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# Environment and Climate Regional Accession Network (ECRAN)

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Report on the Workshop  
on Water Framework  
Directive: “ Tools and  
guidance for assessing  
resource and  
environmental cost in the  
WFD” and the “3<sup>rd</sup>  
Annual Meeting ”

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29-31 March 2016, Skopje

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**ENVIRONMENT AND CLIMATE REGIONAL NETWORK FOR ACCESSION - ECRAN**

**WORKSHOP REPORT**

**Activity 2.3**

**WORKSHOP “TOOLS AND GUIDANCE FOR ASSESSING  
RESOURCE AND ENVIRONMENTAL COST IN THE WFD”**

**3<sup>rd</sup> ANNUAL MEETING OF THE WATER MANAGEMENT WORKING GROUP**

**Skopje, 29 – 31 March 2016**



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LIST OF ABBREVIATIONS	
<b>Acquis</b>	Acquis communautaire - Community legislation
<b>B&amp;A</b>	Bosnia and Herzegovina
<b>BAP</b>	Best Agricultural Practice
<b>BAT</b>	Best Available Techniques
<b>BEP</b>	Best Environmental Practices
<b>BLS</b>	Baseline Scenario
<b>BSC</b>	Black Sea Commission
<b>BWD</b>	Bathing Water Directive
<b>CAP</b>	Common Agricultural Policy
<b>CIS</b>	Common Implementation Strategy
<b>DPSIR</b>	Driver, Pressure, State, Impact and Response framework for environmental analysis
<b>DRB</b>	Danube River Basin
<b>DRBD</b>	Danube River Basin District
<b>DRBMP</b>	Danube River Basin Management Plan
<b>Drina RB</b>	Drina River Basin
<b>DRPC</b>	Danube River Protection Convention
<b>EC</b>	European Commission
<b>ECRAN</b>	Environment and Climate Regional Accession Network Project
<b>EEC</b>	European Economic Community
<b>EPER</b>	European Pollutant Emission Register
<b>EPTR</b>	European Pollutant Release and Transfer Register
<b>EQS</b>	Environmental Quality Standard
<b>EQSD</b>	Directive on Environmental Quality Standards
<b>ERC</b>	Environmental and Resource Cost
<b>FASRB</b>	Framework Agreement on the Sava River Basin
<b>FBIH</b>	Federation of Bosnia and Herzegovina
<b>GES</b>	Good Ecological Status
<b>HMWB</b>	Heavily Modified Water Body
<b>HRC</b>	Danube RBD in Croatia
<b>HRJ</b>	Adriatic RBD in Croatia
<b>ICPBS</b>	International Commission for the Protection of the Black Sea
<b>ICPDR</b>	International Commission for the Protection of the Danube River
<b>IED</b>	Industrial Emissions Directive
<b>IMPRESS</b>	Impact pressures assessment guidance
<b>IPPC</b>	Integrated Pollution Prevention and Control
<b>KTM</b>	Key Type of Measures
<b>MS</b>	Member State
<b>MSDF</b>	Marine Strategy Framework Directive
<b>ND</b>	Nitrates Directive
<b>NVZ</b>	Nutrient Vulnerable Zones
<b>NWRM</b>	National Water Retention Measures



LIST OF ABBREVIATIONS	
<b>PoM</b>	Programme of Measures
<b>PRTR</b>	Pollutant Release and Transfer Register
<b>PS</b>	Priority Substances
<b>RB</b>	River Basin
<b>RBD</b>	River Basin District
<b>RBMP</b>	River Basin Management Plan
<b>RBSP</b>	River Basin Specific Pollutants
<b>RefCond</b>	Reference Conditions
<b>RR</b>	Roof Report
<b>RS</b>	Republic of Serbia
<b>RS</b>	Republic of Srpska
<b>SAA</b>	Stabilization and Association Agreement
<b>SAP</b>	Stabilization and Association process
<b>SWMI</b>	Significant Water Management Issue
<b>TAIEX</b>	Technical Assistance and Information Exchange Office
<b>UWWT</b>	Urban Waste Water Treatment



## Glossary of terms and definitions

**Best available techniques:** The latest stage of development (state of the art) of processes, facilities or methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste

**Best environmental practice:** The application of the most appropriate combination of environmental control measures and strategies

**Common Agricultural Policy (CAP):** providing direct subsidies to farmers and land managers. A small part of these funds support rural development actions that mainly relate to agricultural activities, as well as forestry and environmental improvements on farmland.

**Common Implementation Strategy (CIS):** This strategy was agreed by the European Commission, Member States and Norway in 2001. The aim of the strategy is to provide support in the implementation of the Water Framework Directive and its daughter directives, by developing a common understanding and guidance on key elements of the Directives.

**Competent Authority:** An authority or authorities identified under Article 3(2) or 3(3) of the Water Framework Directive. The Competent Authority will be responsible for the application of the rules of the Directive within each river basin district lying within its territory.

**Cost effective:** In the context of the Water Framework Directive, it describes the least cost option for meeting an objective. For example, where there are a number of potential actions that could be implemented to achieve Good Ecological Status for a water body, Cost Effectiveness Analysis is used to compare each of the options and identify which option delivers the objective for the least overall cost.

**Characterisation (of water bodies):** A two-stage assessment of water bodies under the Water Framework Directive. Stage 1 identifies water bodies and describes their natural characteristics. Stage 2 assesses the pressures and impacts from human activities on the water environment. The assessment identifies those water bodies that are at risk of not achieving the environmental objectives set out in the Water Framework Directive. The results are used to prioritize both environmental monitoring and further investigations to identify those water bodies where improvement action is required

**Catchment:** The area from which precipitation contributes to the flow from a borehole spring, river or lake. For rivers and lakes this includes tributaries and the areas they drain.

**Chemical Status (surface waters):** The classification status for the surface water body. This is assessed by compliance with the environmental standards for chemicals that are listed in the Environmental Quality Standards Directive 2008/105/EC, which include priority substances, priority hazardous substances and eight other pollutants carried over from the Dangerous Substance Daughter Directives. Chemical status is recorded as good or fails. The chemical status classification for the water body, and the confidence in this (high or low), is determined by the worst test result.

**Classification:** Method for distinguishing the environmental condition or “status” of water bodies and putting them into one category or another.

**Coastal water:** surface water on the landward side of a line every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.



**Current Chemical Quality:** A measure of the present chemical condition of a water body (also called Chemical Status). There are two classes of chemical status of a water body (good or fail).

**Current Ecological Quality:** A measure of the present ecological condition of a surface water body (also called Ecological Status). There are five classes of ecological status of surface waters (high, good, moderate, poor or bad)

**Driver, Pressure, State, Impact and Response framework for environmental analysis (DPSIR):** Driver: an anthropogenic activity that may have an environmental effect (e.g. agriculture, industry); Pressure: the direct effect of the driver (for example, an effect that causes a change in flow or a change in the water chemistry; State: the condition of the water body resulting from both natural and anthropogenic factors (i.e. physical, chemical and biological characteristics); Impact: the environmental effect of the pressure (e.g. fish killed, ecosystem modified); Response: the measures taken to improve the state of the water body (e.g. restricting abstraction, limiting point source discharges, developing best practice guidance for agriculture)

**Diffuse sources:** Sources of pollution that are not discrete and extend over a wide geographical area

**Discharge:** Intentional transfer of substances into water

**Disproportionate cost:** The determination of disproportionate cost requires a decision making procedure that assesses whether the benefits of meeting good status in a water body are outweighed by the costs.

**Ecological potential:** The status of a heavily modified or artificial water body measured against the maximum ecological quality it could achieve given the constraints imposed upon it by those heavily modified or artificial characteristics necessary for its use. There are five ecological potential classes for Heavily Modified Water Bodies/Artificial Water Bodies (maximum, good, moderate, poor and bad).

**Ecological status:** Ecological status applies to surface water bodies and is based on the following quality elements: biological quality, general chemical and physico-chemical quality, water quality with respect to specific pollutants (synthetic and non-synthetic), and hydromorphological quality. There are five classes of ecological status (high, good, moderate, poor or bad). Ecological status and chemical status together define the overall surface water status of a water body.

**Ecosystem:** A complex set of relationships among the living resources, habitats, and residents of an area. It includes trees, plants, animals, fish, birds, microorganisms, water, soil and people. The community of organisms and their physical environment interact as an ecological unit.

**Environmental impact assessment (EIA):** Procedure to identify the potential impacts of a project or activity on the environment and to develop mitigation measures to reduce these to acceptable levels.

**Ecosystem approach:** The comprehensive integrated management of human activities based on the best available scientific knowledge about the ecosystem and its dynamics, in order to identify and take action on influences which are critical to the health of the marine ecosystems, thereby achieving sustainable use of ecosystem goods and services and maintenance of ecosystem integrity

**Eutrophication:** It means the enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned



**Exemptions:** The environmental objectives of the Water Framework Directive are set out in Article 4. These include the general objective of aiming to achieve good status in all water bodies by 2015 and the principle of preventing any further deterioration in status. There are also a number of exemptions to the general objectives that allow for less stringent objectives, extension of deadline beyond 2015 or the implementation of new projects. Common to all these exemptions are strict conditions that must be met and a justification must be included in the river basin management plan. The conditions and process in which the exemptions can be applied are set out in Article 4.4, 4.5, 4.6 and 4.7.

**Groundwater:** all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

**Good chemical status (surface waters):** Means those concentrations of chemicals in the water body do not exceed the environmental standards specified in the Environmental Quality Standards Directive 2008/105/EC. These chemicals include Priority Substances, Priority Hazardous Substances and eight other pollutants carried over from the Dangerous Substance Daughter Directives.

**Good chemical status (groundwater):** See chemical status (groundwater). Means the concentrations of pollutants in the groundwater body do not exceed the criteria set out in Article 3 of the Groundwater Daughter Directive (2006/118/EC).

**Good ecological potential:** Those surface waters which are identified as Heavily Modified Water Bodies and Artificial Water Bodies must achieve 'good ecological potential' (good potential is a recognition that changes to morphology may make good ecological status very difficult to meet). In the first cycle of river basin planning good potential may be defined in relation to the mitigation measures required to achieve it.

