
Environment and Climate Regional Accession Network (ECRAN)

Report on the Workshop:
“The economics of
climate change
adaptation measures
under WFD, MSFD and
ICZM””

11-13 April 2016, Istanbul

ENVIRONMENT AND CLIMATE REGIONAL NETWORK FOR ACCESSION - ECRAN

WORKSHOP REPORT

Activity 2.3

**“THE ECONOMICS OF CLIMATE CHANGE ADAPTATION MEASURES UNDER
WFD, MSFD AND ICZM”**

Istanbul, 11 – 13 April 2016



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



LIST OF ABBREVIATIONS	
PoM	Programme of Measures
PRTR	Pollutant Release and Transfer Register
PS	Priority Substances
RB	River Basin
RBD	River Basin District
RBMP	River Basin Management Plan
RBSP	River Basin Specific Pollutants
RefCond	Reference Conditions
RR	Roof Report
RS	Republic of Serbia
RS	Republic of Srpska
SAA	Stabilization and Association Agreement
SAP	Stabilization and Association process
SWMI	Significant Water Management Issue
TAIEX	Technical Assistance and Information Exchange Office
UWWT	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 bioaccumulate, 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 “The economics of climate change adaptation measures under WFD, MSFD and ICZM” has been organized as planned by ECRAN project team in 2015, in Istanbul, 11-13 April 2016.

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).

Specifically, 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.

To respond to the implementation challenges of both WFD and MSFD, and considering the results obtained so far for the preparation of the Program of Measures, and the development of the River Basin Management Plan, a specific task has been included in the agenda of this workshop related to the technical and economical examination of opportunities to consider the climate changes and to ensure that the River Basin Management Plans are climate-proofed.

The workshop has been organized with the aims to discuss the theory, approaches, methodologies and lessons learned in relation with adaptation to the climate change in the RBMP, coordination between WFD and MSFD for the climate change adaptation at the national and regional level, the role and costs of adaptation measures in the PoM and correlation with WFD objectives, and as well the adaptation to climate change measures and their costs within the MSFD Action Plan. Further, the financial dimension and the shared benefits of adaptation and risk reduction measures have been examined to prepare the adequate response to the effects of climate changes.

Finally, case studies showing adaptation approaches and measures were prepared and presented and lessons learned from ECRAN beneficiary countries have been shared with the whole targeted ECRAN project beneficiaries.

The purpose of the Regional Workshop “The economics of climate change adaptation measures under WFD, MSFD and ICZM” 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.



It is anticipated that climate change will affect the management of water resources, specifically the supply of water resources, the use of and demand for water by different sectors and stakeholders, the increase in the risk of floods along coastal zones and in river beds, the decrease in the availability of water, and the deterioration of water quality.

Integrated management approaches including the economic components are thus a key prerequisite for developing adaptation strategies that take all relevant sectors and stakeholders and the complex relationships between them into account and provide the requisite efficient responses.

The climate changes impacts on water resources will significantly affect key economic activities such as agriculture, hydropower and energy production, tourism and navigation in several areas of the beneficiary countries. That's why attention needs also to be given to the serious adverse impacts of climate changes on the WFD and MSFD measures, which need to be climate proofed.

In addition, considering the need to adapt water management to climate change requires a particular focus on planning under uncertain conditions and a constant consideration of the potential risks and of the costs and benefits connected with the adaptation measures required by the WFD and MSFD.

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

The Regional Workshop took place in Istanbul (Turkey) from 11 to 13 April 2016.

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

- Identification of the environmental objectives
- Status objectives:
 - GS/GEP (WFD) – GEnS (MSFD);
 - Protect and enhance/restore the status of aquatic ecosystems (WFD – MSFD).
- Precautionary principle: prevent/reduce further deterioration of status (WFD) ~ preserve the marine environment (MSFD) ~ conserve the status for habitats and species directly depending on water
- Quality elements/descriptors for the status assessment
- The assessment of the proportion of the costs of POM related to different economic sectors and the threshold for disproportionality
- The outline and the first draft of the PoM.

Further, the participants prepared case studies describing climate change adaptation approaches and measures, including factors influencing the implementation process such as governance, science, research at the local, national or transboundary level. Finally, short inputs from AL, B&H, MNE and TR as maritime countries presenting case studies describing climate change adaptation measures in line with MSFD.



The first day of the workshop was dedicated to the Climate change adaptation measures under WFD.

The most relevant policies, guidance, communications, technical papers, platforms and actions at the EU level have been introduced and discussed. As the adaptation measures included in the RBM Plan will have their costs and shared benefits, all financial aspects regarding the adaptation measures in the RBMP have been also examined.

Climate changes adaptation measures under MSFD has been examined during the 2nd day of the workshop.

Similarly as for the Program of Measures under the WFD, the issues related to the adaptation to climate change measures within the MSFD Action Plan have been presented.

The selection of adaptation measures is based on the results of the Cost effectiveness analysis and Cost Benefit Analysis, applied for both WFD and MSFD. Risk reduction and climate change adaptation measures for costal ecosystems are extremely important considering possible impacts of climate change which are likely to worsen many problems that coastal areas already face. Shoreline erosion, coastal flooding, and water pollution affect man-made infrastructure and coastal ecosystems. Confronting existing challenges is already a concern in the maritime beneficiary countries. Addressing the additional stress of climate change may require new approaches to managing land, water, waste, and ecosystems.

Further, approaches and experiences on monitoring and evaluation of climate change adaptation measures need to be explored and applied.

The 3rd workshop day was focused on the Economics of climate change.

The participants examined how strategies for adapting to climate change up to 2050 can be included into the RBM Plan of WFD and Action Plan of the MSFD, and the costs of adaptation in infrastructure, coastal protection, and agriculture, as well the costs for sector-specific mitigation options.

Presentations have been made of a set of case studies from different countries describing approaches of calculation of costs and benefits, possible sources of financing, successes and limited factors.

Further, at the workshop, climate change adaptation strategy in the Danube RB and the results of the adaptation measures in the Danube RB have been introduced.

Experiences from Romania have been shared on how the adaptation measures will support the fulfillment of the WFD objectives and on the assessing of the economic importance of water uses in the context of climate change (WFD).

