://drinkadria.fgg.uni-lj.si/;
- A lot of work was done on capitalization and dissemination of project activities through National Workshops, Conferences, Press articles, appearances on TV etc. [26]. Bilateral committees were contacted with relevant issues.

3.3 Assessing CB WSS technical, managerial and financial capacity in Adriatic region

An important part of strategic planning involves assessing CB WSS's capabilities. There is a large span of utilities – some utility managers invest a lot in systems diagnostics and some less. Full assessment of utility must cover three different areas:

- **Technical part**: Physical infrastructure and operational abilities (this includes deciding whether processes need to be changed or improved upon, and assessing the technical knowledge and qualifications of your system's operators.)
- **Managerial part**: Institutional and administrative abilities (and deciding whether CB WS system's affairs are conducted in a manner that enables utility managers to maintain compliance, operate efficiently, and meet customer expectations.)
- **Financial part**: Ability to acquire and manage financial resources (and deciding whether utility managers will be able to continue current operations, make necessary repairs and replacements, and afford upgrades.)

3.3.1 Analysis of current situation in involved CB WSS in Adriatic Region

Most water utility managers complain that they have insufficient funds for investment into infrastructure and all of them agree that this should be solved at the national level (declared in legislation).

Italy presents their case (example of good practice) - they have mechanisms in national legislation that enables water utility managers to regularly invest into their infrastructure.

Water Asset Management Plan is currently not available and operational for CB WSS in Adriatic region.

3.4 Identifying potential options of CB WSS in Adriatic region

A good analysis of the strengths and weaknesses in the insight of CB WSS regarding technical, managerial, and financial capabilities should be prepared. This information will

allow identification of a range of options that can best fulfil future plans for CB WSS. This must involve cooperation of all stakeholders on all levels (national, municipal, etc.)

One goal of strategic planning is to fully consider the widest possible range of alternatives over a long-term time frame. An option that does not seem feasible in the near term may be more feasible in the longer term and other options may be more feasible when implemented in combination.

Planning should be stimulated by issues such as:

- Changes in unit demands for services;
- Variation in growth projections;
- Adverse trends in customer service levels;
- Changes in community attitudes;
- Changes in technology;
- Changes in regulatory requirements or guidelines;
- Climate changes;
- For the provision of critical infrastructure to meet service demands (e.g. the lead time required for the construction of a dam would be at least 10-15 years).

3.5 Analysing and assessing options of CB WSS in Adriatic region

In order to thoroughly assess options of CB WSS and determine their feasibility, the long-term economic, regulatory, and implementation impacts must be considered together with the options that decisions will have on system. Options can impact a technological aspect of system (treatment, storage and distribution) or an organizational aspect (retail customer services, operation and management, ownership).

Pursuing an option, or combination of options, could result in reorganization or a change to ownership or management. Other options may be easily worked into the current structure and operating environment.

3.6 Implementing options in CB WSS

Strategic planning takes time and effort and includes multiple level of stakeholders – state, municipal etc. It is important to realize however, that implementing the options that were selected will involve additional on-going commitments. It may be needed to gather additional technical, managerial, and financial resources which may require additional planning. Managing authority needs to make sure that everyone involved in implementing the options (managers, operators, governing board, etc.), and everyone who will be affected by it (your customers, regulators, etc.), is committed to its success.

Implementing chosen options involves identifying challenges that could arise during and after implementation, and developing an action plan to address these challenges. This can include developing a time line of upcoming regulations; a schedule for monitoring and evaluating your system's technical, managerial, and financial progress; and plans for continuous improvement

To implement chosen options, development of an action plan is needed.

To develop an action plan it might be necessary:

- Provide special training for technical staff or management;
- Make personnel changes;
- Address new regulatory and legal requirements;
- Inform relevant parties of changes and garner support from regulators, system staff, managers, consumers and the community;
- Obtain approvals, permits and certifications from relevant authorities;
- Re-examine your system revenue-raising mechanisms;
- Find outside or private sources to fund changes.

It is necessary to identify potential challenges and develop an action plan to address obstacles to successful implementation. When talking about implementation, all stakeholders, including asset owners, need to be aware of issues and risks associated with the implementation of projects proposed through a planning study. The recommended implementation strategies should be based on a thorough review of potential risks and how they will be managed.

