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# Environment and Climate Regional Accession Network (ECRAN)

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Report on the Workshop:  
“ Workshop on  
Eutrophication Reduction  
Measures under EU  
Directives  
in the Domain of Water”

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16 -18 May 2016, Sarajevo

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

**WORKSHOP REPORT**

**Activity 2.3**

**“Workshop on Eutrophication Reduction Measures under EU Directives in the Domain of Water”**

**Sarajevo, 16 – 18 May 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 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 on Eutrophication Reduction Measures under EU Directives in the Domain of Water” has been organized as planned by ECRAN project team in 2015, in Sarajevo, 16-18 May 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 focus will be given to this workshop related to the **technical and economical examination of eutrophication, a key environmental problem in the preparation of the program of measures dealing with nutrients reduction**, within the frame of the implementation of WFD and MSFD.

Eutrophication is identified as one of the major threats to the environment and still remains a priority problem. With any additional pressure, the status can revert to previous conditions, endangering the ecosystem. Pollution, although localized, affects biological communities and algae blooms are still heavy in some localities in the beneficiary countries.

Measures for nutrient emission reduction in the agricultural sector may also affect the eutrophication level in marine waters. Consequently, it is important to coordinate the WFD and MSFD policies and measures to take account of the effects both in coastal areas and in open sea regions.

The workshop has been organized with the aims to discuss the theory, approaches, methodologies and lessons learned in relation with (1) the reduction of eutrophication, (2) the coordination between WFD and MSFD to reduce the nitrogen and phosphorous loads to the environment and thereby to reduce eutrophication, which are **the main contributors to the eutrophication, and (3) to see what it can be done to control the eutrophication**.



Finally, case studies on (i) assessing eutrophication presenting existing and proposed measures concerning control of marine and inland waters eutrophication, and (ii) on measures proposed for eutrophication management in the ECRAN beneficiary countries.

In the preparation of the River Basin Management Plans and the Program of Measures, focus should be given on cost effective measures to reduce eutrophication, on actions to reduce nutrients from diffuse sources (farmland), waste water plants, airborne nutrients from e.g. energy and transport combustion. The economic analysis in the RBM Plans will identify all costs to society, based on assessment of the baseline scenarios and a set of different other scenarios, such as p-free detergent scenario, sewage treatment scenario, agricultural scenario.

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 Sarajevo (BiH), 16-18 May 2016.

The first day of the workshop was dedicated to the “Requirements of EC Directives and regional conventions regarding eutrophication”.

The most relevant policies, guidance, communications, technical papers, platforms and actions at the EU level and Regional Conventions have been introduced and discussed.

Eutrophication reduction measures under MSFD, WFD, UWWTD and Nitrates Directive” – Assessment of eutrophication has been examined during the 2nd day of the workshop.

The focus of the second day was on the harmonization of assessment methodologies and criteria for agreed eutrophication elements/parameters/ indicators for rivers, lakes, transitional, coastal and marine waters, on the need of co-ordination of monitoring and reporting, ammonization of models for assessing or predicting anthropogenic or natural nutrient loading into inland and marine waters based on nutrient sources information or nutrient sources scenarios (e.g. EUROHARP models);

The 3rd workshop day was focused on the Eutrophication reduction measures under MSFD, WFD, UWWTD and Nitrates Directive” – Implication in the Program of measures. In addition to the implications of the incorporation of eutrophication measures in the RBM Plan, the need to ensure coherence of current eutrophication assessment schemes and PoM, WFD and marine regional conventions, has been discussed.

Presentations have been made of a set of case studies from different countries describing approaches of assessing eutrophication and related reduction measures.

Further, at the workshop, information about eutrophication in the Danube RB and the results of the reduction measures in the Danube RB has been introduced.

Experiences from Romania have been shared on how the eutrophication of the Black Sea and the reduction measures are interlinked to support the fulfilment of the WFD objectives.



## Summary of the main topics covered

### **1) Requirements of EC Directives and regional conventions regarding eutrophication**

- Overview and common understanding of eutrophication in EC and international policies
- Requirements of EC directives and regional conventions regarding eutrophication
- Eutrophication and the designation of sensitive areas or nitrate vulnerable zone
- Links of eutrophication assessment with pressure and impact analysis, and programme of measures
- Approaches and methods for eutrophication target setting in the Baltic Sea region.