**Good ecological status:** The objective for a surface water body to have biological, structural and chemical characteristics similar to those expected under nearly undisturbed conditions.

**Good status:** Is a term meaning the status achieved by a surface water body when both the ecological status and its chemical status are at least good or, for groundwater, when both its quantitative status and chemical status are at good status.

**Groundwater:** All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

**Hazardous substances:** Substances or groups of substances which are toxic, persistent and liable to bio accumulate, and other substances or groups of substances which give rise to an equivalent level of concern.

**Heavily Modified Water Body:** A surface water body that does not achieve good ecological status because of substantial changes to its physical character resulting from physical alterations caused by human use, and which has been designated, in accordance with criteria specified in the Water Framework Directive, as 'heavily modified'.

**Inland waters:** all standing or flowing water on the surface of the land, and all groundwater on the landward side of the baseline from which the breadth of territorial waters is measured.

**Measure:** This term is used in the Water Framework Directive and domestic legislation. It means an action which will be taken on the ground to help achieve Water Framework Directive objectives.





**Mechanisms:** The policy, legal and financial tools which are used to bring about actions (measures). Mechanisms include for example: legislation, economic instruments; codes of good practice; negotiated agreements; promotion of water efficiency; educational projects; research; development and demonstration projects.

**Monitoring points:** A location within a water body where different environmental parameters are measured, including biology, hydromorphology, physico-chemical, and priority and priority-hazardous substances for surface waters.

**Objective (surface waters):** Three different status objectives for each water body. These are:

- Overall status objective;
- Ecological status or potential objective;
- Chemical status objective.

These are always accompanied by a date by when the objective will be achieved.

*Ecological status* (or potential) objectives will be derived from the predicted outcomes for the biological elements and physico-chemical elements, plus any reasons for not achieving good ecological status (or potential) by 2015.

Chemical status objectives will be derived from the predicted outcomes for the chemical elements plus any reasons for not achieving good chemical status by 2015.

Overall status objectives will be derived from the ecological status and chemical status objectives.

**Point source:** Identifiable and localized point of emissions to air and discharges to water

**Pressures:** Human activities such as abstraction, effluent discharges or engineering works that have the potential to have adverse effects on the water environment.

**Priority substances:** A pollutant or group of pollutants, presenting a significant risk to or via the aquatic (surface water) environment that has been identified at Community level under Article 16 of the Water Framework Directive. They include 'priority hazardous substances'.

**Pollution:** The introduction by man, directly or indirectly, of substances or energy into the maritime area which results, or is likely to result, in hazards to human health, harm to living resources and marine ecosystems, damage to amenities or interference with other legitimate uses of the sea

**Population equivalent** is a measure of pollution representing the average organic biodegradable load per person per day: it is defined in Directive 91/271/EEC as the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60 g of oxygen per day.

**Programme of Measures:** A Programme of Measures, as used in the Water Framework Directive, is a group of actions designed to improve the environment in a river basin district and meet the objectives of the Directive.

**Reference conditions:** The benchmark against which the effects on surface water ecosystems of human activities can be measured and reported in the relevant classification scheme. For waters not designated as heavily modified or artificial, the reference conditions are synonymous with the high ecological status class. For waters designated as heavily modified or artificial, they are synonymous with the maximum ecological potential class.



**Risk:** The likelihood of an outcome (usually negative) to a water body or the environment, or the potential impact of a pressure on a water body.

**Risk assessment:** The analysis that predicts the likelihood that a water body is at significant risk of failing to achieve one or more of the Water Framework Directive objectives.

**Risk category:** The numerical or descriptive category assigned to water bodies that have been risk assessed, in order to make the risk-based prioritization of water bodies for action under the Water Framework Directive more manageable.

**River basin:** A river basin is the area of land from which all surface run-off and spring water flows through a sequence of streams, lakes and rivers into the sea at a single river mouth, estuary or delta. It comprises one or more individual catchments.

**River basin district:** the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3(1) as the main unit for management of river basins.

**River Basin Management:** The management and associated planning process that underpins implementation and operation of the Water Framework Directive. It is both an overarching process in terms of existing processes and also defines new sub-processes such as those for hydromorphology. The river basin management plans are plans for river basin management.

**River Basin Management Plan:** For each River Basin District, the Water Framework Directive requires a River Basin Management Plan to be published. These are plans that set out the environmental objectives for all the water bodies within the River Basin District and how they will be achieved. The plans will be based upon a detailed analysis of the pressures on the water bodies and an assessment of their impacts. The plans must be reviewed and updated every six years.

**Surface water:** inland waters, except groundwater, transitional waters and coastal waters, except in respect of chemical status, for which territorial waters are also included.

**Significant Water Management Issues:** This is a report on each River Basin District that highlights significant water management issues in that River Basin District which will need to be addressed to achieve environmental objectives under the Water Framework Directive.

**Transitional waters:** bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.

**Urban waste water** means waste water from residential settlements and services which originates predominantly from the human metabolism and from household activities (domestic waste water) or a mixture of domestic waste water with waste water which is discharged from premises used for carrying on any trade or industry (industrial waste water) and/or run-off rain water;

**Water body:** A manageable unit of surface water, being the whole (or part) of a stream, river or canal, lake or reservoir, transitional water (estuary) or stretch of coastal water. A 'body of groundwater' is a distinct volume of groundwater within an aquifer or aquifers



## I. Background/Rationale

### General information about the training

The Regional Workshop “Tools and guidance for assessing resource and environmental cost in the WFD” has been organized back to back with the 3<sup>rd</sup> Annual Meeting of the Water Management Working Group (WMWG) as planned by ECRAN project team in 2015.

The tasks of the WMWG within the frame of ECRAN project are mainly focused on the strengthening of the technical capacities of the competent authorities in ECRAN beneficiaries’ countries on the implementation of WFD, specifically in providing assistance in the development of transboundary River Basin Management Plans (RBMPs, and performing economic and financial analysis of the Program of Measures (PoM). In addition, the WMWG provides the frame for capacity building on interlinkages between the WFD and Marine Strategy Framework Directive (MSFD).

The principal component of the WFD for each river basin district is the development of river basin management plans which will be reviewed on a six yearly basis and which set out the actions required within each river basin to achieve set environmental quality objectives.

Considering the need to ensure a greater particularization of the water management issues on a smaller scale but having potentially a larger impact, the countries in the Drina River Basin (Drina RB) will develop the Drina River Basin Management Plan which will include a Joint Program of Measures.

Drina River Basin (Drina RB) has been selected within the frame of the 2<sup>nd</sup> Screening Workshop (September 2014) as the most appropriate pilot river basin for assistance to the beneficiary countries in the development of transboundary river basin management plans.

This process will set off interfaces between a sub – unit (3 countries) and the Sava River Basin (4 countries) and the whole Danube River Basin (19 countries), through the exchange and comparison of state-of-the-art knowledge, frameworks, practices and experiences gained at the Sava and Danube basin scale. The different scale and degree of detailing - at the sub unit level - will offer the possibility of filling the missing data and gaps and bringing together the most comprehensive and up-to-date information and statistics when addressing the key challenges for the Drina basin.

The purpose of the Regional Workshop “Tools and guidance for assessing resource and environmental cost in the WFD” was to provide an open forum for consideration of practical approaches and concepts, discussions of countries inputs, needs and challenges, presentations and exchange of experience on assessing resource and environmental cost in line with the WFD.

The benefits of strengthening the technical capacity of the workshop participants were maximised through the training and exchange of experience offered by TAIEX assistance to the ECRAN project beneficiaries.

The Regional Workshop took place in Skopje (FYR of Macedonia) from 30 to 31 March 2016.



### The 3<sup>rd</sup> Annual Meeting of the Water Management Working Group

The 3<sup>rd</sup> Annual Meeting of the Water Management Working Group took place on 29 March 2016, in Skopje, FYR of Macedonia. The meeting focused on the presentation of the WM WG tasks and the results achieved for each of the tasks since the last Annual meeting.

The main tasks of the WM WG include:

Task 2.3.2: Assistance in the development of transboundary river basin management plans

Task 2.3.3: Economic analysis in accordance with the WFD (cost recovery and cost-effectiveness considerations), including innovative systems of waste water treatment

Task 2.3.4: WFD and Marine Strategy Framework Directive (MSFD) – objectives, synergies and approaches.

The Task 2.3.2 aims to provide practical assistance to the beneficiary countries in the development of the RBMP and the Program of Measures (PoM) in Drina River Basin, selected as a pilot basin. At the meeting the progress reached towards the preparation of the RBMP and the PoM has been summarised, considering the methodology adopted by the group and the steps already implemented. In addition, a number of case studies from all beneficiary countries have been introduced on topics such as: agricultural measures, reporting to the UWWT Directive, reporting to EQS Directive, program of measures, together with the lessons learned to date, best practices and cross - cutting recommendations summarised during the workshops.

For the Task 2.3.3, the key topics discussed during the workshops related to the Economic analysis in accordance with the WFD, specifically cost recovery and cost-effectiveness considerations have been presented. Also, for this component the group prepared a set of case studies (such as cost recovery, payment for environmental services, resource cost, environmental costs, and water tariffs) following agreed templates, which were discussed at the meetings.

Within the frame of Task 2.3.4 related to the synergies and approaches between the WFD and MSFD, the outcomes of the workshops have been summarized, including the practical approach and the methodology for MSFD implementation, the similarities and difference between the requirements of the Initial Assessment, the GES determination, development of PoM and performing Economic Analysis. For this task, the beneficiary countries did prepared questionnaires which were discussed and assessed during the workshops, and which were as well introduced at the annual meeting.

Apart of presenting the results of the workshops organized in the reporting period, at the Annual meeting, the agenda of the Regional Workshop “Tools and guidance for assessing resource and environmental cost in the WFD” has been introduced and adopted. Finally, at the meeting remaining activities to be performed till the end of the project were introduced, together with some considerations related to (i) possible topics for further training to be organised within the frame of future initiatives in the beneficiary countries, but also (ii) challenges and expectations related to the impact of the training activities on the knowledge, expertise and understanding of the participants.