3.7 Assessment and evaluation of CB WSS in Adriatic region

Water utility managers need strategic planning to face favourably unpredictable future. Current plans address some most possible scenarios circumstance or provide a solution for some challenges.

On-going monitoring and evaluation helps to assess whether CB WSS is operating the way it should. It must be stressed that strategic planning is a continuous process that can result in continuous improvements. The planning process and the values and goals that define CB WSS should allow it to respond more effectively, quickly, and creatively in the future.

Planning outputs and reports should clearly and succinctly communicate to key decision makers and other stakeholders how the preferred option best meets the service need, taking into account future development scenarios and assumptions.

Planning reports should demonstrate that a rigorous examination (at an appropriate level) of options, costs and risks has been undertaken, and that all legislative, financial, environmental and social issues have been addressed, or at least considered [1, 23, 25].

4 Conclusion

This document provides a general overview of current situation regarding CB/CR WSS in Adriatic region with respect to long term water supply planning and emphasizes general aspects and content of technical protocols required for the efficient, reliable and high quality level CB/CR WSS. As a result of complexity, all these aspects involve legislation and planning documents at the international, national, regional, and municipality level and water supply technical standards, rules, etc.

Principles underlined in this document should be considered as the guidelines for the parties involved in CB/CR WSS when planning improvement or development, namely bilateral commissions, municipalities, and other relevant institutions.

This is strongly recommended especially within the scope of DRINKADRIA project as a result of current situation review which indicate that already signed contracts are usually defined just generally and can lead to many disagreements and lasting disputes between the involved parties.

Main stakeholder's groups were identified for all 8 involved countries (Slovenia, Italy, Croatia, Serbia, Albania, Greece, Montenegro and BiH). The involvement of relevant stakeholders and decision makers are crucial given the complexity of CB/CR WS planning and management. It should be underlined that stakeholders' groups review indicates that they are organized on various levels in different countries. This fact can complicate the unification of legislation and rules regarding CB WSS.

Thus, during the development of joint documents, treaties, standards etc. among the neighbouring countries or regions, it needs to be considered to avoid confrontation of the different policies and legal frameworks at national and cross border level due to countries specifics. It is important to consider issues and constrains during the inception phase of planning process to avoid as much as possible plans implementation failure and to decrease the risks.

Existing CB/CR WSS are advised to review WSS in same manner as it is explained in chapter 3. Seven steps of analysis are presented in the report on basis of reviewed literature [1, 23, 24, 29]. Step Three (Chapter 3.3 Assessing CB WSS technical, managerial and financial capacity) usually reveals the most problematic parts of CB/CR WSS.

These guidelines are prepared based on experiences gained during DRINKADRIA project implementation and should be considered only as a support and additional tool to be used by stakeholders and decision makers in the planning process for establishment of new or improvement of existing CB/CR WSS. Establishment of new CB/CR WSS requires a lot of political will, discussion and cooperation of all involved interested parties. Appropriate guidelines implementation during the negotiation processes would very likely minimise identified gaps between various stakeholders and decision makers and generate improvement in long term CB/CR WSS planning.

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Annexes

Annex 1: List of relevant stakeholders (August 2016)

Bilateral commissions for water management

Bosnia and Herzegovina: The committee for water management of Republic of Croatia and Bosnia and Herzegovina.

In Greece, the following should be underlined:

- Memorandum of Understanding and Cooperation for Sustainable Development and Environment between the (former) Ministry and the Ministry of Environment and Physical Planning of Macedonia, signed in Skopje on 09.04.2004. This Memorandum has not been ratified by the Greek Parliament;
- Memorandum of Understanding on Environmental Protection between the Greek Republic and the Republic of Bulgaria (Law 3367/2005 169/A/6-7-2005 Gazette);
- Agreement between the Government of the Greek Republic and the Government of the Republic of Albania to establish a permanent Commission on issues of Greek and Albanian border waters (Law 3405/2005 GG 264/25-10-2005); and
- On 14 May 2010, the Ministry of Environment of Turkey and the Ministry of Environment, Energy and Climate Change of Greece signed a Joint Declaration. The Joint Declaration focuses on the cooperation for the sustainable development of the Ebro River Basin, the protection of the marine environment, the protection of biodiversity and cooperation on climate change and adapting to its effects.