### **2) Assessment of eutrophication**

- Current eutrophication assessment methodologies and criteria in European countries
- Impact and pressure criteria used in WFD Article 5 risk assessment
- Importance and effects of the Black Sea eutrophication on the EU water directives implementation within its basin
- Assessment methodologies and criteria used for water quality status classification for coastal water
- Assessment methodologies and criteria used for water quality status classification for marine waters
- Case studies on assessing eutrophication in the ECRAN beneficiary countries
- Eutrophication assessment in the context of the European water policies
- Assessment of the eutrophication within the Drina Basin.

### **3) Implication in the Program of measures**

- Presentation of a study case on tackle eutrophication within Nitrate Directive eutrophication in Romania
- Promoting an integrated approach to the eutrophication at the national and regional level
- Administrative and economic measures provided for managing the input of fertilizers within the marine and inland waters
- Case studies on measures intending for eutrophication management in the ECRAN beneficiary countries
- Influence of the climate change adaptation measures on the eutrophication assessment and management
- Measures related to eutrophication to be included within the Drina River Basin Management Plan.



## II. Objectives of the Training

### General Objective

The overall objectives of the workshop are to develop a knowledge base on the importance of the eutrophication process and the reduction measures imposed by the EU Directives and policies in the development of the River Basin Management Plans and the Program of Measures in line with the WFD, and in the Action Plan prepared according to the MSFD requirements.

### Specific Objectives

- To enhance the understanding of the eutrophication in its policy context in the EC and international policies;
- To examine the eutrophication and the designation of sensitive areas or nitrate vulnerable zone in line with the Nitrates Directive;
- To discuss current eutrophication assessment methodologies and investigate implications for the RBM Plan and the Program of measures;
- To analyse the synergies between the inland waters and transitional and coastal waters in relation to the nutrient reduction measures;
- To provide examples of the WFD-compliant assessment systems for coastal waters;
- To present the assessment methodologies and criteria used for UWWT and ND designations
- To introduce the impact and pressure criteria used in WFD Article 5 risk assessment which can be applied by beneficiary countries;
- To present the criteria and standards under the Marine Strategy Framework Directive with relevance for beneficiary countries;
- To introduce the relevant EU policies, guidance documents and policies for the topics of the workshop;
- To examine options to support decision makers from the local to the transboundary and international level on the challenges caused by reduction of eutrophication;
- To discuss relevant needed coordination between WFD, ICZM and MSFD for the eutrophication at the national and regional level;
- To discuss case studies from different countries describing (i) existing and proposed measures concerning control of marine and inland waters eutrophication, and (ii) measures intending for eutrophication management in the ECRAN beneficiary countries;
- 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 eutrophication process, and the selection of the reduction 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 eutrophication reduction measures;
- Guidance documents related to the WG tasks discussed and clarified.



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

#### Nitrates Directive

The implementation of the Nitrates Directive (91/676/EEC) forms an integral part of the Water Framework Directive and is one of the key instruments in the protection of waters against agricultural pressures. The Nitrates Directive has the general purpose of “reducing water pollution caused or induced by nitrates from agricultural sources and preventing further such pollution” (Art.1). A threshold nitrate concentration of 50 mg/l is set as the maximum permissible level in water resources, and the Directive limits the application of livestock manure to land in excess of 170 kg N/ha/yr.

Waters referred to by the Nitrates Directive include all waters: surface, ground, transitional and coastal and marine waters.

The Nitrates Directive defines waters which are polluted or are liable to pollution as:

- Surface freshwaters, in particular those used for the abstraction of drinking water, which contain or could contain (if preventative action is not taken) nitrate concentrations greater than 50 mg/l;
- groundwaters which contain or could contain (if preventative action is not taken) nitrate concentrations greater than 50 mg/l;
- natural freshwater lakes, or other freshwater bodies, estuaries, coastal waters and marine waters which are found to be eutrophic<sup>1</sup> or in the near future may become eutrophic if preventative action is not taken.