Summary of the main topics covered

1) Climate change adaptation measures under WFD

- The most relevant policies, guidance, communications, technical papers, platforms and actions at the EU level dealing with economics of climate changes, WFD and MSFD;
- Financial aspects, cost and shared benefits of considering adaptation measures in the RBMP;
- Adaptation to the climate change in the RBMP for Danube River Basin (DRB);
- Assessing the economic importance of water uses in the context of climate change (WFD).



2) Climate changes adaptation measures under MSFD

- Coordination between WFD and MSFD for the climate change adaptation at the national and regional level;
- Adaptation to climate change measures within the MSFD Action Plan;
- Influence of climate change on Cost effectiveness analysis and Cost Benefit Analysis (WFD and MSFD) Risk reduction and climate change adaptation measures for coastal ecosystems;
- Approaches and experiences on monitoring and evaluation of climate change adaptation measures;
- Case studies on climate adaptation approaches and measures in the ECRAN maritime countries.

3) Economics of climate change.

- ICZM used as a tool for adaptation to the climate change between WFD and MSFD;
- Resource costs and climate change;
- Case studies on cost of climate change mitigation measures and sources of funding;
- Cross sectoral approach in the climate adaptation measures;
- Presentation of the importance of adopting of a sectoral approach bringing together sectors such as agriculture, land use, water supply and sanitation, energy production;
- Suggestions and recommendations for incorporation of climate change consideration in Drina RBMP.



II. Objectives of the Training

General Objective

The overall objectives of the workshop are to develop a knowledge base on the importance and the economic dimension of adaptation measures imposed by anticipated climate changes in the development of the River Basin Management Plans in line with the WFD, and in the Action Plan prepared according to the MSFD requirements.

Specific Objectives

- To provide recommendations on how to integrate climate change into the River Basin Management (RBM) cycles of the WFD
- To discuss option on how to ensure that the River Basin Management Plans (RBMP's) are climate-proofed
- To introduce the relevant EU policies, guidance documents and platforms for the topics of the workshop
- To provide information on expected climate change, the current and future vulnerability of regions and sectors, projections, uncertainties, scenarios and assumptions, guiding principles for integration into the WFD - RBM Plan and the Action Plan of MSFD.
- To examine options to support decision makers from the local to the transboundary and international level on the challenges caused by climate change to water management and water-related activities and for developing adaptation strategies
- To discuss relevant needed coordination between WFD and MSFD for the climate change adaptation at the national and regional level
- To discuss how to consider the adaptation to climate change measures within the MSFD Action Plan
- To examine available tools for adaptation to the climate change between WFD and MSFD, such as the ICZM
- To improve the understanding on the economic elements of climate change adaptation measures
- To present national and transnational adaptation strategies, adaptation case studies and potential adaptation options and tools that support climate change adaptation planning
- To discuss case studies from different countries describing approaches of calculation of costs and benefits, possible sources of financing, successes and limited factors
- To review the possible adaptation measures that can be incorporated in the Drina RBM Plan
- Facilitate dialogue among the countries on specific concepts and actions that are needed to ensure WFD and MSFD 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 and MSFD requirements and involvement of participant countries.

Expected Results

- Improved understanding of the topics, challenges and tasks, and related responsibilities along the selection and economic assessment of the climate adaptation measures in the RBMP in line with the WFD and in the Action Plan according to the MSFD
- 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 climate adaptation measures and related costs
- Guidance documents related to the WG tasks discussed and clarified.



III. EU policy and legislation covered by the training

The Marine Strategy Framework Directive (MSFD)

The Marine Strategy Framework Directive 2008/56/EC (MSFD) is establishing a framework for community action in the field of marine environmental policy; it was formally adopted by the European Union in July 2008. The MSFD is the environmental pillar of Europe's maritime policy designed to create a framework for sustainable use of Europe's marine waters.

The European Union Marine Strategy Framework Directive provides a legislative framework to sustainably manage human activities at all scales - from local to national to regional seas. The MSFD promotes an Ecosystem Approach (EA) to reach Good Environmental Status (GESt) by 2020.

The MSFD outlines a transparent, legislative framework for an ecosystem-based approach to the management of human activities which supports the sustainable use of marine goods and services. The overarching goal of the Directive is to achieve 'Good Environmental Status' (GES) by 2020 across Europe's marine environment.

In order to achieve GES in a coherent and strategic manner, the MSFD established four European Marine Regions, based on geographical and environmental criteria. The North East Atlantic Marine Region is divided into four subregions, with UK waters lying in two of these (the Greater North Sea and the Celtic Seas). Each Member State is required to develop a marine strategy for their waters, in coordination with other countries within the same marine region or subregion. This coordination is being achieved through the Regional Seas Conventions.

Marine strategies are being implemented to protect and conserve the marine environment, prevent its deterioration, and, where practicable, restore marine ecosystems in areas where they have been adversely affected.

The marine strategies, developed by each Member State, contain:

An initial assessment of the current environmental status of that Member State's marine waters:

1. A determination of what Good Environmental Status means for those waters;
2. Targets and indicators designed to show whether a Member State is achieving GES;
3. A monitoring programme to measure progress towards GES;
4. A programme of measures designed to achieve or maintain GES.

The MSFD does not state a specific programme of measures that Member States should adopt to achieve GES, except for the establishment of Marine Protected Areas (MPAs). The MSFD does however outline 11 high level descriptors of GES in Annex I of the Directive.

The MSFD will be complementary to, and provide the overarching framework for, a number of other key Directives and legislation at the European level. Examples include the EC Habitats Directive, the EC Birds Directive, the EU Water Framework Directive, and the Common Fisheries Policy.

There are 7 EU guidelines which explain and illustrate the social, economic and environmental science base and methods to tackle key management tasks necessary to implement the MSFD during preparation, planning and implementation phases. Key messages are highlighted for managing multiple uses of coastal and marine resources and space to help decision makers prepare spatial plans.



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 - 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
- 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

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)

MSFD

- Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy

Common Fishery Policy

- Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy

ICZM

- Recommendation of European Parliament and of the Council of 30 May 2002 concerning the implementation of Integrated Coastal Zone Management in Europe

Maritime Spatial Planning

- Directive 2014/89/EC of European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning

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

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 economics of climate change adaptation measures under WFD.