In Serbia, bilateral commissions exist with Romania and Hungary. Moreover, the country is full member of International Commission for Protection of Danube River and International Sava River Basin Commission.

Slovenia has the following address bilateral/ cross –border water management:

- SLO-AUT: Commission for Drava
- SLO-AUT: Commission for Mura
- SLO-ITA: Commission for VG
- SLO-HR: Commission for VG
- SLO-MAD: Commission for VG
- SLO-ITA-HR-CG: Commission for Adriatic

In Greece, Special Secretariat for Water, Greek Ministry of Environment, energy and climate change http://www.ypeka.gr/default.aspx?tabid=347&language=en-us, and Ministry of Public order and Citizen Protection. Water resource management at the national level in Republic of Serbia is under the jurisdiction of the Water Directorate (Ministry of Agriculture and Environmental Protection), http://www.rdvode.gov.rs/. In addition, several other authorities at the national level should be consider in this process, e.g., Ministry for Construction, Transportation and Infrastructure.

In Montenegro, Ministry of Agriculture and Rural Development of MNE, Ministry of Sustainable Development and Tourism of MNE, etc. are authorities at national level that have power to advocate the adoption of the guidance documents.

Institutes for public health or other relevant

As an example, in Serbia the institute for Public Health of Serbia “Dr Milan Jovanovich – Butut”, and its regional and local branches is in charge for drinking water safety for human consumption.

In Montenegro, Institute for public health of Montenegro is involved in drinking water quality monitoring and reporting.

In Greece, Hellenic Union of Municipal Enterprises for Water Supply and Sewerage (EDEYA) http://www.edeya.gr, is recognized as relevant for this category of stakeholders. At the project area level, in majority of countries National Hydrometeorological services are involved in monitoring activities.

Professional associations and NGOs

In Croatia, Involvement of professional and scientific societies like Croatian hydrologic society can help in discussing topics relevant for DRINKADRIA project. The conference and a round table that would address cross border water resources management (CB WRM) is planned to be organized together Croatian hydrologic society next year.

Serbian water pollution control society representatives participated at the first national workshop. In the future they will be included in the future capitalization activities. Further, it is planed that relevant information and outputs be presented to The International Association of Waterworks in the Danube catchment area (IAWD), ICPDR, etc. Although the before mentioned Association and Commission are focused on the Danube River Basin, they input and comment might be very useful for DRINKADRIA capitalization and sustainability activities.

In Greece, the following professional associations and NGOs are considered as relevant stakeholders:

- MEDITERRANEAN SOS Network, http://medsos.gr/medsos/medsos-network.html;
- The Hellenic Water Association (HWA) is a non-profit association. It is the Greek Governing member of IWA (International Water Association). The Hellenic Water Association was founded in June 2012. Its principles are its non-political character and non-profit and voluntary operation. Furthermore, HWA aims to act as a think tank, support top-class research and provide high-quality service to society. The main purpose of HWA is to play a primary role to water and wastewater management from a scientific point of view;

- The ideal core of the HWA lies in the application of the best available practices and contemporary methods for water and wastewater management by a skilled integration of several scientific, technical and management disciplines;
- The ultimate goal of the HWA is to assist in the environmental awareness of the society and contribute to its sustainable growth;
- More information about the Hellenic Water Association (HWA) can be found in the respective sections of this website (http://www.hwa.gr/index.php/en);
- Hellenic Hydrotechnical Association NGO (http://eye.web.auth.gr/); and
- Greek Committee for Water Resources Management NGO (http://www.waterinfo.gr/eedyp/whatis.html).

Annex 2: List of relevant stakeholders for DRINKADRIA project implementation (August 2016)