The first steps along the ND implementation included the designation of Nitrate Vulnerable Zones (NVZs) and the introduction of a strengthened range of measures in the NAP that farms within NVZs must comply with, such as:

- Identification of water polluted, or at risk of pollution
- Designation as "Nitrate Vulnerable Zones"(NVZs)
- Establishment of Codes of Good Agricultural Practice to be implemented by farmers on a voluntary basis
- Establishment of action programmes to be implemented by farmers within NVZs on a compulsory basis
- National monitoring and reporting.

The Nitrates Directive provides two options for designation of Nitrates Vulnerable Zones pursuant to its Article 3: to designate separate zones or announce the whole national territory as vulnerable to nitrate pollution. The aim of designating Nitrate Vulnerable Zones is to identify land sites and consequentially coastal areas where the discharge of an excess of nitrates could cause environmental degradation. Existing EU Member States have adopted different strategies for designation of the vulnerable zones.

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<sup>1</sup> Eutrophication is the enrichment of waters by excessive input of nutrients such as nitrogen or phosphorus compounds. This results in the accelerated growth of algae and higher forms of plant life, resulting in an undesirable disturbance to the balance of organisms present and to the quality of the water concerned.





## Common Agricultural Policy

Agriculture affects both the quantity and quality of water available for other uses. In some parts of Europe, pollution from pesticides and fertilizers used exclusively in agriculture remains one of the main causes of poor water quality. Agriculture, especially the intensified agriculture can lead to nutrient pollution affecting water and soil, changing natural habitats and disturbing landscapes, plants and animals, through the excessive application of fertilizers and pesticides and the use of an irrigation water of poor quality and quantity.

These considerations have imposed development and promotion by the EU of the Common Agricultural Policy (CAP), with the objective of achieving sustainable and environmentally friendly agriculture. The EU's objective is to limit the negative effects and encourage the positive effects of agriculture on ecosystems biodiversity, climate, and landscape and nature conservation.

Based on FAO estimates for 2025, water saving and efficiency of its use measures are greatly needed as the estimates indicate that the amount of water needed for agriculture will increase by 14% compared to the current level, while for 2050 will not be enough fresh water necessary for food production worldwide.

There is a great potential to achieve positive environmental effects through merging the efforts of the two policies Common Agricultural Policy (CAP) and the Water Framework Directive (WFD). Several tools of the CAP, e.g. the Cross-Compliance and the Rural Development Programmes, could contribute to implementation of the WFD. The Common Agricultural Policy backs up the Nitrates Directive through direct support and rural development measures.

The fact that WFD includes numerous provisions related to agricultural activity shows the importance of considering the synergies and their related effects between the WFD and CAP.

### WFD provisions justifying the need for integration with CAP

The relevant WFD provisions highlighting the need of integration with CAP include:

- The amount of water used and how to use
- Waste water discharge conditions
- Economic activities which could give rise to diffuse pollution
- Physical changes produced in water bodies such as heavily modified water bodies.

### WFD provisions related to different actions or inappropriate application of best agricultural practices

- Sampling of water for irrigation without a permit (WFD Article 11.3.e)
- Discharge of wastewater directly or indirectly into water courses without authorization (WFD Article 11.3.g & j)
- Inappropriate application of pesticides (period of application, type of pesticides, their application in the vicinity of water courses, etc.) (WFD Article 11.3.h)
- Modification of riparian areas of a water body without a permit (WFD Article 11.3.i).



Failing to comply with these provisions restrict the support or compensation for the farmers, which are not anymore eligible to get support.

#### WFD basic measures as cross compliance requirements under CAP

The most important WFD measures which are relevant for cross compliance are the basic measures (WFD Article 11). For this reason, the Water Directors of the Member States have agreed, at their meeting on 28-29 November 2012, on the feasibility of **including basic measures in the cross-compliance requirements**, recognizing that if these measures will be implemented by the farmers, this will contribute to the overall goals of water policy, as required by the WFD.

The basic measures address the pressure from agriculture on water resources as organic and nutrients point and diffuse pollution (WFD Article 11 (3)) contributing to achieve the WFD objectives.

#### **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:



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- (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/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>



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## 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 – **Requirements of EC Directives and regional conventions regarding eutrophication.**

#### 1. Overview and common understanding of eutrophication in EC and international policies

##### Understanding the eutrophication



Eutrophication is a process driven by the enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus, leading to: increased growth, primary production and biomass of algae; changes in the balance of organisms; and water quality degradation. The consequences of eutrophication are undesirable if they appreciably

degrade ecosystem health and biodiversity and/or the sustainable provision of goods and services.