1. Adaptation to the climate change in the RBMP for Danube River Basin (DRB)

A presentation has been made on the Climate change adaptation strategy in the Danube River Basin (DRB), including the examination of the results of the adaptation measures in the DRB.



Climate change is of declared importance in the DRB, considering that humans and environment are expected to be affected in many ways. The water management sector must deal with climate change issues inter alia to estimate climate change impacts on the aquatic environment and respective consequences and to find appropriate *climate proof* solutions. Actions regarding climate change adaptation are already taking place and different scenarios currently exist.

The agreed approach for DRB highlights that:

Climate change is an issue of Danube basin wide significance, which will be addressed by a stepwise approach, addressing and respecting all SWMIs for the DRB, and in addition, addressing the issues of flood protection, low water discharges, drought and land use.

Climate change signals for the DRB are sufficient to act beyond existing scientific uncertainties.

Follow the ongoing DRB related scientific projects and their outcomes.

Existing DRB scientific activities are the basis for the further development of measures (see Annex 19 for a selected list of projects on climate change relevant for the DRB)

Future infrastructure project have to be '*climate proof*'

Holistic and coherent in their approach (linking all relevant sectors)

Flexible management tools and no regret measures.

The ICPDR Strategy on Adaptation to Climate Change includes:

- The presentation of the Framework conditions

- Relevant water-related EU Directives and Policies
- National and international adaptation activities



- ICPDR approach towards strategy development

- Introduction of the knowledge base

- Climate change scenarios for the Danube river basin
- Water-related impacts of climate change
- Vulnerability
- Overview of possible adaptation measures

- Presentation of the guiding principles, integration and next steps.

The conditions of success of implementing the ICPDR Strategy on Adaptation to Climate Change include: the willingness to cooperate, political commitment at the national level, a good coordination, good scientific support, common agreed targets, and of course a river basin approach.

2. Presentation of the EU most recent developments related to the adaptation measures

Presentation has been made of the most relevant policies, guidance, communications, technical papers, platforms and actions at the EU level.

Firstly, the WFD - establishes a legal framework to protect and restore the water environment and to ensure the long-term sustainable use of water.

However, even climate change is not explicitly included in the WFD text, the WFD provide a valuable framework for adaptation.

Climate change should be considered in the different steps of the WFD implementation and RBM planning and implementation process, such as: River basin characterization, Pressures and impacts assessment, Economic analysis, Monitoring, Preparation of the programmes of measures, Establishment of the environmental objectives.

Secondly, the EU Floods Directive 2007/60/EC (EFD) establishes a legal framework for the assessment and management of flood risks, aiming at reducing the adverse consequences of floods to human health, the environment, cultural heritage and economic activity.

Climate change is explicitly included in the Floods Directive. Therefore, the preliminary flood risk assessment should include an assessment of the impacts of climate change on the occurrence of floods.

For the implementation of the Floods Directive, coordination with the implementation of the WFD is required in order to ensure that differing and conflicting interests can be properly balanced and maximum synergies are gained.

The directive requires the elaboration of the Flood Risk Management Plan for those areas where potential significant flood risk has been assessed. The Management Plan should provide adequate and coordinated measures to reduce this flood risk, taking into account the possible impact of climate change.

The core elements of the flood risk management cycle are the preliminary flood risk assessment flood hazard and risk maps and flood risk management plans.



Thirdly, the MSFD aim is to achieve good environmental status of the EU's marine waters by 2021, and to protect the resource base upon which marine-related economic and social activities depend.

The Marine Strategy identifies climate change as one of the main pressures on the marine environment. The protection of the marine environment should be flexible enough to allow for an adaptation to changing pressures and impacts, which may be caused by climate change.

The Marine Strategy provides a broad framework for effective adaptation policies.

Fourthly, the EC Green Paper on Maritime Policy (2007) makes clear statements as to the challenges that will have to be addressed. It emphasizes that adaptation strategies, to mitigate the effects of climate change on coastal regions, including the organization of sea defence, will be required to manage risks for coastal and offshore infrastructure resulting from sea level rise and increased flooding.

Fifthly, within the ICZM, the coastal zones are among the most vulnerable areas to climate change and natural hazards. Risks include flooding, erosion, sea level rise, extreme weather events.

Integrated coastal management aims for the coordinated application of the different policies affecting the coastal zone and related to activities such as nature protection, aquaculture, fisheries, agriculture, and industry, off shore wind energy, shipping, tourism, development of infrastructure and mitigation and adaptation to climate change.

It will contribute to sustainable development of coastal zones by the application of the 'ecosystem based approach'. Integrated coastal management covers the full cycle of information collection, planning, decision- making, management and monitoring of implementation.

Sixthly, the EU CIS Guidance document shows ways on how to integrate climate change into the 2nd and 3rd River Basin Management (RBM) cycles of the WFD with a special focus on floods and droughts, and on how to ensure that the River Basin Management Plans (RBMP's) are climate-proofed. The main topics include:

- Climate modelling, projections, scenarios, potential impacts and uncertainty
- Getting started: how to build adaptive capacity for management under climate change
- Water Framework Directive and adaptation
- Flood risk management and adaptation
- Drought management and water scarcity and adaptation

Seventhly, the overall objective of the Blueprint is to improve EU water policy in order to ensure good quality water, in adequate quantities, for all authorized uses.

It will ensure a sustainable balance between water demand and supply, taking into account the needs of both people and the natural ecosystems they depend on.

Eighthly, the EU White Paper "Adapting to climate change: Towards an European framework for action" calls for a more strategic approach to climate change adaptation across different sectors and levels of governance:



- to promote strategies which increase resilience to climate change e.g. by improving the management of water resources and ecosystems
- to deliver adaptation actions for flood risk, water scarcity and drought management and river basin management through catchment-based approaches.

Ninthly, the European Climate Adaptation Platform (<http://climate-adapt.eea.europa.eu>) provides:

- information on expected climate change
- the current and future vulnerability of regions and sectors
- national and transnational adaptation strategies
- adaptation case studies and
- potential adaptation options and tools that support adaptation planning.

Tenthly, the UNECE Guidance aims to support decision makers from the local to the transboundary and international level by offering advice on the challenges caused by climate change to water management and water-related activities and for developing adaptation strategies.