	Country	Italy	Slovenia	Croatia	Bosnia and Herzegovina	Serbia	Montenegro	Albania	Greece
1_1	**Participants in the process of water supply**	State	State (competent agencies and ministries)	State: Ministry of Agriculture - Water management department and the Croatian waters	Local community or municipality	Municipalities (or cities)	State	State: Ministry of Transport and Infrastructure: • General Directorate of Water Supply and Sewerage • General Directorate of Policies	National Water Commission
		National Regulatory Authority (AEEGSI)	Municipality	Local governments (cities and municipalities	Water utility	Public water utility companies (PUC) are established by municipalities	Municipality	Water Regulatory Authority	National Registry of Water Abstraction Points (EMSY)
		Regional Administrations	Public water utility company (public service contractor - public or private)	Exceptionally counties			Public water utility	Institute of Public Health/Ministry of Health	National Water Council
		Local Regulators						Ministry of Environment/Water Administration Unit	Ministry of Reconstruction of Production, Environment & Energy
		Entrusted Water Utilities						Local Government Units (Municipality/Commune)	Decentralized Administration and Regional Authorities
								Water Supply and Sewerage Utilities	Municipal Enterprises for Water Supply and Sewerage (DEYA)

1_2	**Owner of the water supply infrastructure**	Water Utility	Municipality which charges the public service company the rent for infrastructure	In most of the cases property of the public companies.	Municipality	Municipality	State	Local Government Unit (Municipality/Commune).	Municipal Enterprises for Water Supply and Sewerage. In some cases they are also the owners of the water supply infrastructure
		Municipality		No private ownership			Municipality		
1.3		END USERS							
1.4		Bilateral and transboundary river basin management commissions							

Annex 3: List of legislation for EU countries (August 2016)

List of legislation for EU countries (Croatia, Greece, Italy; Slovenia) involved in DRINKADRIA project aggregated according different levels [29].

Level / Country	CRO	GRC	ITA	SVN
EU	•The Drinking Water Directive •Water Framework Directive •Measuring instruments Directive	•The Drinking Water Directive •Water Framework Directive •Measuring instruments Directive	•The Drinking Water Directive •Water Framework Directive •Measuring instruments Directive	•The Drinking Water Directive •Water Framework Directive •Measuring instruments Directive
National	•Agreement between Bosnia and Herzegovina and Croatia on contract rights and obligations of water use for cross border public water supply •Metrology act •Regulations of metrology requirements for water meters for cold water •Waters Act •Act of financing water management •The Water Management Strategy •Water for human consumption Act •Regulations on parameters of conformity and methods of analysis of water for human consumption •Regulations of sanitary - technical, hygiene and other condition which have to obey water supply facilities	•Water management and protection - harmonization with the WFD 2000/60/EC •Determination of measures and procedures for the integrated water protection and management in compliance with the WFD2000/60/EC •Foundation of municipal water supply and sewage companies •Water use permits and water exploitation works •National Registry of Water Abstraction points •Amendment of the Law 3199/2003 •Identification of the 45 River Basin Districts and their competent regional authorities •Redefinition of the responsibilities of the ministries •Quality of drinking water for human consumption in compliance with the Directive 98/83/EC •Amendment of JMD Y2/2600/2001: Deviations •Amendment of JMD Y2/2600/2001 •Measures for the drinking water quality assurance in cases of exceptional climatic events and natural disasters •Additional	•Enviromental code •Rule book of losses •Partial abrogation water price rules •Urgent measures for economic growth •Provisions on water resources •Implementation of Measuring instruments Directive 2004/22 / EC •Regulation specifying criteria for following checks on water meters and heat meters, according to D.Lgs. 20 February 2007, n. 22, implementation of Dir. 2004/22/EC (MID) •Water tariff method •Regulation for materials and pieces that can be used in water supply and distribution systems •Criteria, methodologies and general technical standards, as foreseen by art. 2 letters b), d) and e) of the Law no. 319, as of 10 May 1976 , concerning rules for the prevention of water pollution •Implementation of EU Drinking Water Directive 98/83/EC on the quality of water intended for human consumption	•Rules on measuring instruments •Waters Act •Decree on drinking water supply •Action plan •Decree of tariff system for public service on the environmental field •Rules on drinking water

		monitoring for drinking water quality •Identification of the national monitoring network for the monitoring of water quality and quantity determining the monitoring stations •Technical Specifications		
Regional			•Provisions on water resources in Marche Region •Provisions on water resources in Veneto Region •Provisions on water resources in Friuli Venezia Giulia Region •Provisions on water resources in Puglia Region •Provisions on water resources •Regional guidelines for surveillance and control of water intended for human consumption in Veneto Region •Water Protection Plan •Provisions on water resources and integrated water service •Water Protection Plan - Technical Standards for the implementation •Optimal Territorial Area Plans (Piani d'Ambito)	
Municipal		•Water Pricing Policy		•Order on drinking water supply
Utility	•General and technical conditions of delivery of water services •Decision about the price of water services			Rules on technical performance, operation and management of facilities and instruments on public water supply system

Annex 4: List of legislation for non EU countries (August 2016)

List of legislation for non EU countries (Albania, BiH, Montenegro and Serbia) involved in DRINKADRIA project aggregated according different levels [29].