##### Global policy strategies to tackle eutrophication

- Implement research and monitoring programs to characterize the effects of eutrophication, collect water quality data, and inform adaptive management strategies.
- Raise awareness of eutrophication through public awareness campaigns, school environmental education programs, and targeted outreach and technical assistance for effective actions to reduce nutrient losses and eutrophication.
- Implement regulations to mitigate nutrient losses, such as standards, technology requirements, or pollution caps for various sectors.
- Create fiscal and economic incentives to encourage nutrient reducing actions using taxes and fees, subsidies, or environmental markets.
- Preserve and restore natural ecosystems that capture and cycle nutrients.
- Establish strong, and coordinated institutions to address eutrophication.
- Capitalize on environmental synergies when designing comprehensive policies to address eutrophication.

### Issues to consider

- Eutrophication is a global problem and tackling the issue is a priority for all regions
- Effects of eutrophication will have a big impact on the water quality, environment and social and economic activities
- Diffuse pollution from agriculture, untreated wastewater and some industrial activities are the main source of water eutrophication
- Tackling the diffuse and point sources of nutrient discharges is a priority around the world
- European Union has developed targeted policies toward the reduction of nutrient pollution in inland and marine waters

## **2. Presentation of the requirements of EC directives and regional conventions regarding eutrophication**

### Eutrophication covered by EU policies

- 1) The UWWTD (91/271/EEC) addresses the major point sources, in particular the municipal waste water discharges and requests the identification of sensitive areas and compliance with treatment requirements. Article 2.(11) Definition: eutrophication means "the enrichment of water by nutrients especially compounds of N or P, 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".

This definition implicitly defines eutrophication by four criteria:

- enrichment of water by nutrients;
- accelerated growth of algae and higher forms of plant life;
- an undesirable disturbance to the balance of organisms present in the water
- deterioration of the quality of the water concerned.

- 2) The Nitrates Directive (91/676/EEC) deals with diffuse pollution of nitrogen from agriculture and requires the designation of nitrate vulnerable zones and application of action programmes

ND has an identical definition of eutrophication as the UWWTD.

The effects must be caused by the enrichment of water by N compounds rather than by nutrients in general.

ND sections that refer to eutrophication and surface water monitoring are:

- Article 2(i), which defines eutrophication;
- Article 3, on the identification of polluted waters and designation of Nutrient Vulnerable Zones;
- Article 5(6) on the monitoring programmes for the purpose of assessing the effectiveness of action programmes;
- Article 6, on water monitoring for the purpose of the first designation and revision of nitrate vulnerable zones; and



- Annex 1, which specifies criteria for identifying polluted waters.

### 3) Marine Strategy Framework Directive

GES is determined at the level of the marine region or subregion (specified in MSFD Article 4) on the basis of eleven qualitative 'descriptors' specified in MSFD Annex 1.

The descriptor 5 regards eutrophication, which is described as: "Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters."

Annex III (Table 2 'Pressures and Impacts') includes two pressures (i.e. nutrient and organic enrichment) that need to be considered in the determination of GES and that influence compliance with the eutrophication descriptor.

MSFD Annex I: eleven qualitative descriptors which describe what the environment will look like when GES has been achieved.

#### **Descriptor 5. Eutrophication is minimised**

- 4) Several piece of EU water legislation (e.g. Bathing Water Directive 76/160/EEC, Fishwater Directive 78/659/EEC)

#### International conventions addressing eutrophication in marine waters

- OSPAR (North-East Atlantic)
- HELCOM (Baltic Sea)
- Barcelona Convention (Mediterranean Sea)
- Bucharest Convention (Black Sea).

#### Coordination required in several policy areas

- 1) the harmonisation of assessment methodologies and criteria for agreed eutrophication elements/parameters/ indicators for rivers, lakes, transitional, coastal and marine waters;
- 2) the use of water type-specific objectives for biological and general physico-chemical elements;
- 3) the co-ordination of monitoring and reporting;
- 4) the harmonisation of models for assessing or predicting anthropogenic or natural nutrient loading into inland and marine waters based on nutrient sources information or nutrient sources scenarios (e.g. EUROHARP models);
- 5) the identification of sources of nutrients and possible restoration measures for water bodies.