Finally, the EU Adaptation Strategy (2013) sets out a framework and mechanisms for preparing the EU for current and future climate impacts.

Main objectives: promoting action by Member States, promoting better-informed decision-making, and promoting adaptation in key vulnerable sectors.

The overall aim is to enhance the EU's preparedness for and the capacity to respond to the impacts of climate change.

At least 20% of the EU's budget for the years 2014-2020 should be spent on climate change mitigation and adaptation.

3. Assessing the economic importance of water uses in the context of climate change (WFD)

Through this presentation, information was provided on the approaches to calculate economic value of water considering the climate change effects, with reference to different economic sectors.

The impacts of climate change on the economic value of water resources is based on the development of adaptation strategies with regards to the sustainable management of regional and national water resources.

The modelled changes in water use by sector will strongly reflect differences in the economic value of water in each sector. But in each case a significant increase of economic value for water resource is expected.

Economic analyses play a critical role in consideration of climate change policies. Identifying, assessing and communicating the implications of economic uncertainty and knowledge gaps remain a major challenge – for example - in characterization of long-term technology change and valuation of non-market impacts. Further, seasonal tariff variations can be very effective to provide higher incentives for saving water in periods with high scarcity only.

The Integrated Water Resources Rapid Assessment report provides recommendations in two categories:



- No-Regret Actions: where needs are serious and benefits are obvious and significant;
- Recommended Actions for Prioritization: where further economic and technical analysis is needed.

Economic value of water in the context of climate change is summarized in the table below:

Economic Value of water			Climate change influence
Benefit Class	Benefit Category	Types of benefits and examples	
Use values	Direct use	Market (Commercial: water supply navigation, tourism)	Increasing due to CC related measures costs (e.g. Reducing leakages, BAT for water savings)
		Non-market (Recreational: water skiing, fishing, swimming, boating, photography)	Present related studies (Contingent Evaluation Method) indicated a small increase
	Indirect use	Amenity value derived from a nice environment	Discrepancy in spatial assessment
		Benefit extracted from someone else using the environmental good	not assessed
		General ecosystem support (preserving the food chain to support fishing)	Increasing due to the increasing value of Ecosystem services
Option value	Value derived from preserving potential direct or indirect use values in future, which depends on uncertainty over future demand and supply.	not assessed	
Non-use values	Existence	Biodiversity, heritage and cultural values	Present related studies (Contingent Evaluation Method) indicated a small increase
	Bequest	Preservation of water quality for family and future generations	increasing due to conservation and adaptation measures costs

4. Financial aspects for the implementation of the adaptation measures included in the RBMP

The presentation examined the financial aspects, cost and shared benefits of considering adaptation measures in the RBMP.



Estimating the costs of adaptation involves a large number of methodological challenges:

- Determining and using information on climate change impacts = a fundamental need for the entire climate change adaptation process
- Dealing with uncertainty is the major need, when considering:
 - climate projections
 - socio-economic scenarios
 - analysis of impacts (and benefits) and adaptation responses.
- Assessments need to be linked with science-based knowledge
- The need to have a comprehensive and systematic overview on the usefulness of economic assessments for climate change adaptation.

There is a need to plan robust strategies to prepare for an uncertain future and not to use uncertainty as a reason for inaction.

Highlights Day 2

The second day has been dedicated to the presentation of the Climate change adaptation measures under MSFD.

5. Coordination between WFD and MSFD for the climate change adaptation at the national and regional level

For ensuring integrating of adaptation within the key steps of River Basin Management Planning following steps should be followed:

- Assessing direct and indirect climate pressures;
- Detecting climate change signals;
- Monitoring change at reference sites;
- Setting objectives;
- Forecasting the economics of water supply and demand;
- Checking the effectiveness of measures;
- Favouring robust adaptation measures;
- Maximize cross-sectoral benefits and minimize negative effects across sectors;
- Apply WFD Article 4.7;
- Flood risk management;
- Drought management and water scarcity.

Integrating adaptation into spatial planning and the built environment decision making includes:

- Planning and development legislation including provisions for climate change adaptation;
- Developing Guidelines and tools on how to integrate adaptation and broader climate change considerations into the statutory planning system and the built environment;
- Encourage local-level planning;
- Developing pilot climate information system;



- Include climate change adaptation into materials, design, guidelines for new developments.

Integrating adaptation into flooding decision-making includes:

- Ensure a closer coordination of Floods and Water Framework Directives in the preparation of RBMPs and address climate change adaptation;
- Promote flood-risk guidelines to enhance adaptive capacity;
- Review and update flood forecasting and flood warning systems taking into account climate change adaptation;
- Development of support tools for flood risk assessment of assets in the context climate change'
- Include climate change experience into the future review of the Floods Directive.

Integrating adaptation into risk management decision-making includes:

- Investigate synergies that may exist between the emergency planning function of the risk management and adaptation planning;
- Assess the impacts of climate change on national emergency system and prepare appropriate coping strategies;
- Explore role of emergency forces in operating in extreme weather and responding to emergencies/extreme weather events (e.g. include role of emergency forces in local and regional emergency plans).

Integrating adaptation into coastal and marine decision-making includes:

- IMP, Marine Strategy Framework Directive are opportunities for climate change adaptation;
- Development of the Interdepartmental Marine Coordination Group possible synergy role;
- Development of expert systems and climate change adaptation tools for marine-spatial planning;
- Maximize use of research such as national sea bed survey and develop a Marine Digital Atlas.

Coordination at the regional level includes:

- Use the existing administrative structures to promote coordination for climate change adaptation particularly Regional Seas Conventions and River Basin Conventions;
- Establish Ad Hoc Groups between marine and river conventions in order to develop coordinated measures related to climate change;
- Promote joint research studies to improve the knowledge on the interaction between rivers and seas and the effects of climate change adaptation measures.

6. Risk reduction and climate change adaptation measures for costal ecosystems

The risks and uncertainties, often associated with seasonality, are most evident in agricultural practices and for rural - urban change, and include:

- Limited availability of water, increased water demand; water quality problems;
- Effect on water resources relying on snowmelt;



- Effects on some water supplies;
- Reduced energy demand for heating;
- Increased demand for cooling;
- Declining air quality in cities;
- Effects on winter tourism;
- Agriculture, forestry and ecosystems: increased yields in colder environmental conditions; decreased yields in warmer environments;
- Area affected by drought increases.