**Key points** of discussions:

- Highlighting the approaches and the outcomes of the previous reporting period;
- Identifying key issues and challenges for finalizing the remaining activities of the group, within the frame of ECRAN project;



- Presentation of the overall approach and methodology that have been applied for implementation of the activities with the outputs and results achieved for each of the WM WG tasks;
- Agreement on the organization of the remaining workshops to be organized until July 2016, when the project will be finalized;
- Enhanced understanding on the need to establish a comprehensive database that can meet a wide range of requirements for assessment and reporting;
- Suggestions on how to enhance the interaction of participants and ensure motivated involvement (national inputs, short presentations on selected topics which can stimulate interest);
- Encouraging careful selection of case studies/applications to “real life” tasks/situations ;
- Presentations of the final outcome outline of the report on the Drina River Basin Management Plan, synthesis and presentations of the countries inputs.

The **key results** of the 3<sup>rd</sup> Annual Meeting include:

- Agenda of the Regional Workshop “Tools and guidance for assessing resource and environmental cost in the WFD” accepted;
- Workplan 2016 of the WM WG approved;
- Clarification of the future topics of the case studies to be prepared until the finalisation of the project.

### **Regional Workshop “Tools and guidance for assessing resource and environmental cost in the WFD”**

The assistance in preparing the Program of Measures as part of the development of the River Basin Management Plan, in line with the Water Framework Directive continued with additional steps, based on the agreed 4 phases methodology, and related packages of actions and activities needed for their implementation.

The whole process of river basin management planning includes the preparation of programmes of measures at basin level for achieving the environmental objectives of the Water Framework Directive cost-effectively. Specifically, the main focus of this Workshop was to discuss the methodologies and approaches for calculating the resource and environmental cost in line with the WFD, towards reaching the WFD objectives.

Phases 1 – 3 have been already implemented through the assistance and contributions of all beneficiary countries in 2015. The first results reached during the 4<sup>th</sup> phase have been implemented at the Workshop, which is the subject of this present report. The phase 4 will be further implemented in 2016 till the end of the project.

The final outcome of the first task of the Water Management Working Group, respectively the task 2.3.3 “Assistance in the development of transboundary river basin management plans” would be the draft Program of Measures or Drina River Basin, concluded through the contributions from the Drina



countries but discussed and agreed by all ECRAN beneficiary countries. In addition, experiences of all beneficiary countries will be incorporated in the final report, as case studies, following the logic of the report and of the WFD.

The Program of measures in Drina River Basin to be completed in line with phase 4 of the methodology will include basic and supplementary measures, addressing organic pollution, nutrient pollution, flooding, hazardous substances pollution and hydromorphological alterations. For each of these significant water management issues, the participants made use of the EC reporting sheets, following the relevant EU Directives, such as Urban Wastewater Directive, Industrial Emissions Directive, Nutrients Directive, Flood Directive, and Environmental Quality Standards Directive. Further, for addressing hydromorphological alterations, the program of measures will cover mainly measures for improving longitudinal and lateral connectivity of rivers, as suggested by the beneficiary countries.

To respond to the WFD challenges, a specific task on the calculation of the resource and environmental cost has been included in the training program of the WM WG, and discussed at this workshop. Recommendations were given to the participants on how resource and environmental costs might best be assessed and reported under the WFD (and potentially other EU water-related directives that address economic issues), but also where we can make use of these costs.

The legal basis of the calculation of the resource costs and environmental costs, as components of the total economic value is stipulated in the WFD provisions:

*Article 5* of the WFD requires Member States to undertake an economic analysis of water uses according to the specifications of *Annex III*.

*Article 13* and *Annex VII* require Member States to send summary reports of the analyses required under *Article 5* and *Annex II* as part of the first RBMP.

*Annex III* of the WFD stipulates that the economic analysis of water uses should contain enough information in sufficient detail (taking account of the costs associated with collection of relevant data) in order to:

- Make the relevant calculations necessary for taking into account the principle of recovery of the costs of water services under Article 9, taking into account long term forecasts of supply and demand for water in the RBD and where necessary:
- Make estimates of the volume, prices and costs associated with water services.
- Make estimates of the relevant investment including forecasts of such investments
- Make judgments about the most cost-effective combination of measures with respect to water uses to be included in the PoMs under Article 11, based on estimates of the potential costs of such measures.

*Article 9:*

- Member States shall take account of the principle of recovery of the costs of water services, including environmental and resource costs, having regard to the economic analysis conducted according to *Annex III*, and in accordance in particular with the polluter pays principle.

Member States shall ensure by 2010 that water-pricing policies provide adequate incentives for users to use water resources efficiently, and thereby contribute to the environmental objectives of this



Directive, an adequate contribution of the different water uses, disaggregated into at least industry, households and agriculture, to the recovery of the costs of water services, based on the economic analysis conducted according to *Annex III* and taking account of the polluter pays principle.

For the preparation of this workshop, the participants made use of the results obtained during previous screening workshops, specifically:

- The assessment of the degree of cost recovery
- Elements of the economic analysis
- Procedures for completing the screening templates for basic measures, according to the European reporting schemes
- The approach for the identification and selection of supplementary measures
- The outline and the first draft of the PoM.

Further, the participants prepared case studies related to the cost recovery, the resource and the environmental costs.

The first day of the workshop was dedicated to the Resource costs: theory, methodology, application.

Resource costs represent the costs of foregone opportunities that other uses suffer due to the depletion of the resource beyond its natural rate of recharge or recovery (e.g. costs related to groundwater over-abstraction).

A more recent definition from the EC guidance 2015, indicates that the resource costs are the costs of foregone opportunities which other water employments suffer due to the depletion of the resource beyond its natural rate of recharge or recovery (e.g. linked to the over-abstraction of groundwater).

They depend on:

- the water availability in the territory and in the time
- current and future needs
- reproducibility of the resource (including its quantity)
- the allocation distribution
- the economic, social and environmental effects on the alternative use and no-use.

The resource costs are "scarcity costs" and they can occur for inefficiency causes or natural conditions.

Therefore, they could exist also if environmental costs do not exist. In these cases alternative water uses could generate higher net economic value.

The resource costs arise as a result of an inefficient allocation ((in economic terms) of water and/or pollution over time and across different water users, because an alternative water use generates a higher net economic value.





In addition, during the first day the participants reviewed the approach and methodologies to calculate resource costs (RC), options where we can make use of the RC, the types of the RC, and the relevance of the scale, availability of data, and the levels of disaggregating issues in the WFD.

The Environmental costs: theory, methodology, application have been examined during the 2<sup>nd</sup> day of the workshop.

Environmental costs (EC) are distinguished separately from the resource costs- important differences exist in terms of water quantity and water quality management issues. Environmental costs refer to all physical environmental damage costs related to the chemical and ecological status of a water body or river basin.

Environmental costs represent the total economic costs (welfare loss) of the physical environmental damage to a water system (water body or river basin) as a result of the chemical and/or ecological state of the water system.

The physical environmental damage is measured through the difference between a water body or river basin's current and good chemical and/or ecological state.

The total economic costs include possible benefits foregone (opportunity costs), such as loss of the economic benefits derived from, for example, recreational opportunities or wildlife habitat and biodiversity conservation.

The environmental costs also include the (indirect) impacts of the physical environmental damage on various relevant water uses. EC are estimated on the basis of the costs of the programme of measures to achieve good water status

Further, the participants discussed the steps in the assessment of the environmental costs associated with water use, reviewed the approach and methodologies to calculate EC, the options where we can make use of the EC, the types of the EC, and the relevance of the scale, availability of data, and the levels of disaggregating issues in the WFD.

Following the suggestions of the participants at the last workshop organized on February 2016, regarding sharing the experience of countries, case studies have been prepared and presented covering the following subjects:

- 1) Cost recovery
- 2) Resource cost
- 3) Environmental cost
- 4) Water pricing
- 5) Water tariffs.

Experiences from Romania have been shared on the development and testing of Practical Guidelines for the Assessment of Resource Costs and Benefits in the WFD in the Romania.

The remaining components of the 4<sup>th</sup> phase methodology will cover issues such as the economic analysis, financing and issues linked to the implementation and reporting of the program of measures. These topics will represent the focus of the next planned training in 2016.





## Summary of the main topics covered

The main topics presented and discussed at the Workshop included:

### 1) Resource Cost –theory, methodology and application

- Resource Cost - theory and methodology
- Resource Cost – Economic Guidance
- Policy framework and options to assess resource costs: lessons learned from Romanian projects
- Development and Testing of Practical Guidelines for the Assessment of Resource Costs and Benefits in the WFD in the Romania
- Scale, data, levels of disaggregating issues in the WFD
- CVM - Contingent Valuation Method
- Cost recovery and incentive pricing

### 2) Environmental costs: theory, methodology and application

- Environmental Cost - theory and methodology
- Implementing environmental costs for financing projects: lessons learned from Romanian experience
- Cost recovery for water services, a suitable instrument for reaching good water status
- Development and Testing of Practical Guidelines for the Assessment of Environmental Costs and Benefits in the WFD in the Romania
- Cost assessment and reporting of the WFD implementation.



## II. Objectives of the Training

### General Objective

The overall objectives of the workshop are to develop a knowledge base on the economic dimensions of water management (i.e. costs, benefits, environmental and resource cost) that will facilitate the overall assessment of the economic impact (costs & benefits) of the WFD and the economic assessment of policy options

### Specific Objectives

- To provide recommendations on how costs and benefits might best be assessed and reported under the WFD ;
- To contribute to the enhancing of the existing water economic knowledge base so it better support water management and EU water policy making in the medium term;
- To improve the understanding on the calculation of resource costs and of the environmental costs;
- To contribute to the improvement of the understanding of the water pricing policy in line with Art 9 of the WFD;
- To present, discuss and review the preparatory status of the PoM in Drina River Basin in relation to the pressures assessment, identification of basic and supplementary measures addressing the five SWMIs in Drina River Basin, and performing the economic analysis;
- To establish further actions in order to finalize the Drina RBM Plan;
- To assess the difficulties in the countries for development of the environmental objectives and to discuss the needs and possible options of support through the activities of ECRAN project, including training needs;
- Facilitate dialogue among the countries on specific concepts and actions that are needed to ensure WFD implementation;
- To brainstorm and discuss the activities (guidance, capacity building, and practical case studies) needed for performing the remaining project tasks in line with WFD requirements in the Drina RB and involvement of participant countries;
- To brainstorm and discuss the activities (guidance, capacity building, and practical case studies) needed for performing the project tasks in line with WFD requirements in the Drina RB and involvement of participant countries.