### **3. Eutrophication and the designation of sensitive areas or nitrate vulnerable zone**

Through this presentation, information was provided on the approaches to designate sensitive areas and NVZs.



### Eutrophication and sensitive areas in UWWTD

"Eutrophication" 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;

Directive requires Member States to designate Sensitive Areas, in conformity with the criteria of Annex II.

#### Sensitive areas

(a) natural freshwater lakes, other freshwater bodies, estuaries and coastal waters which are found to be eutrophic or which in the near future may become eutrophic if protective action is not taken.

(b) surface freshwaters intended for the abstraction of drinking water which could contain more than the concentration of nitrate laid down under the relevant provisions of Council Directive 75/440/EEC of 16 June 1975 concerning the quality required of surface water intended for the abstraction of drinking water in the Member States (') if action is not taken ;

(c) areas where further treatment than that prescribed in Article 4 of this Directive is necessary to fulfil Council Directives.

#### Status of sensitive areas within EU at 2012

- 12 EU Member States have decided to apply Article 5(8) of the Directive and apply more stringent treatment over the whole territory: AT, CZ, DE, DK, EE, FI, LT, LU, LV, NL, PL and RO
- 7 EU Member States (CZ, DK, EE, FI, LV, LT, LU and RO) apply Article 5(8) and Article 5(2,3). All apply Article 5(8) with sensitivity for N and P with the exception of FI, which applies the Directive with sensitivity for P only (and for some subregions, if this is necessary due to the local situation, sensitivity for N is applied).
- AT, DE, NL and PL apply Article 5(8) and Article 5(4)
- BE, SK and SE apply Article 5(2,3) and have identified all their water bodies as sensitive areas.

### Nutrient Vulnerable Zones

A nitrate vulnerable zone is a conservation designation for areas of land that drain into nitrate polluted waters, or waters which could become polluted by nitrates.

The NVZs covered large areas of land that had been identified as exceeding or being at risk of exceeding 50 mg NO<sub>3</sub>/l.

NVZs have rules on fertilizer application involving not fertilizing at certain times of the year (during the winter when runoff is greatest and uptake by plants at a minimum), reducing the amount of fertilizer used, and changing the times when animal waste is applied to the land (waste must be held in tanks over the period when it cannot be applied).

### Method of designation Nitrate Vulnerable Zones

Overlapping three layers information:



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- Layer 1: Soil transmission properties for nitrates below root front depth (leaching) and by surface runoff
- Layer 2: Groundwater
- Layer 3: Nitrogen balance NUTS level (import from local farmyard and livestock manure; export by crop yields).

#### Nitrate Vulnerable Zones in EU 2012

Action programmes are applying on about 1 952 086.5 km<sup>2</sup> in the year 2012, corresponding to about 46.7% of the total EU land area

States which apply the Action programmes on entire territory are: Austria, Denmark, Finland, Germany, Ireland, Lithuania, Luxembourg, Malta, the Netherlands, Slovenia, the Region of Flanders, Northern Ireland, Romania, Belgium-Wallonia, Spain Sweden and the United Kingdom.

#### Highlights Day 2

The second day has been dedicated to the presentation of the **Assessment of eutrophication**.

#### 4. Links of eutrophication assessment with pressure and impact analysis, and programme of measures

##### DPSIR framework

**The OECD framework DPSIR framework:** driving forces (D), pressures (P), state (S), impact (I) and responses (R)

In the **WFD context:**

- **P** is addressed in the Article 5 reports when assessing pressures and presenting typology/characteristics of a water body.
- **S** and **I** are addressed by the work on classification, intercalibration and monitoring.

**R** is addressed in the WFD programmes and measures.

The **conceptual framework for eutrophication assessment** can be linked to the general DPSIR assessment framework:

Category I in the conceptual framework corresponds to **P** and **S**

Categories II and III refer to **I**.

The eutrophication conceptual framework provides an effective means of identifying the critical processes that can be adapted to processes specific to different water body categories.