Risk Reduction describes the development and application of policies, strategies and practices that minimize vulnerabilities, hazards and disaster impacts throughout a society in the broad context of sustainable development.

The lessons and the challenges refer to:

- Longer term perspectives on social protection;
- Social protection interventions need to fully address issues of social vulnerability;
- Institutional capacity and co-ordination;
- Political ownership;
- Uncertainty in trying to establish the impacts of climate change with any degree of confidence;
- Adaptive social protection;
- Climate proofing social protection through a long - term vision in the context of more reliable and accurate predictions and consideration of vulnerability;
- Policy and programmatic options for social protection for climate change adaptation.

A preventive and holistic approach is needed to achieve risk reduction.

Highlights Day 3

The last day has been dedicated to the discussion of the Economics of Climate change adaptation measures.

7. ICZM used as a tool for adaptation to the climate change between WFD and MSFD

Integrated coastal zone management (ICZM) or Integrated coastal management (ICM) is a process for the management of the coast using an integrated approach, regarding all aspects of the coastal zone, including geographical and political boundaries, in an attempt to achieve sustainability.

The objectives of ICZM include:



This Project is funded by the
European Union



A project implemented by
Human Dynamics Consortium

- Optimize benefits from coastal and marine resources, specifically for local communities
- Identify desired uses
- Minimize conflicts
- Prevent environmental degradations

The Integrated Coastal Zone Management (ICZM) is a dynamic, multi-disciplinary and iterative process to promote sustainable management of coastal zones.

"Integrated" in ICZM refers to the integration of objectives and also to the integration of the many instruments needed to meet these objectives. It means integration of all relevant policy areas, sectors, and levels of administration. It means integration of the terrestrial and marine components of the target territory, in both time and space

Key principles for successful ICZM cover:

- A broad "holistic" perspective
- A long term perspective



- Adaptive management during a gradual process
- Reflect local specificity
- Work with natural processes
- Participatory planning
- Support & involvement of all relevant administrative bodies
- Use of a combination of instruments

Key tools for ICZM are:

- Legislation
 - state legislation, local regulatory documents
- Planning
 - development strategies and sector plans, spatial planning
- Economics and finance
 - participation in state programmes, attraction of international funds, rational budget planning, strengthening of taxation framework
- Infrastructure
 - traffic routes, tourism and recreation facilities, nature and landscape protection, facilitated areas
- Communication
 - website development, local information systems

ICZM Protocol addresses land and sea ecosystems, coastal and maritime planning including tourism, energy, etc., impacts of Climate change and adaptation, in a multi sectoral /holistic approach.

8. Resource costs and climate change

Resource costs represent the costs of foregone opportunities which other uses 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.

The water resource cost present policy takes into account that:

- Water allocation and water price is still a very high political issue;
- Priorities for water allocation are established based on the importance in the national economy not necessary having in mind the most market value;
- Environmental water requirements (non-value costs) are still not ranking in high priorities;
- In the climate change conditions the water allocation should be more based on the economic analysis of alternative costs.

Other key points of discussion

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

- The need to prepare long-term strategies for addressing the impacts of climate change with a focus on the linkages between adaptation and mitigation;
- Taking account of uncertainty about key climate variables;
- Opportunities for enhancing the effectiveness of climate change policies need to be investigated by the beneficiary countries;
- Having in mind the large uncertainties around the estimates of the impacts of climate change, it is important to explain the sources of these uncertainties and to try to quantify their magnitude;
- Types of uncertainties:
 - i) Economic and technological uncertainty;
 - ii) Environmental uncertainty: uncertainty around the impact of GHGs concentration on the physical climate;
 - iii) Economic and valuation uncertainty.

Final Workshop Outcomes

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

Climate change is expected to have significant implications for many areas of human activity. A main conclusion is that there are large uncertainties, which are not fully reflected in existing estimates of global impacts of climate change in monetary units.



Estimating the economic impacts of climate change raises a number of difficult issues.

- the knowledge on the physical impacts of climate is limited;
- the impact should be calculated across regions, which raises an equity issue, and over time, which implies the use of a social (consumption) discount rate.

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

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.