### Expected Results

- Improved understanding of the topics, challenges and tasks, and related responsibilities along the calculation of the resource and environmental costs, in line with WFD;
- Exchange of experiences and knowledge significantly improved;
- Key obstacles impeding the tasks implementation and related solutions identified;
- Active involvement of the participants through the preparation of case studies on cost recovery and the resource and environmental costs;
- Agreement on the draft 2 of the Drina RBM Plan and the case studies from all beneficiary countries;
- Guidance documents related to the WG tasks discussed and clarified.



### III. EU policy and legislation covered by the training

#### The Water Framework Directive (WFD) 2000/60/EC

The Water Framework Directive (WFD) 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy represents the European Union directive which commits European Union member states to achieve good qualitative and quantitative status of all water bodies by 2015. The Directive aims for 'good status' for all ground and surface waters that include rivers, lakes, transitional waters, and coastal waters, in the EU.

The Directive also requires Member States to establish river basin districts and for each of these a river basin management plan. The Directive envisages a cyclical process where river basin management plans are prepared, implemented and reviewed every six years. There are four distinct elements to the river basin planning cycle: characterisation and assessment of impacts on river basin districts; environmental monitoring; the setting of environmental objectives; and the design and implementation of the programme of measures needed to achieve them.

This Framework-Directive has a number of objectives, such as preventing and reducing pollution, promoting sustainable water usage, environmental protection, improving aquatic ecosystems and mitigating the effects of floods and droughts, aiming to achieve "good ecological and chemical status" for all Community waters by 2015.

Several successive amendments and corrections (2001, 2008 and 2009), have been incorporated to the WFD.

The river basin management established under the WFD (entered into force December 2009) begins with an analysis of the characteristics of the river basin district, a review of the impact of human activity on water status, and an economic analysis of water use. Programmes to monitor water status must be established, along with programmes of measures for each river basin district in order to achieve the specified environmental objectives. Then, for each river basin district, a river basin management plan must be produced with the active involvement of all interested parties.

Finally, the specific programmes of measures must be implemented so as to achieve the objective of good status for all waters within each river basin. The first RBM plans cover the period 2009-2015. They shall be revised in 2015 and then every six years thereafter.

#### The River Basin Management Plan (RBMP) and the Program of Measures (PoM)

The principal component of the Water Framework Directive for each river basin district is the development of river basin management plans which will be reviewed on a six yearly basis and which set out the actions required within each river basin to achieve set environmental quality objectives.

The best model for a single system of water management is management by river basin - the natural geographical and hydrological unit - instead of according to administrative or political boundaries. While several Member States already take a river basin approach, this is at present not the case everywhere. For each river basin district - some of which will traverse national frontiers - a "river basin management plan" will need to be established and updated every six years, and this will provide the context for the co-ordination requirements identified above.



The river basin management plan (RBMP) is essentially a snapshot in time and is the subject of continual review. Essentially, the first river basin management plans finalized ended on December 2009 and represents the transition between the initial analysis carried out in 2004 and implementation of the Directive. Their 6-years updating is a refining process based on improved data and understanding and allowing for revision of the circumstances in the river basins.

The first river basin management plans have been published by the end of 2009 and summarized the quality and quantity objectives to be achieved by 2015.

The river basin management plan (RBMP) represents the main achievement tool of the WFD objectives, which is realized in 6-year cycles and consists of preparation, implementation and revision phases.

Essentially, the RBMP provides:

- 1) evidence and documentation mechanism for the information gathered including: pressures and impact assessment, environmental objectives for surface and ground waters, quality and quantity of waters, and the impact of human activity on water bodies;
- 2) facilitates coordination of the programmes of measures and other relevant programmes within the river basin district;
- 3) guarantees the main progress reporting mechanism to the EC as required by the WFD Art. 15.

Within the Water Framework Directive (WFD), the environmental objectives will be set for all water bodies. One of its main aims is that all water bodies (including rivers, lakes, coasts, estuaries and groundwater) achieve “good status” by 2015. Water bodies must also be protected to prevent any deterioration in status.

Through the gap analysis, for each water body, any possible discrepancy between its existing status and that required by the Directive is identified.

If a water body is considered unlikely to achieve its environmental objectives by 2015 (including those for protected areas and groundwater), the WFD requires that management measures to be put in place to meet the WFD goals. Individual measures and/or packages of measures for water bodies must be integrated in a co-ordinated and cost-effective programme of measures

### **Guidance documents**

In order to address the WFD implementation challenges in a coordinated way, the Commission agreed on a number of 33 guidance documents and 10 technical reports which have been produced to assist EU Member States with an overall methodological approach, which could be adjusted to specific circumstances by each EU Member State. The Guidance documents cover many aspects of implementation, such as establishing monitoring programmes, undertaking economic analyses, engaging the public, developing classification systems, how to identify and designate heavily modified and artificial water bodies.

Guidance documents finalized are made available on CIRCA.

The most relevant guidance documents for this workshop are the following:

N° 1 – Economics and the Environment



This Project is funded by the  
European Union



A project implemented by  
Human Dynamics Consortium

- N° 2 – Identification of Water Bodies
- N° 3 - Analysis of Pressures and Impacts
- N° 11 - Planning Processes
- N° 12 - The Role of Wetlands in the Water Framework Directive
- N° 13 - Overall Approach to the Classification of Ecological Status and Potential
- N° 20 - Exemptions to the environmental objectives
- N° 21 - Guidance for reporting under the WFD
- N° 24 - River Basin Management in a changing climate

Of major relevance for this workshop, the following additional documents are useful references for the participants:

- Information Sheet on the “Assessment of Environmental and Resource Costs in the Water Framework Directive” prepared by the Drafting Group ECO2 of Working Group 2B of the Common Implementation Strategy (CIS), 2004;
- Guidance for assessing the recovery of Environmental and Resource Costs in the context of the WFD, 2015.

The most relevant EU documents in support of the WFD implementation include:

- "Common Strategy on the Implementation of the Water Framework Directive" (CIS);
- "Carrying forward the Common Implementation Strategy for the Water Framework Directive - Progress and Work Programme 2003/2004"
- "Moving to the next stage in the Common Implementation Strategy for the Water Framework Directive - Progress and Work Programme 2005/2006"
- "Improving the comparability and the quality of Water Framework Directive implementation – Progress and Work Programme 2007-2009"
- "Supporting the implementation of the first river basin management plans - Work programme 2010-2012"
- "Strengthening the implementation of EU water policy through the second river basin management plans - Work Programme 2013-2015".

The CIS is a key document, prepared in recognition that an integrated approach to river basin management throughout Europe is crucial for the successful implementation of the WFD Directive.

The purpose is to:

- (i) develop a common understanding and approach to implementation throughout the EU,
- (ii) elaborate informal technical guidance and share experiences between MS to avoid duplication of effort, and
- (iii) to support efficient application of the WFD requirements.



In addition, the Commission produced Thematic CIS information sheets which provided more information and resource material publicly available on a variety of subjects, such as: River Basin Management, Reporting and WISE, Ecological Status, Groundwater, Chemical Aspects, Flood Risk Management, Climate Change and Water, Water Scarcity and drought, Agriculture and Water, Biodiversity and water, Hydromorphology and the Economic Issues.

### **Other relevant EU legislation for approaching River Basin Management Plan and the Program of Measures**

- Decision 2455/2001/EC of the European Parliament and of the Council of 20 November 2001 establishing the list of priority substances in the field of water policy and amending Directive 2000/60/EC of water policy (WFD).
- 2005/646/EC: Commission Decision of 17 August 2005 on the establishment of a register of sites to form the intercalibration network in accordance with Directive 2000/60/EC of the European Parliament and of the Council.

#### Groundwater

- Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances.
- Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration

#### Flood protection

- Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks.

#### Municipal urban wastewater treatment

- Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment
- 93/481/EEC: Commission Decision of 28 July 1993 concerning formats for the presentation of national programmes as foreseen by Article 17 of Council Directive 91/271/EEC.
- The Sewage Sludge Directive (86/278/EEC).

#### Drinking water

- Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption.
- Council Directive 79/869/EEC of 9 October 1979 concerning the methods of measurement and frequencies of sampling and analysis of surface water intended for the abstraction of drinking.

#### Dangerous substances

- Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.



- Council Directive 86/280/EEC of 12 June 1986 on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC.
- Directive 2006/11/EC of the European Parliament and of the Council of 15 February 2006 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.
- Council Directive 82/176/EEC of 22 March 1982 on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry.
- Council Directive 83/513/EEC of 26 September 1983 on limit values and quality objectives for cadmium discharges.
- Council Directive 84/491/EEC of 9 October 1984 on limit values and quality objectives for discharges of hexachlorocyclohexane.
- Council Directive 84/156/EEC of 8 March 1984 on limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry.

#### Industrial discharges

- Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control.
- Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (Codified version).
- Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
- The Major Accidents (Seveso) Directive (96/82/EC).

#### Agriculture

- Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources
- Common Agricultural Policy

#### Bathing water

- Council Directive 76/160/EEC of 8 December 1975 concerning the quality of bathing water
- Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality and repealing Directive 76/160/EEC

#### Bathing water

- Bathing Water Directive (EC, 2006)

#### Environmental Impact assessment

- The Environmental Impact Assessment Directive (85/337/EEC).
- Strategic Environmental Impact Assessment Directive (2001/42).



## Useful references on practical guides or links to various WFD web sites

At the EC, <https://circabc.europa.eu/> provides comprehensive sources of reference documents related to WFD, Flood Directive, and other relevant policies and directives.