In order to provide a link to the subsequent steps of the assessment process (i.e. establishing reference conditions and classification), holistic checklists have been derived for the different water categories highlighting the critical processes and variables under the headings of: causative factors, primary or direct effects and secondary or indirect effects.

The level of detail included in the checklist reflects the specificity of the eutrophication process in rivers, lakes, transitional, coastal and marine waters.

The complete checklists for each water category can be found in Annex 2 Guidance Document 23.



## 5. Baltic Sea eutrophication

Eutrophication is driven by a surplus of the nutrients nitrogen and phosphorus in the sea.

Nutrient over-enrichment causes elevated levels of algal and plant growth, increased turbidity, oxygen depletion, changes in species composition and nuisance blooms of algae.

The main pathways of nutrients to the sea are:

- riverine inputs
- atmospheric deposition of nitrogen to the water surface and
- direct waterborne discharges to the sea either from coastal point sources, run-off from diffuse sources in coastal areas and
- discharges from ships.

### Baltic Sea Action Plan

Vision for the Baltic Sea

“A healthy Baltic Sea environment with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable human economic and social activities”.

Four thematic issues (also referred to as segments):

- eutrophication
- hazardous substances
- maritime activities
- biodiversity.

### Targeting setting protocol

It has three steps:

Step 1: Dividing the Baltic Sea into ecologically relevant basins and sub-basins with regard to eutrophication.

Step 2: Analyses of temporal trends per basin or sub-basins identified in Step 1 and the identification of any thresholds.

Step 3: From thresholds to targets – an evaluation of the ecological relevance of statistically identified thresholds.

### Target setting concepts

(1) The **concept of 'reference conditions'** as derived from the WFD:

Reference condition - is a description of the biological quality elements that exist, or would exist, at high status, that is, with no, or very minor disturbance from human activities.

The objective of setting reference condition standards is to enable the assessment of ecological quality against these standards.

The concept of reference condition has a number of strengths:



- It is a well consolidated concept used in all EU coastal and transitional waters – mostly because it originates from the WFD.
- Reference conditions are generally determined by scientific methods, e.g. the analysis of historical data, modelling and reference sites – or by expert judgments.

2) The **concept of ‘acceptable deviation’** from reference conditions also originates from the WFD, where the acceptable deviations are no deviation or a slight deviation from the reference conditions, whilst deviations being ‘moderate’ or ‘high’ are regarded ‘unacceptable deviations’ indicative of impaired ecological status

A combination of the above two terms would lead to the following interpretation of Acceptable Deviation:

**A divergence worth accepting or a divergence within a range considered normal.**

The objective of setting an acceptable deviation from reference conditions is **to define the boundary between acceptable and unacceptable eutrophication status** and thus the **setting of operational targets for relevant eutrophication indicators**.

### Highlights Day 3

The last day has been dedicated to the discussion of **Implication in the Program of measures**

## 6. Impact and pressure criteria used in WFD Article 5 risk assessment

The pressures and impacts assessment is a four-step process:

- describing the ‘driving forces’, especially land use, urban development, industry, agriculture and other activities which lead to pressures, without regard to their actual impacts;
- identifying pressures with possible impacts on the water body and on water uses, by considering the magnitude of the pressures and the susceptibility of the water body;
- assessing the impacts resulting from the pressures; and
- evaluating the risk of failing the WFD objectives.

### LAKES

For WFD Article 5 risk assessments for eutrophication related pressures, some MS have derived pressure and impact criteria to determine whether a lake water body was at risk of not achieving its environmental objective in 2015.

The pressure criteria have been based on the presence of point sources of nutrients and/or a proportion of a particular land use (most commonly agricultural and urban land uses) in the catchment of the lake.

### RIVERS

Some MS have derived pressure and impact criteria to determine whether a river water body was at risk of not achieving its environmental objective in 2015.





The pressure criteria have been based on the presence of point sources of nutrients and/or a proportion of a particular land use (agriculture, forestry and untreated wastewater from settlements) in the upstream catchment of the river water body.

The impact criteria were based on nutrient concentrations (N and P).

The most commonly used impact criteria were TP and orthophosphate. Values for the estimated good/moderate class boundary used in the Article 5 risk assessments were comparable for similar river types (i.e. lowland rivers) (0.15 mg<sup>l</sup><sup>-1</sup> TP and 0.1mg<sup>l</sup><sup>-1</sup> orthophosphate-P).