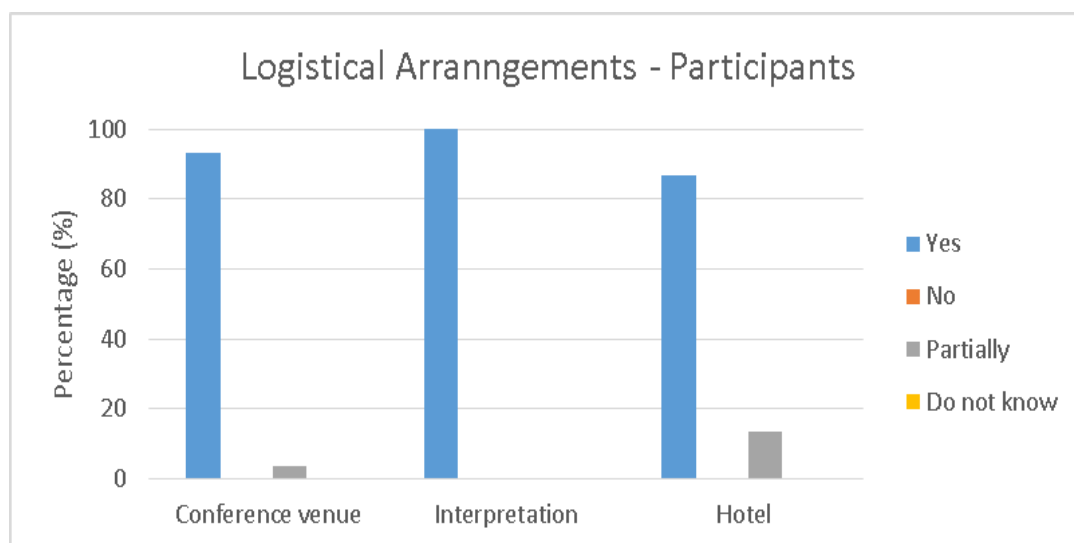
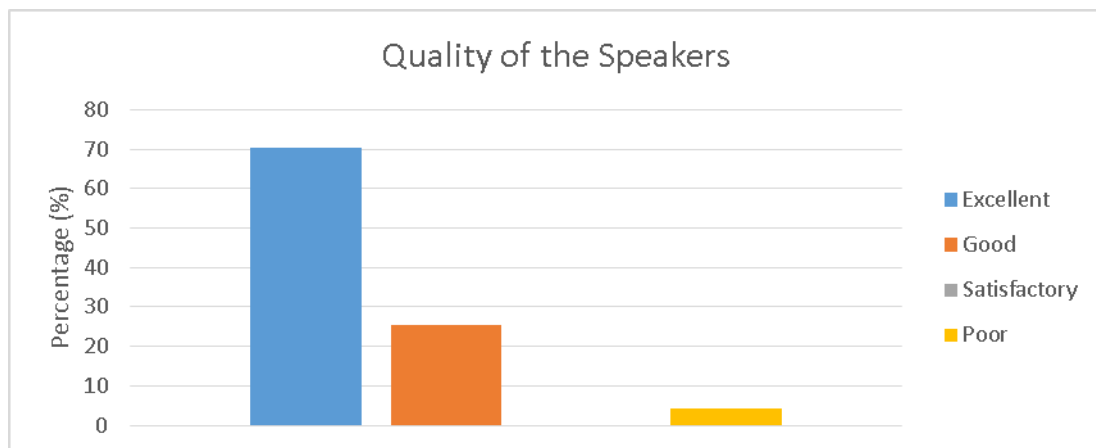
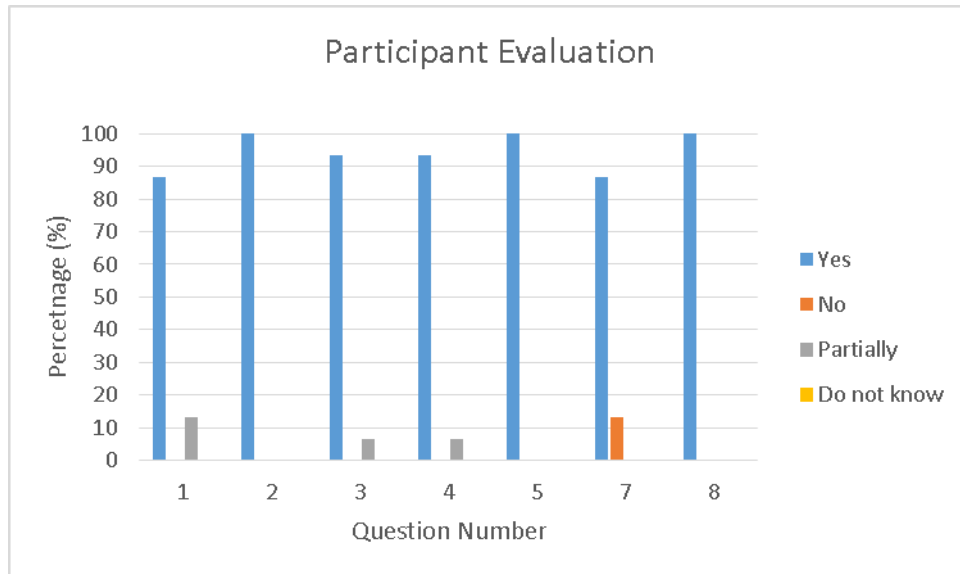
Evaluation

Statistical information

Workshop – Participants' Evaluation

Question	N°. Responses	Yes	No	Partially	Do not know	
1. Was the workshop carried out according to the agenda	15	13 (86)%	0 (0)%	2 (13)%	N/A	
2. Was the programme well structured?	15	15 (100)%	0 (0)%	0 (0)%	N/A	
3. Were the key issues related to the topics addressed?	15	14 (93)%	0 (0)%	1 (6)%	N/A	
4. Did the workshop enable you to improve your knowledge?	15	14 (93)%	0 (0)%	1 (6)%	N/A	
5. Was enough time allowed for questions and discussions?	15	15 (100)%	0 (0)%	0 (0)%	N/A	
6. How do you assess the quality of the speakers?	Speaker/Expert	N°. Responses	Excellent	Good	Satisfactory	Poor
	5	47	33 (70)%	12 (25)%	0 (0)%	2 (4)%
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.)?	15	13 (86)%	2 (13)%	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?	13	13 (100)%	0 (0)%	N/A	N/A	
9. Were you satisfied with the logistical arrangements, if applicable?	Conference venue	15	14 (93)%	0 (0)%	1 (6)%	0 (0)%
	Interpretation	14	14 (100)%	0 (0)%	0 (0)%	0 (0)%
	Hotel	15	13 (86)%	0 (0)%	2 (13)%	0 (0)%
Comments:						
<ul style="list-style-type: none"> In general, I think the workshop was well structured, but it will be better if all speakers/experts talks more specifically about the steps that we should follow, not only in principle. Which are the most important policies to be met, et. Thank you! Marta Moren-Abat did not attend the workshop because of the flight cancellation. I have assessed her quality by mistake and could not take back, please ignore it on question 6. 						