### EU LEGISLATION, GUIDELINES AND REPORTS

#### WATER

[http://ec.europa.eu/environment/water/waterframework/objectives/implementation\\_en.htm](http://ec.europa.eu/environment/water/waterframework/objectives/implementation_en.htm)

[http://ec.europa.eu/environment/water/flood\\_risk/](http://ec.europa.eu/environment/water/flood_risk/)

### ECRAN & RENA NETWORK

<http://www.ecranetwork.org/>

<http://www.renanetwork.org/>

### TAIEX

<http://ec.europa.eu/enlargement/taieux/>

### RELEVANT PROJECTS IN MEDITERRANEAN SEA AND BLACK SEA

[http://ec.europa.eu/research/bioeconomy/fish/research/ocean/index\\_en.htm](http://ec.europa.eu/research/bioeconomy/fish/research/ocean/index_en.htm)

<http://cordis.europa.eu/fp7/coordination/>

[http://ec.europa.eu/maritimeaffairs/policy/marine\\_knowledge\\_2020/index\\_en.htm](http://ec.europa.eu/maritimeaffairs/policy/marine_knowledge_2020/index_en.htm)

<http://www.kg.eurocean.org/>

<http://www.devotes-project.eu/>

<http://www.perseus-net.eu/site/content.php>

<http://medsea-project.eu/>

<http://www.misisproject.eu/>

<http://www.pegasoproject.eu/>

<http://www.coconet-fp7.eu/index.php/about-coconet>

<http://www.envirogrids.net/>

<http://www.seas-era.eu/np4/homepage.html>





## IV. Highlights from the Training

Reference is made to Annex I for the agenda. Below only the main elements are highlighted. The presentations are provided in Annex III.

### Highlights Day 1

The first day has been dedicated to the presentation of the current status of the report regarding the River Basin Management Plan and the Program of Measures for Drina River Basin and the discussion of the Resource costs and their assessment methodologies.

#### 1. Overview of the current status of the preparation of the Program of Measures in Drina RB

As the WM WG agreed to prepare a report on the River Basin Management Plan and the Program of Measures, which will include information not only to Drina River Basin, but also case studies covering the non-Drina countries, on the same topics as for the Drina countries.

The report will follow the agreed methodology, will include the contributions of all beneficiary countries, and reflect the knowledge and the experience of the participants of the WM WG which is outstanding. Considering the data gaps, some parts of the report will be more theoretical than those where real assessment and interpretation have been made.

#### CONTENT OF THE REPORT ON THE PROGRAM OF MEASURES IN DRINA BASIN AND CASE STUDIES FROM ECRAN BENEFICIARY COUNTRIES

The Drina RBM plan is structured as follow:

- 1. Introduction**
- 2. Legal basis**
- 3. 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.
- 4. Overview on the Significant Water Management Issues of the Drina RB**  
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.
- 5. Identified significant pressures in the Drina RBD**
  - a. Organic pollution
  - b. Flooding
  - c. Hydromorphological alterations
  - d. Nutrient pollution
  - e. Hazardous substances pollution
  - f. Other significant issues
    - i. Groundwater



1. Groundwater quality
  2. Groundwater quantity
  - 6. Monitoring networks and ecological/chemical status**
  - 7. Environmental objectives and exemptions**
  - 8. Economic analysis of water uses**
  - 9. Drina Joint Programme of Measures**
    - a. Organic pollution**
      - i. Visions and management objective**
      - ii. JPM approach toward the management objective**
      - iii. Summary of joint measures on the basin wide scale**
    - b. Flooding**
      - i. Visions and management objective**
      - ii. JPM approach toward the management objective**
      - iii. Summary of joint measures on the basin wide scale**
    - c. Hydromorphological alterations**
      - i. Visions and management objective**
      - ii. JPM approach toward the management objective**
      - iii. Summary of joint measures on the basin wide scale**
    - d. Nutrient pollution**
      - i. Visions and management objective**
      - ii. JPM approach toward the management objective**
      - iii. Summary of joint measures on the basin wide scale**
    - e. Hazardous substances pollution**
      - i. Visions and management objective**
      - ii. JPM approach toward the management objective**
      - iii. Summary of joint measures on the basin wide scale**
  - 10. Conclusions**
  - 11. List of competent authorities.**
- Annexes**

At the meeting, agreement was reached on the outline of the report and the first chapters of the plan have been discussed.

Case studies<sup>1</sup> have been prepared by all ECRAN beneficiary countries covering the following topics:

<sup>1</sup> Case studies indicated in bold will be prepared until June 2016.



Chapters of the Report				
Pressures assessment	Monitoring	Program of measures	Economic analysis	Environmental objectives
<b>Case studies</b>				
<b>Albania</b>				
	Monitoring water quality	Basic measures	- Payments for environmental services - Resource costs - <b>Tariff policy</b>	
<b>Bosnia and Herzegovina</b>				
		- Basic and supplementary measures - Agricultural measures	- Cost recovery - Payments for environmental services - Environmental Protection Fund - <b>Water pollution fees</b>	
<b>Kosovo<sup>2*</sup></b>				
		- Agricultural measures - Program of measures	- Water payment structure - Tariffs and penalties - <b>Water pricing</b>	
<b>Montenegro</b>				
Reporting on agglomerations		- Program of measures - Agricultural measures	- <b>Cost – benefit analysis</b>	
<b>FYR of Macedonia</b>				
		- Prioritization of investments - Scenarios	- Cost recovery - PES - Water use charge - Water resource cost - <b>Industrial pollution charge</b> - <b>Cost – effectiveness analysis</b>	Environmental objectives
<b>Serbia</b>				
- Reporting on agglomerations - Reporting on		- Water protection measures	- Cost recovery - PES - Resource and	

<sup>2</sup> This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.



EQS Directive		- Supplementary measures	environmental cost - <b>Agricultural water pricing</b> - <b>Drinking water pricing</b>	
<b>Turkey</b>				
		- River Basin Protection Actions Plan, - Ergene River Basin Management Plan - <b>Prioritization of measures</b>	- Resource costs	

The list of topics for case studies will be further developed based on the developments of the remaining workshops in 2016 where the remaining chapters of the plan will be completed.

The report will include annexes which will cover the methodology of developing the program of measures and the screening templates used for covering the specific chapters of the plan.

#### **Annexes and screening templates**

- 1) Transboundary issues: template for data collection for Drina countries
- 2) SWMIs basic concept and screening template for Drina countries
- 3) Linkages SWMIs and PoM: background document for all ECRAN project beneficiaries
- 4) Monitoring programs: template for data collection from all ECRAN beneficiaries countries
- 5) SWMIs prioritization
- 6) Visions identification and agreement at 5<sup>th</sup> Screening Workshop
- 7) Management objectives identification
- 8) Pressures assessment making use of EC reporting schemes
- 9) Impact assessment
- 10) Economic analysis
- 11) Financing of measures
- 12) WFD Environmental objectives

## **2. Assessment of Resource Costs and Benefits in the WFD**

The resource costs arise as a result of an inefficient allocation (in economic terms) of water and/or pollution over time and across different water users, because an alternative water use generates a higher net economic value.



A new definition (2015) introduced by the EC in the guidelines for assessing the resource costs and benefits indicates that “Resource costs are the costs of foregone opportunities which other water employments suffer due to the depletion of the resource beyond its natural rate of recharge or recovery (e.g. linked to the over-abstraction of groundwater)”.

The resource costs are influenced by (i) the water availability in the territory and in the time, (ii) the current and future needs, (iii) the reproducibility of the resource (including its quantity), (iv) the allocation distribution, and (v) the economic, social and environmental effects on the alternative use and no-use.

The resource costs are “scarcity costs” and they can occur for inefficiency causes or natural conditions. Therefore, they could exist also if environmental costs do not exist. In these cases alternative water uses could generate higher net economic value.

If we consider two users (City A and City B) which are competing for the use of the same water, it is possible to estimate the demand curve for each of them.

If there is sufficient water available to satisfy both demands, there is no scarcity and the resource cost of water is zero. If there is scarcity - only a limited amount of water available - (supply with scarcity), there will be a resource cost, which can be calculated by finding the price for which total demand is exactly to the supply with scarcity. The difference between that price and the normal price is the resource cost.

### 3. Guidelines for the assessment of resource costs and benefits in the Water Framework Directive

Practically, there are no well-established methods for estimating resource costs.

There are two categories of resources costs:

#### Resource costs resulting from current water shortage

The resource costs arising due to foregone benefits from “not delivering” water quantities to given consumers are based on the concept that the value of the resource equals the value of the water that is “not delivered”. Therefore, a possible way to quantify them is to calculate the lost profit originating from the “missed consumption” by multiplying the “not delivered quantities” by their value, a proxy for which can either be water prices or water taxes.

#### Resource costs for future water shortage

The resource costs for future water shortage are based on an assessment of the security of the water consumption as a result of climate change and deterioration in water quality. The cost estimation is based on “conditional” water shortages compared to a baseline scenario for the respective RB. The estimation of these costs is based on Water Exploitation Index+ (WEI+), calculated according to the following formula in compliance with EEA 2012 State of Water Assessment.

The necessary steps to be undertaken to assess the resource costs include:

- get knowledge of the existing administrative water concession procedures including complete information on water licences and actual consumption rates



- verify the cost-benefit ratio for each water use and between different allocation schemes using a benchmark analysis (e.g. optimal *pro capite* households water budget, crop surface to water volume ratio, etc.)
- identify causes of imbalances
- establish limits to the abstraction (water licences) to support a hydrologic regime coherent with GES achievement (ecological flow), at the right cost.

#### 4. Scale, data, levels of disaggregating issues in the WFD

Scale issues influence the costs and benefits at water body level. The identification of the geographical scale is relevant to assess which information and expertise is available. The scale is important to see which information and results are to be reported for effective information and consultation of the public.

Statistical extrapolation or interpolation techniques can be used to estimate key variables at the desired scale.

The scale for reporting to the EU: the river basin district, with the analysis being presented for key spatial and socio-economic/water uses aggregates

In addition to the River Basin Management Plans developed for each district, more detailed plans can be produced for specific sectors, issues or water types (*Article 13*), and to focus on specific aggregation levels lower than the river basin. These plans may be identified for the analysis of pressures, impacts and significant water management issues.