Level / Country	ALB	BIH	MNE	SRB
EU		•The Drinking Water Directive		
National	•For determination of the environmental quality standards for surface waters •Integrated Management of Water resources Law •Metrology Law •Hygiene and health regulation for the control of drinking water quality, design, construction and supervision of systems of drinking water supply, dated 26.02.1998 •Regulation On The Water Supply and Sewage services in the service area of the water-joint stock Supply and Sewage Utilities, dated 11.12.2009	•Agreement between Bosnia and Herzegovina and Croatia on contract rights and obligations of water use for cross border public water supply •Drinking water regulations	•Regulation on the hygienic quality of drinking water •Water Law •Law on water management financing •Law on communal activities •Regulations on methods for determining and maintaining sanitary protection zones for drinking-water sources and restrictions in the related zones •The Law on meteorology	•Regulation on the hygienic quality of drinking water •Water Law •Regulation on water source protection zones •Rules on measuring instruments •Water Management Master Plan of r. of Serbia •(Law should be adopted in 2015)
Entity		•Law on water of the Federation BiH		
County		•Law on water at the level of Herzegovina-Neretva County		
Regional / Utility				•Decision of water treatment and distribution
Municipal		•Decision on household garbage disposal and water supply prices •Water Supply Study for Municipality Neum	•The Decision on the water supply and sewage	
Utility		•Water utility Statut		

Annex 5: List of known CB WSS (August 2016)

List of known CB WSS [16, 17].

Countries	Type	Status	Name
ALB - GRC	CB WSS	potential	from Syri i Kalter (Albania) to Corfu (Greece)
ALB - ITA	CB WSS	potential	from Syri i Kalter (Albania) to Puglia (Italy)
CRO - BIH	CB WSS	active	from Doljani (Bosnia and Herzegovina) to Metković (Croatia)
CRO - BIH	CB WSS	active	from Imotski (Croatia) to Drinovačko Brdo and Puteševica (Bosnia and Herzegovina)
CRO - BIH	CB WSS	active	from Neum (Bosnia and Herzegovina) to Dubrovačko Primorje (Croatia)
CRO - BIH	CB WSS	active	from Posušje (Bosnia and Herzegovina) to Imotski (Croatia)
CRO - BIH	CB WSS	active	from Tomislavgrad (Bosnia and Herzegovina) to Imotski (Croatia
CRO - BIH	CB WSS	active	from Vrgorac (Croatia) to Ljubuški (Bosnia and Herzegovina)
CRO - MNG	CB WSS	active	from Bileća Lake (Bosnia and Herzegovina) through Konavle (Croatia) to Herceg Novi (Montenegro)
SLO - CRO	CB WSS	active	from Atomske toplice (Slovenia) to Luke poljanske (Croatia)
SLO - CRO	CB WSS	inactive	from Babno Polje (Slovenia) to Prezid (Croatia)
SLO - CRO	CB WSS	active	from Brest (Croatia) to train station Rakitovec (Slovenia)
SLO - CRO	CB WSS	active	from Buzet (Croatia) to Koper (Slovenia)
SLO - CRO	CB WSS	potential	from Čakovec (Croatia) to Ormož (Slovenia)
SLO - CRO	CB WSS	active	from Ilirska Bistrica (Slovenia) to Starod (Slovenia), Šapjane (Croatia), Jelšane (Slovenia), Klana (Croatia), Mučići (Croatia), Matulji (Croatia)
SLO - CRO	CB WSS	potential	from Jamnik (Croatia) to Radovice (Slovenia), Brašljevica (Croatia), Drašiče (Slovenia)
SLO - CRO	CB WSS	potential	from Jamnik (Croatia) to Slamna vas (Slovenia), Boldraž (Slovenia)
SLO - CRO	CB WSS	active	from Kuželj (Croatia) to Kuželj (Slovenia)
SLO - CRO	CB WSS	inactive	from Ormož (Slovenia) to Banfi (Croatia)
SLO - CRO	CB WSS	inactive	from Ptuj (Slovenia) to Gruškovje (Croatia)
SLO - CRO	CB WSS	potential	from Rajakovići (Croatia) to Brezovica (Slovenia), Bušinja vas (Slovenia), Suhor (Slovenia), Lokvice (Slovenia) and Trnovec (Slovenia)
SLO - CRO	CB WSS	potential	from Rajakovići (Croatia) to Hrast (Slovenia), Dole (Slovenia), Drage (Croatia)
SLO - CRO	CB WSS	active	from Rogaška Slatina (Slovenia) to Hum na Sutli and Zagorska sela (Croatia)
SLO - CRO	CB WSS	inactive	from Rogaška Slatina (Slovenia) to Rogatec (Croatia)
SLO - ITA	CB WSS	active	from Albana (Italy) to Golo Brdo (Slovenia)
SLO - ITA	CB WSS	inactive	from Gorizia (Italy) to Šempeter (Slovenia)
SLO - ITA	CB WSS	active	from Kambreško (Slovenia) to Strada Provinciale (Italy)
SLO - ITA	CB WSS	active	from Mrzlek (Slovenia) to Gorizia (Italy)
SLO - ITA	CB WSS	potential	from Rabuiese (Italy) to Škofije (Slovenia)