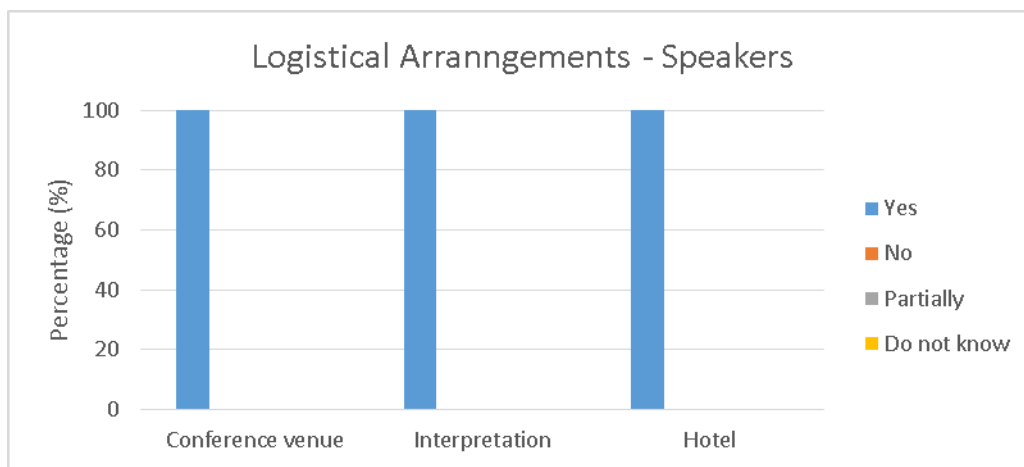
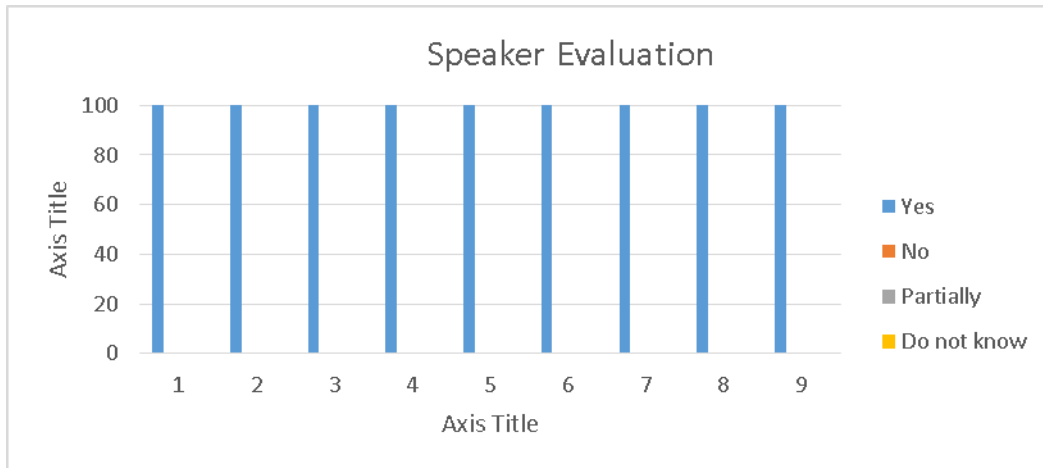




Workshop – Speakers’ Evaluation

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 : Monday, 11 April 2016

<p>Topic: WM WG – Workshop: “The economics of climate change adaptation measures under WFD, MSFD and ICZM” – <u>Climate change adaptation measures under WFD</u></p> <p>Chair and Co-Chairs: Mihail Dimovski and Mihaela Popovici</p> <p>Venue: Istanbul, Turkey</p>				
Start	Finish	Topic	Speaker	Sub topic/Content
08:30	09:00	Registration		
09.00	09.15	Welcome and opening	Welcome and opening Mr. Mihail Dimovski ECRAN Team Leader	Address by ECRAN
09.15	09.30	Introduction of the Agenda of the workshop	Ms. Mihaela Popovici	Introduction to the purpose of the workshop and its expected outcome Presentation and adoption of the agenda
09.30	10.30	Presentation and discussion of the results achieved in 2015 related to the WFD and MSFD workshops	Ms. Mihaela Popovici	Presentation of the approach, methodologies and the results achieved Method : PPP and Q&A
10:30	11:00	Coffee Break		
11.00	12.30	Adaptation to the climate change in the RBMP for Danube River Basin (DRB)	Mr. Gheorghe Constantin Head of Water Department, Ministry of Environment Romania TAIEX expert All participants	1) Presentation of the Climate change adaptation strategy in the DRB 2) Results of the adaptation measures in the DRB Method : PPT and Q&A



12:30	14:00	Lunch Break		
14:00	15:00	Presentation of the EU most recent developments related to the adaptation measures	Ms. Mihaela Popovici	Presentation of the most relevant policies, guidance, communications, technical papers, platforms and actions at the EU level Method : PPP and Q&A
15:00	15:30	Adaptation measures in the PoM and correlation with WFD objectives	Mr. Gheorghe Constantin TAIEX expert All participants	The presentation will investigate how the adaptation measures will support the fulfillment of the WFD objectives Method : PPP and Q&A
15:30	16:00	Coffee Break		
16:00	16:30	Assessing the economic importance of water uses in the context of climate change (WFD)	Mr. Gheorghe Constantin TAIEX expert All participants	Through this presentation, information will be provided on the approaches to calculate economic value of water considering the climate change effects, with reference to different economic sectors Method : PPP and Q&A
16.30	17.00	Financial aspects for the implementation of the adaptation measures included in the RBMP	Ms. Mihaela Popovici All participants	The presentation will examine financial aspects, cost and shared benefits of considering adaptation measures in the RBMP Method : PPP and Q&A



Day 2 : Tuesday 12 April, 2016

Topic: WMWG - Workshop: “The economics of climate change adaptation measures under WFD, MSFD and ICZM” – Climate change adaptation measures under MSFD

Chair: Mihaela Popovici and Gheorghe Constantin

Venue: Istanbul, Turkey

Start	Finish	Topic	Speaker	Sub topic/Content
09.00	09.15	Welcome and opening	Welcome and opening Ms. Marta Moren Abat, European Commission, DG Environment	Address by EC
09.15	09.45	Coordination between WFD and MSFD for the climate change adaptation at the national and regional level	Mr. Gheorghe Constantin TAIEX expert All participants	Presentation of the coordination mechanism established between countries in the Danube and Black Sea Region Method : PPP and Q&A
9:45	10:15	Adaptation to climate change measures within the MSFD Action Plan	Mr. Gheorghe Constantin All participants	Presentation of the concept and measures addressing climate changes effects planned and implemented in the MSFD Action Plan Method : PPP and discussions
10:15	11:00	Case studies on climate adaptation approaches and measures	All participants	Short inputs from countries presenting case studies describing climate change adaptation approaches and measures, including factors influencing the implementation process such as governance, science, research at the local, national or transboundary level. Method : PPP and Q&A
11:00	11:30	Coffee Break		