Scale issues – and the difference that might exist between the scale of the **assessment of cost-disproportionality** (that might be performed at aggregated scale/river basin district scale) and the scale of the **justification of time/objective exemption** (that is at the water body scale).

The scale issue is relevant for assessing the gap/risk of noncompliance, through the assessment of the costs of basic measures at the river basin scale, and the likely costs and qualitative impact of potential measures at the scale of the likely-affected water use(s).

Further, the scale issue is relevant in the cost effectiveness analysis. Further levels of disaggregation are possible in the analysis linked to the assessment of significant water uses and the potential measures investigated.

Availability of data is an important issue: different information on technical and economic questions is available on different scale level. It is necessary to find an appropriate level of scale to link

A working mechanism to handle and exchange data on a river basin level and in the transboundary context is essential to enable an analysis of a whole river basin.



information from the Economic Analyses with data from the biophysical characterisation. Also, in the transboundary context it is important to consider that countries collect different set of data, which are available with different authorities, and registered in different formats.

The time scale of a measure is important for (i) the initial selection of measures, (ii) its cost estimation, and (iii) the whole duration, until its efficiency is reached, on short-term, medium-term and long-term scenarios.

## 5. CVM method

Environmental economists have introduced a difference between use values and non-use values, in order to account for the various reasons and motives people may have to value environmental change. Use values are associated with the actual or potential future use of a natural resource (e.g. drinking water, fish consumption, irrigation water).

Non-use values are not related to any actual or potential future use, but refer to values attached to the environment and natural resource conservation based on considerations that, for example, the environment should be preserved for future generations or because plants and animals also have rights.

The aggregated WTP or WTA amount provides an indicator of their total economic value (TEV).

**Willingness to pay relates essentially to individuals' ability to pay, which determines the relative weights assigned to their preferences.**

## Highlights Day 2

The second day has been dedicated to the presentation of the environmental costs, their application and options of their assessment.

## 6. Key issues in the economic valuation of water use

Water as an economic good **has both an economic value and an opportunity cost.**

Environmental costs refer to all physical environmental damage costs related to the chemical and ecological status of a water body or river basin. Physical environmental damage is measured in practice as the difference between the baseline state of a water body or river basin and its good ecological status as defined in the WFD. Damage arises when there is a discrepancy between some reference and target point or situation. The latter can be measured, for instance, through existing environmental norms or standards or the right people attach to a clean environment and the provision of sufficient and clean water. In practice, sometimes also a point in the past, when pollution levels and corresponding damage costs were lower, is taken to represent the target situation.



**Environmental costs are distinguished separately from the resource costs** - important differences exist in terms of water quantity and water quality management issues.

The environmental costs also include the indirect impacts of the physical environmental damage on various relevant water uses.

Damage is defined here as the difference between some reference and target situation and the corresponding effect on the provision and quality of the goods and services involved (DPSIR).

## 7. Calculation of Environmental cost

Any assessment of environmental costs or benefits starts with and is based upon an environmental impact assessment (Figure 1).

**Environmental costs are estimated on the basis of the costs of the programme of measures to achieve good water status.**

An important question when estimating environmental costs is what exactly constitutes damage, to the water environment and those who use the water environment.

Steps in the assessment of the environmental costs associated with water use:

- identify the significant pressure, which causes a water body to change and not reach the set environmental WFD objective(s);
- assess the impact of this pressure (reduction) on the water environment;
- identify and, if possible, quantify the nature and extent of the damage involved, both on the water environment and other water users.

The economic value of environmental costs or benefits is often referred to as environmental values.

It can be measured based on the identification of the goods and services (functions) impaired by the pressure involved (e.g. water used for drinking water production, irrigation, food processing, recreation, wildlife habitat etc.).

It can be estimated **using direct or indirect market and non-market based valuation techniques.**

Economic values are derived from **existing market prices for inputs** (production values) or outputs (consumption values).





# Economic valuation of environmental costs and benefits

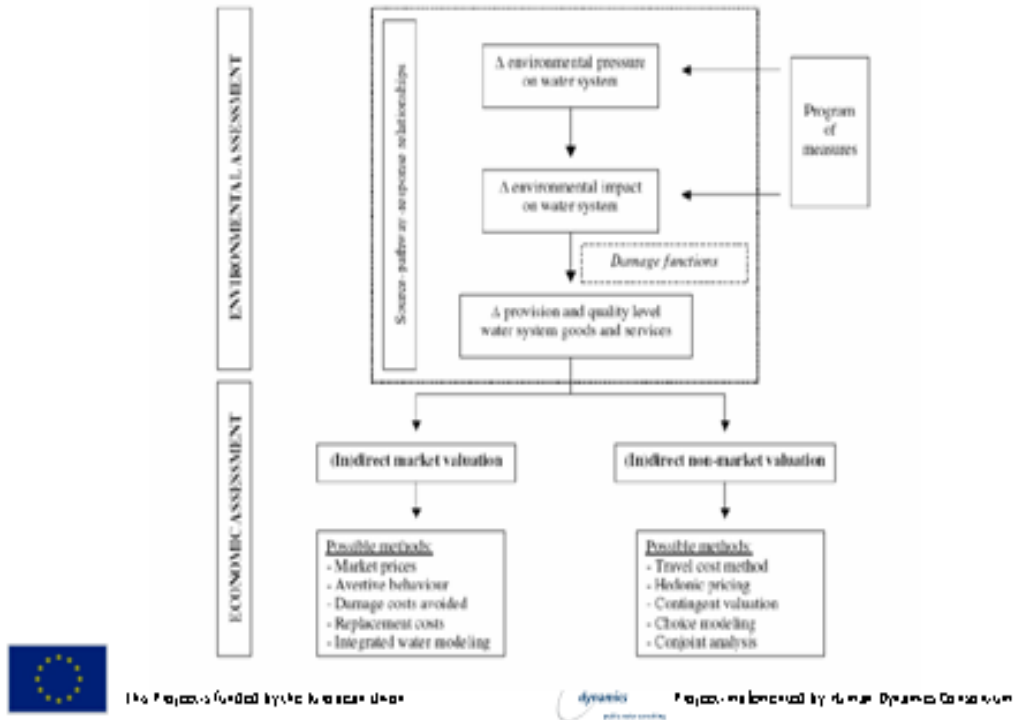


Figure 1. Economic valuation of environmental costs and benefits

Examples include the economic value of fish, which is sold on a fish market (market analysis) or the costs of replacing impaired environmental riparian functions such as nutrient retention.

## 8. Cost recovery

According to the WFD, „Member States shall take account of the principle of recovery of the costs of water services, including environmental and resource costs [.....] and in accordance in particular with the polluter pays principle.

Member States shall ensure by 2010: an adequate contribution of the different water uses, disaggregated into a least industry, households and agriculture “to the recovery of the costs of water services“(Art. 9 (1)).

In order to achieve full cost recovery 3 main categories of cost should be taken into account:

- **Financial Cost** : Operation and maintenance cost
- **Resource Cost** : Opportunity cost
- **Environmental Cost**: The cost is created either from the deterioration of water quality from pollution or deprival of quantity of water from the different uses.

It is important to create a data base in relation with water pricing policies in order to identify proper solutions on basin wide scale.

## 9. Other key points of discussion

In addition to the highlighted topics, other issues were raised and discussed at the meeting, including the following topics:

- Justification of the major increase in water price for agglomerations implementing the WFD and UWWTD;
- What are the main gaps identified in relation with implementing an adequate water price policy (i.e. assessment of environmental & resource cost, cross subsidies, lack of incentives instruments...)?
- Which economic sectors are covered by the cost recovery calculations (full/partially)?
- Which are the water services covered by cost recovery policy and which not? (i.e. diffuse pollution)?
- What are the rates of cost recovery per sector in different countries?
- What kind of economic instruments (price/tariffs/contributions...) are used by the beneficiary countries
- Estimation of the trend of water prices in relation with the future water demand should be done per economic sectors?
- If climate change are incorporated in future water price policy
- Derogation for other water related directives
- What kind of cost recovery system could be implemented to provide sufficient funding to finance the activities related to ensure flood protection and meet the EU Water Framework Directive (art. 9) & EU Flood Directive?
- Difficulty to assess water quality and its trends, which more uncertain than those of water quantity
- How to assess environmental and resource costs, especially when they are not fixed, but highly variable as a result of for instance climatic variability or other demand and supply influencing factors?

## 10. Final Workshop Outcomes

Based on the discussions at the workshop, the outcomes of the training consist of the following:

- The outline and the second draft of the Drina RBM and PoM and case studies from all beneficiary countries discussed;
- Clarification on the necessity to develop case studies that would be inserted into the report on different topics, from all beneficiary countries;
- Awareness improved on the necessity to ensure a reliable and complete database;



- Information on the reporting requirements for achieving the measures to reach the WFD objectives;
- When we need to calculate the environmental cost;
- Clarity on the calculation of the resource cost application of exemptions and the link with derogations and disproportionate costs;
- A bit clearer picture on the negotiations process and the requirements at the national level for transposition, harmonization and institutional and financial strengthening.

The participants have also agreed on the future topics of discussion in the next workshops planned for 2016, dedicated to all three tasks of the Water Management Working Group.

1) on the preparation of the Program of measures for Drina river basin

- Environmental objectives
- Exemptions application
- Scenarios
- Funding options
- Climate change
- Public participation in the making decision process

2) on the Economic Analysis

- Application of Polluter Pays Principle
- Estimation of Cost of measures
- Disproportionate costs
- Affordability
- Prioritization of investments
- Water utilities
- Tariffs and charges

3) Integration WFD and the MSFD

- ICZM implementation
- Economics of the PoM analysed in synergy with the economics of the PoM under WFD.