SLO - ITA	CB WSS	potential	from Robič (Slovenia) to Cividale (Italy)
SLO - ITA	CB WSS	inactive	from Trieste (Italy) to Lipica (Slovenia)
SLO - ITA	CB WSS	active	from Trieste (Italy) to Sežana (Slovenia)

Annex 6: List of known CR WSS (August 2016)

List of known CR WSS [16, 17].

Countries	Type	Status	Name
ALB	CR WSS	active	from Berat to Kucove
ALB	CR WSS	potential	from Berat to Ura Vajgurore
ITA	CR WSS	active	from Bolognola to San Ginesio
ITA	CR WSS	active	from Cingoli to Camerano
ITA	CR WSS	active	from Montefortino to Sarnano to Civitanova Marche
ITA	CR WSS	active	from Montefortino to Sarnano to Montecosaro
ITA	CR WSS	active	from Sefro to Matelica
ITA	CR WSS	active	Venice region
MNG	CR WSS	active	Nikšič
SRB	CR WSS	potential	from Čačak via Mrčajevci to Kraljevo
SRB	CR WSS	active	Kruševac
SRB	CR WSS	potential	from Gornji Milanovac via Mt. Rudnik to Topola, Arandjelovac and Ljig
SRB	CR WSS	potential	Kruševac to Aleksandrovac, Ćićevac, Varvarin and a part of Trstenik Municipality
SRB	CR WSS	active	from Ljuberđa to Niš
SRB	CR WSS	active	Rzav (the municipalities of Arilje, Požega, Lučani, Čačak and Gornji Milanovac)

Countries	Type	Status	Description
ALB	CR WSS	active	from Berat to Kucove
ALB	CR WSS	potential	from Berat to Ura Vajgurore
ITA	CR WSS	active	Venice region
ITA	CR WSS	active	from Montefortino to Sarnano to Montecosaro
ITA	CR WSS	active	from Montefortino to Sarnano to Civitanova Marche
ITA	CR WSS	active	from Cingoli to Camerano
ITA	CR WSS	active	from Bolognola to San Ginesio
ITA	CR WSS	active	from Sefro to Matelica
MNG	CR WSS	active	Nikšič
SRB	CR WSS	active	Rzav (the municipalities of Arilje, Požega, Lučani, Čačak and Gornji Milanovac)
SRB	CR WSS	active	Kruševac
SRB	CR WSS	active	from Ljuberđa to Niš
SRB	CR WSS	potential	from Gornji Milanovac via Mt. Rudnik to Topola, Arandjelovac and Ljig
SRB	CR WSS	potential	from Čačak via Mrčajevci to Kraljevo
SRB	CR WSS	potential	from Kruševac to Aleksandrovac, Ćićevac, Varvarin and a part of Trstenik Municipality

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The project is co-funded by the European Union, Instrument for Pre-Accession Assistance