11:30	12:00	Influence of climate change on Cost effectiveness analysis and Cost Benefit Analysis (WFD and MSFD)	Mihaela Popovici All participants	Presentation of the findings of CEA and C&B analysis in climate change adaptation measures estimates Method : PPT and Q&A
12:00	12:30	Risk reduction and climate change adaptation measures for costal ecosystems	Ms. Mihaela Popovici All participants	Presentation of the EU legal basis, i.e Integrated Maritime Policy, ICZM in relation with coastal areas Method : PPP and Q&A
12:30	14:00	Lunch Break		
14:00	15:00	Case studies on climate adaptation approaches and measures in the ECRAN maritime countries	All participants	Short inputs from AL, B&H, MNE and TR as maritime countries presenting case studies describing climate change adaptation measures in line with MSFD Method : PPP and Q&A
15:00	15:30	Water management adaptation to the climate change: Romanian Experience	Mr. Gheorghe Constantin, TAIEX Expert All participants	Presentation of the approaches, implementation process and challenges in Romania towards MSFD goals Method : PPP and Q&A
15:30	16:00	Coffee Break		
16:00	17:00	Approaches and experiences on monitoring and evaluation of climate change adaptation measures	Ms. Mihaela Popovici All participants	Presentation of the results reported by the EEA on experiences of countries in Europe on monitoring, evaluation and reporting on mitigation measures Method : PPP and Q&A



Day 3 : Wednesday 13 April, 2016

Topic: WMWG - Workshop: “The economics of climate change adaptation measures under WFD, MSFD and ICZM” – <u>The economics of climate change</u>				
Chair and Co-Chairs: Mihaela Popovici and Gheorghe Constantin				
Venue: Istanbul, Turkey				
Start	Finish	Topic	Speaker	Sub topic/Content
08:30	09:00	Registration		
09:00	09:30	Wrap up of the key points of discussion from the first two days meeting	Ms. Mihaela Popovici	
09:30	10:30	ICZM used as a tool for adaptation to the climate change between WFD and MSFD	Gheorghe Constantin TAIEX Expert All participants	Presentation of legal initiatives and approaches of ICZM in dealing with emerging climate changes Method : PPP and Q&A
10:30	11:00	Coffee Break		
11:00	12:30	Resource costs and climate change	Mr. Gheorghe Constantin TAIEX expert All participants	Presentation from the results of climate changes adaptation strategies projects in Romania Method : PPP and Q&A
12:30	14:00	Lunch Break		
14:00	15:00	Case studies on cost of climate change mitigation measures and sources of funding	Ms. Mihaela Popovici All participants	Presentation of a set of case studies from different countries describing approaches of calculation of costs and benefits, possible sources of financing, successes and limited factors Method : PPP and Q&A 11
15:00	15:30	Cross sectoral approach in the	Ms. Mihaela Popovici,	Presentation of the importance of adopting of a sectoral approach



		climate adaptation measures	All participants	bringing together sectors such as agriculture, land use, water supply and sanitation, energy production Suggestions and recommendations for incorporation of climate change consideration in Drina RBMP.
15:30	16:00	<i>Coffee Break</i>		
16.00	16.30	Next steps and conclusions	Ms. Mihaela Popovici	



ANNEX II – Participants

First Name	Family Name	Institution Name	Country	Email
Arben	Pambuku	Ministry of Agriculture	Albania	arben.pambuku@bujqesia.gov.al
Arduen	Karagjozi	Technical Secretariat of National Water Council	Albania	arduen.karagjozi@stkku.gov.al
Ermela	Kraja	Technical Secretariat of National Water Council	Albania	ermela.kraja@stkku.gov.al
Gerta	Lubonja	Technical Secretariat of National Water Council	Albania	gerta.lubonja@stkku.gov.al
Ilda	Cela	Ministry of Agriculture	Albania	ilda.cela@bujqesia.gov.al
Gorana	Basevic	Ministry of Foreign Trade and Economic Relations	Bosnia and Herzegovina	gorana.basevic@mvteo.gov.ba
Violeta	Jankovic	Srpska Waters	Bosnia and Herzegovina	vjankovic@voders.org
Halil	Rexhepi	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	halilrexhepi@hotmail.com
Ljupka	Dimovska-Zajkov	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	L.Zajkov@moepp.gov.mk
Melita	Gocevska	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	melitagocevska@yahoo.com
Nazmije	Idrizi	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	nazmije_idrizi@live.com
Radmila	Bojkovska	Hydromet	former Yugoslav Republic of Macedonia	rbojkovska@meteo.gov.m
Snezhana	Martulkova	Ministry of Environment and Physical Planning	former Yugoslav Republic of Macedonia	aneandmartul@yahoo.com



First Name	Family Name	Institution Name	Country	Email
Fatlije	Buza	Ministry of Environment and Spatial Planning	Kosovo ^{1*}	fatlije.buza@rks-gov.net
Severgjan	Radonçiq	Ministry of Environment and Spatial Planning	Kosovo*	severgjan.radoniqi@rks-gov.net
Sylejmon	Latifi	Ministry of Environment and Spatial Planning	Kosovo*	sylejmon.latifi@rks-gov.net
Zymer	Mrasori	Ministry of Environment and Spatial Planning	Kosovo*	zymer.mrasori@rks-gov.net
Pavle	Đurašković	Institute of Hydrometeorology and Seismology	Montenegro	pavle.djuraskovic@meteo.co.me
Alev	Adıgüzel	Ministry of Forestry and Water Affairs, Directorate General for Water Management,	Turkey	alevkoksal@ormansu.gov.tr
Bahar	Sel	Ministry of Forestry and Water Affairs, Directorate General for Water Management,	Turkey	bfehim@ormansu.gov.tr
Eda	Bayar	Ministry of Environment and Urbanization, Directorate General for Environmental Management	Turkey	eda.bayar@csb.gov.tr
Mehmet	Aşkİner	Ministry of Forestry and Water Affairs, Directorate General for Water Management,	Turkey	maskiner@ormansu.gov.tr
Semih	Emlekçi	Ministry of Forestry and Water Affairs, Directorate General for Water Management,	Turkey	semlekci@ormansu.gov.tr

¹ 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.



First Name	Family Name	Institution Name	Country	Email
Gheorghe	Constantin	Ministry of Environment, Water and Forest	Romania	Gheorghe.constantin@mmediu.ro
Mihaela	Popovici	ECRAN	Austria	mihaela_popovici@yahoo.com
Masa	Stojsavljevic	ECRAN	Serbia	masa.stojsavljevic@humandynamics.org



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_CC_Adaptation_April_2016_istanbul.zip



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