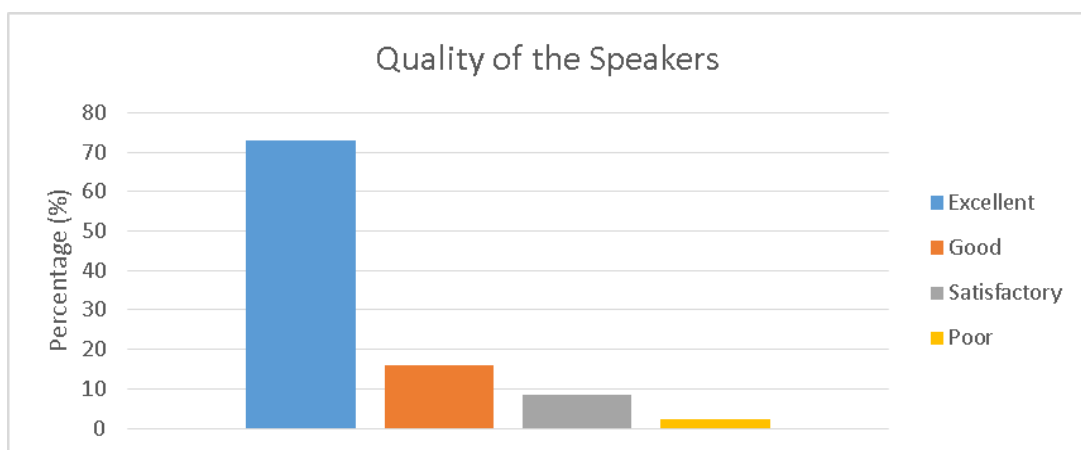
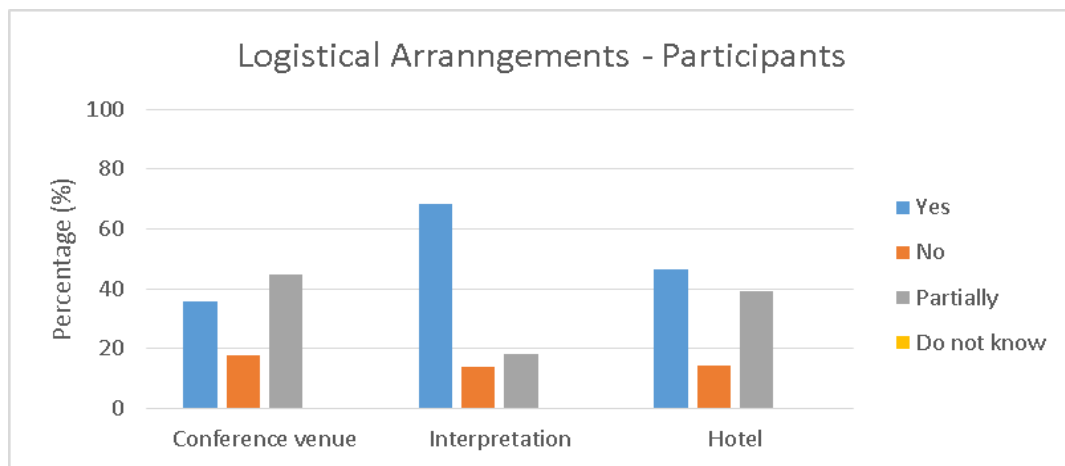
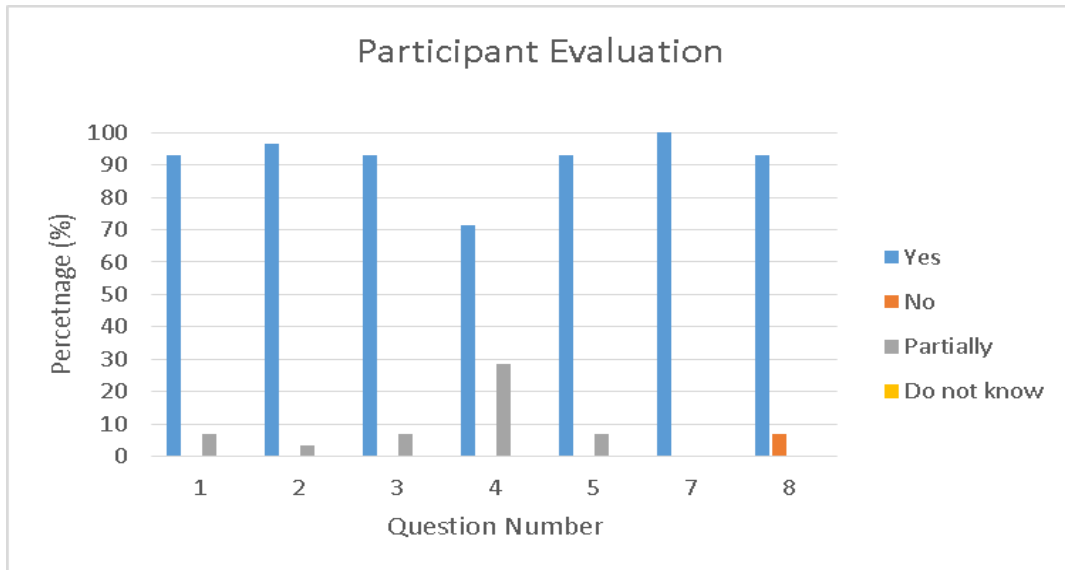


## V. Evaluation

### Workshop - participant Evaluation

Question	N°. Responses	Yes	No	Partially	Do not know	
1. Was the workshop carried out according to the agenda	28	26 (92)%	0 (0)%	2 (7)%	N/A	
2. Was the programme well structured?	28	27 (96)%	0 (0)%	1 (3)%	N/A	
3. Were the key issues related to the topics addressed?	28	26 (92)%	0 (0)%	2 (7)%	N/A	
4. Did the workshop enable you to improve your knowledge?	28	20 (71)%	0 (0)%	8 (28)%	N/A	
5. Was enough time allowed for questions and discussions?	28	26 (92)%	0 (0)%	2 (7)%	N/A	
6. How do you assess the quality of the speakers?	<b>Speaker/Expert</b>	<b>N°. Responses</b>	<b>Excellent</b>	<b>Good</b>	<b>Satisfactory</b>	<b>Poor</b>
	4	81	59 (72)%	13 (16)%	7 (8)%	2 (2)%
Question	N°. Responses	Yes	No	Partially	Do not know	
7. Do you expect any follow-up based on the results of the workshop (new legislation, new administrative approach, etc.)?	28	26 (92)%	2 (7)%	N/A	N/A	
8. Do you think that further TAIEX assistance is needed (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	26	26 (100)%	0 (0)%	N/A	N/A	
9. Were you satisfied with the logistical arrangements, if applicable?	Conference venue	28	10 (35)%	5 (17)%	13 (46)%	0 (0)%
	Interpretation	22	15 (68)%	3 (13)%	4 (18)%	0 (0)%
	Hotel	28	13 (46)%	4 (14)%	11 (39)%	0 (0)%
<p>Comments:</p> <ul style="list-style-type: none"> <li>Lectures have been at a high level and understandable. All participating countries presented and discussed experiences related to resources &amp; environmental costs. I see with great interest of the continuity of this project, as well as in content and in cooperation with others. Therefore participation is very useful;</li> <li>Conference room was so small and without daily light and fresh air. Acoustic was not good. In back lines nobody can hear anything.</li> </ul>						

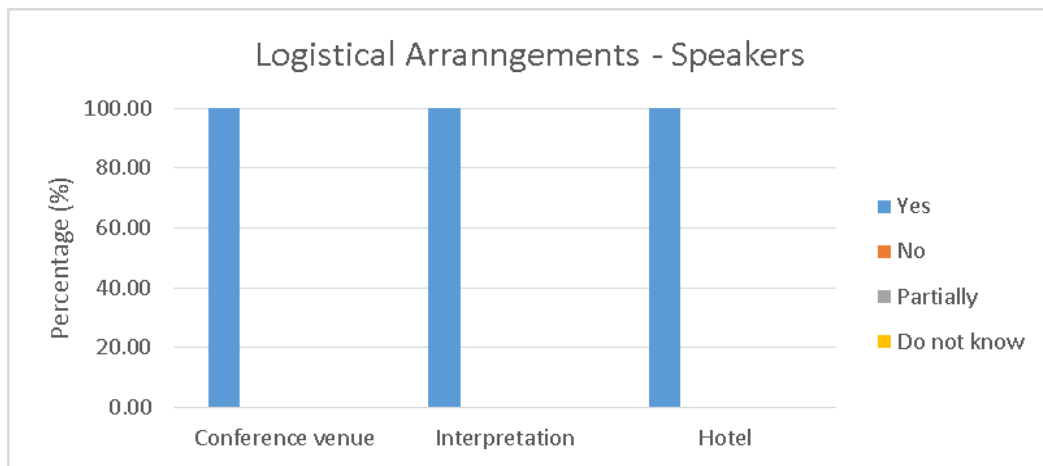
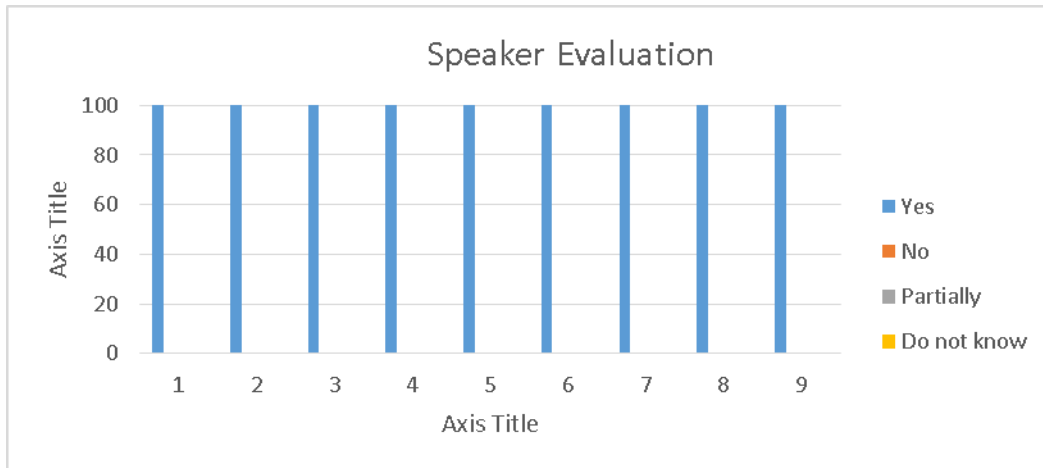




## Workshop - speaker Evaluation

Question	N°. Responses	Yes	No	Partially	Do not know	
1. Did you receive all the information necessary for the preparation of your contribution?	3	3 (100%)	0 (0%)	0 (0%)	N/A	
2. Has the overall aim of the workshop been achieved?	3	3 (100%)	0 (0%)	0 (0%)	N/A	
3. Was the agenda well structured?	3	3 (100%)	0 (0%)	0 (0%)	N/A	
4. Were the participants present throughout the scheduled workshop?	3	3 (100%)	0 (0%)	0 (0%)	N/A	
5. Was the beneficiary represented by the appropriate participants?	3	3 (100%)	0 (0%)	0 (0%)	N/A	
6. Did the participants actively take part in the discussions?	3	3 (100%)	0 (0%)	0 (0%)	N/A	
7. Do you expect that the beneficiary will undertake follow-up based on the results of the workshop (new legislation, new administrative approach etc.)	3	3 (100%)	0 (0%)	N/A	1 (33%)	
8. Do you think that the beneficiary needs further TAIEX assistance (workshop, expert mission, study visit, assessment mission) on the topic of this workshop?	3	3 (100%)	0 (0%)	N/A	N/A	
9. Would you be ready to participate in future TAIEX workshops?	3	3 (100%)	0 (0%)	N/A	N/A	
10.If applicable, were you satisfied with the logistical arrangements?	Conference venue	3	3 (100%)	0 (0%)	0 (0%)	0 (0%)
	Interpretation	3	3 (100%)	0 (0%)	0 (0%)	0 (0%)
	Hotel	3	3 (100%)	0 (0%)	0 (0%)	0 (0%)
Comments:						





**ANNEX I – Agenda**

**Day 1 : Tuesday, 29 March 2016**

<b>Topic: WM WG – 3<sup>rd</sup> Annual Meeting</b>				
<b>Chair and Co-Chairs: Mihail Dimovski and Mihaela Popovici</b>				
<b>Venue: Skopje, Macedonia</b>				
<b>Start</b>	<b>Finish</b>	<b>Topic</b>	<b>Speaker</b>	<b>Sub topic/Content</b>
<b>08:30</b>	<b>09:00</b>	<b>Registration</b>		
09.00	09.15	Welcome and opening	Welcome and opening Ms. Marta Moren Abat, European Commission, DG Environment  Mr. Mihail Dimovski (ECRAN Team Leader)	Address by EC  Address by ECRAN
09.15	09.30	Introduction of the Agenda of the workshop	Ms. Mihaela Popovici, ECRAN Expert	Introduction to the purpose of the workshop and its expected outcome Presentation and adoption of the agenda
09.30	10.30	1) Presentation and discussion of the results achieved by the WM WG  2) Work program 2016	Ms. Mihaela Popovici	1) Overview of the WM WG tasks 2) Presentation of the overall approach and methodology that have been applied for implementation of the activities with the output and results achieved 3) Presentation of the work plan 2016  Materials provided: - Detailed draft work plan for 2016 - Guidance documents  Method : PPP and Q&A
<b>10:30</b>	<b>11:00</b>	<b>Coffee Break</b>		
11.00	12.30	Task 2.3.2 “ Assistance in the development of transboundary river	Ms. Mihaela Popovici, All participants	1) Presentation of the specific methodology, screening templates,





		basin management plans” - approach and outcomes		data collection process 2) Outcomes - Drina RB Pilot SWMIs, vision, management objectives, PoM Method : PPP and Q&A
<b>12:30</b>	<b>14:00</b>	<b>Lunch Break</b>		
14:00	14:30	Task 2.3.3: Economic analysis in accordance with the WFD: approaches and outcomes	Ms. Mihaela Popovici All participants	Presentation of the specific methodology, outline screening templates, data collection process, outcomes, remaining activities Method : PPP and Q&A
14:30	15:00	Task 2.3.4: WFD and MSFD approaches and outcomes	Ms. Mihaela Popovici All participants	Presentation of the specific methodology, outcomes, remaining activities Method : PPP and Q&A
<b>15:00</b>	<b>15:30</b>	<b>Coffee Break</b>		
15:30	16:30	Economic mechanism for water resources management in Romania	Gheorghe Constantin TAIEX Expert All participants	Presentation of the water resources management specific mechanism as part of the WFD implementation. Evolution and results. Method : PPP and Q&A
16:30	17:00	Thematic synergies with other WGs Cooperation with TAIEX Next steps Conclusions	Ms. Mihaela Popovici All participants	Presentation of the issues of interests for WGs within ECRAN Joint training organized Suggestions for follow up Method : PPP and Q&A



## Day 2: Wednesday 30 March, 2016

**WMWG - Workshop: "Tools and guidance for assessing resource and environmental cost in the WFD"**  
**Topic: Resource costs: theory, methodology, application**

**Chair: Mihaela Popovici and Gheorghe Constantin**

**Venue: Skopje, Macedonia**

Start	Finish	Topic	Speaker	Sub topic/Content
09.00	09.30	Introduction of the Agenda of the workshop	Ms. Mihaela Popovici, ECRAN Expert	Introduction to the purpose of the workshop and its expected outcome Presentation and adoption of the agenda
9:30	10:00	Overview Draft 2 RBM Plan and JPM Drina RB	Ms. Mihaela Popovici All participants	Presentation of the update of the report based on inputs from previous meeting Feb 2016  Method : PPP and discussions
10:00	10:30	1) Resource Cost - theory and methodology 2) Resource Cost – Economic Guidance	Ms. Mihaela Popovici All participants	1) Presentation of the application of sound economic principles, methods and instruments for supporting the achievement of its objectives (good ecological status) within WFD  2) Presentation of the specific guidance on water economics (WATECO), developed under the CIS process.  Method : PPP and Q&A
10:30	11:00	Policy framework and options to assess resource costs: lessons learned from Romanian projects	Gheorghe Constantin TAIEX Expert All participants	Presentation of the Romanian experience in the calculation of resource costs  Method : PPP and Q&A
<b>11:00</b>	<b>11:30</b>	<b>Coffee Break</b>		
11:30	12:00	Development and Testing of Practical Guidelines for the Assessment of	Gheorghe Constantin TAIEX Expert	Resources cost analysis of water use in the Neajlov catchment, AQUAMONEY Project Romania



		Resource Costs and Benefits in the WFD in the Romania	All participants	Method : PPT and Q&A
12:00	12:30	Scale, data, levels of disaggregating issues in the WFD	Ms. Mihaela Popovici All participants	Presentation of the Directive approach for spatial or aggregation units, data collection and analysis  Method : presentations and Q&A
<b>12:30</b>	<b>14:00</b>	<b>Lunch Break</b>		
14:00	15:00	National experiences in the use of Resource Costs	Countries	Short presentation on the use of resource cost made by countries  Method: Countries presentations and Q&A
15:00	15:30	CVM - Contingent Valuation Method	Ms. Mihaela Popovici, ECRAN Expert  All participants	Presentation of approach and case studies  Method : PPP and Q&A
<b>15:30</b>	<b>16:00</b>	<b>Coffee Break</b>		
16:00	17:00	Cost recovery and incentive pricing	Ms. Mihaela Popovici, ECRAN Expert  All participants	Presentation of art 9 WFD: theory and application/case studies  Method: PPP and Q&A



**Day 3 : Thursday 31 March, 2016**

**WMWG - Workshop: "Tools and guidance for assessing resource and environmental cost in the WFD"**  
**Topic: Environmental costs: theory, methodology, application**

**Chair and Co-Chairs: Mihaela Popovici and Cristian Rusu**

**Venue: Skopje, Macedonia**

Start	Finish	Topic	Speaker	Sub topic/Content
<b>08:30</b>	<b>09:00</b>	<b>Registration</b>		
09:00	09:30	Wrap up of the key points of discussion from the first two days meeting	Ms. Mihaela Popovici, ECRAN Expert	
09:30	10:30	Environmental Cost - theory and methodology	Ms. Mihaela Popovici, ECRAN Expert	Presentation of background, policy context, political, institutional and financial barriers  Method : PPP and Q&A
<b>10:30</b>	<b>11:00</b>	<b>Coffee Break</b>		
11:00	11:30	Implementing environmental costs for financing projects: lessons learned from Romanian experience	Gheorghe Constantin TAIEX Expert All participants	Presentation from the results of implementing environmental cost and projects in Romania  Method : PPP and Q&A
11.30	12.30	Cost recovery for water services, a suitable instrument for reaching good water status	Gheorghe Constantin TAIEX Expert All participants	Presentation from the results of implementation of the cost recovery instrument in the first RBMP and lessons learned at the national and regional level  Method : PPP and Q&A
<b>12:30</b>	<b>14:00</b>	<b>Lunch Break</b>		



14:00	15:00	Development and Testing of Practical Guidelines for the Assessment of Environmental Costs and Benefits in the WFD in the Romania	Gheorghe Constantin TAIEX expert All participants	Environmental cost analysis of water use in the Neajlov catchment, AQUAMONEY Project Romania  Method : PPP and Q&A
15:00	15:30	Cost assessment and reporting of the WFD implementation	Ms. Mihaela Popovici, ECRAN Expert	Presentation of the EU recommendations to ensure coherence between pressures and measures and assessing of the cost and related reporting  Method : PPP and Q&A
<b>15:30</b>	<b>16:00</b>	<b><i>Coffee Break</i></b>		
16.00	16.30	Review the countries' position on resource and environmental costs as a tool for PoM	Ms. Mihaela Popovici, ECRAN Expert  All participants	Country's presentation
16.30	17.00	Next steps and conclusions	Ms. Mihaela Popovici, ECRAN Expert	Next steps and conclusions



## ANNEX II – Participants

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### **ANNEX III – Workshop materials (under separate cover)**

Workshop materials including presentations and case studies can be downloaded from:

[http://www.ecranetwork.org/Files/Workshop\\_Presentations\\_WFD\\_March\\_2016\\_Skopje.zip](http://www.ecranetwork.org/Files/Workshop_Presentations_WFD_March_2016_Skopje.zip)



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