### **TRANSITIONAL WATERS**

Eutrophication is a recognised threat to the ecological status of transitional water bodies as these accumulate nutrients transported from river systems, from direct inputs from their surrounding catchments and, in some cases, from coastal waters.

The available information for Article 5 related criteria indicates that whenever pressure criteria were reported these were based mainly on the presence of surface point sources (sewage) of nutrients loads and surface water run-off.

The impact criteria were based mainly on nutrient concentrations and chlorophyll a (direct effect) and occasionally on dissolved oxygen, macrovegetation, etc. (indirect effects).

## **7. Assessment methodologies and criteria used for water quality status classification for coastal water**

Coastal zones fulfil many functions, with limited space and resources.

Many similarities exist between coastal sites in spite of widely different physical, environmental, social and economic conditions.

### Main pressures:

- Eutrophication due to the agricultural practices.
- Urban development – the extension of cities, industries, railways, airports
- Insufficient treatment of urban and industrial effluents
- Land contamination
- Fisheries
- Tourism
- Shipping

### Main impacts

- Eutrophication
- Loss of habitats
- Flooding
- Coastal erosion



- Invasive species
- Degradation of ecosystems
- Water shortage

Assessment methodologies and criteria used for water quality status classification

#### Causes of eutrophication of coastal ecosystems

- the nutrient sources on the coastal line
- the land based sources or from rivers that bring nutrients from their catchments, via sea current transport from distant coastal and marine waters
- from the atmosphere.

Effects of the eutrophication of coastal ecosystems

- excessive accumulation of phytoplankton biomass
- depletion of oxygen in bottom waters
- increased frequency of noxious algal blooms
- increased turbidity
- deterioration of coastal food webs and
- reduction of biodiversity.

The Regional Seas Conventions procedures for the assessment of eutrophication of coastal waters, typically include:

- the measurement of nutrient enrichment,
- the measurement of direct effects of nutrient enrichment (phytoplankton chlorophyll a, macrophyte vegetation, and other biological elements)
- the measurement of indirect effects of nutrient enrichment (dissolved oxygen, algal toxins, macrozoobenthos kills, etc.)

National methods for assessing eutrophication in coastal water bodies have been developed based on the assessment of both biological and physico-chemical quality elements.

From available information for Article 5 the pressure criteria for coastal waters were reported based mainly on the presence of surface point sources (sewage) of nutrients loads and surface water run-off.

The impact criteria for coastal waters were based mainly on nutrient concentrations and chlorophyll a (direct effect) and occasionally on dissolved oxygen, macrovegetation, etc. (indirect effects).

#### **Other key points of discussion**

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

1. Eutrophication of lakes and problems with ensuring drinking water quality



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2. Barcelona Convention and MAP
3. Different weight in regulating N compared with P
4. Agricultural practices: manure disposal, transport, financing
5. Problems related to monitoring, especially biological monitoring
6. Monitoring of priority substances
7. Criteria for selecting extension of sewage and not of individual system
8. Decision of municipalities for building their own wwtp supporting by their funds
9. Financing mechanism – increase of water price in case of regional operators
10. Regional operators owned by the municipalities
11. Use of money collected from penalties – who gets this money and how they are spent – RO – ANAR budget spent on monitoring
12. Differentiation and division between water supply and wastewater treatment
13. Monitoring obligations under different conventions and directives
14. Use of Inventories of emissions, E PRTR, EQS, ARS, contaminated sites
15. Requirements for creating sufficient admin capacity for negotiation at national level and local
16. Transposition obligation and deadlines
17. Accessing IPA funds
18. The size of EU infringements
19. Reorganization issue in line with WFD requirements
20. Technical capacity important during negotiations

### Final Workshop Outcomes

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

- Improved understanding of the topics, challenges and tasks, and related responsibilities along the eutrophication process, and the selection of the reduction 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 eutrophication reduction measures
- Guidance documents related to the WG tasks discussed and clarified

The participants have also agreed on the future topics of discussion in the final workshop planned for 4-6 July 2016, dedicated to the first task of the Water Management Working Group –preparation of the Drina RBM Plan.

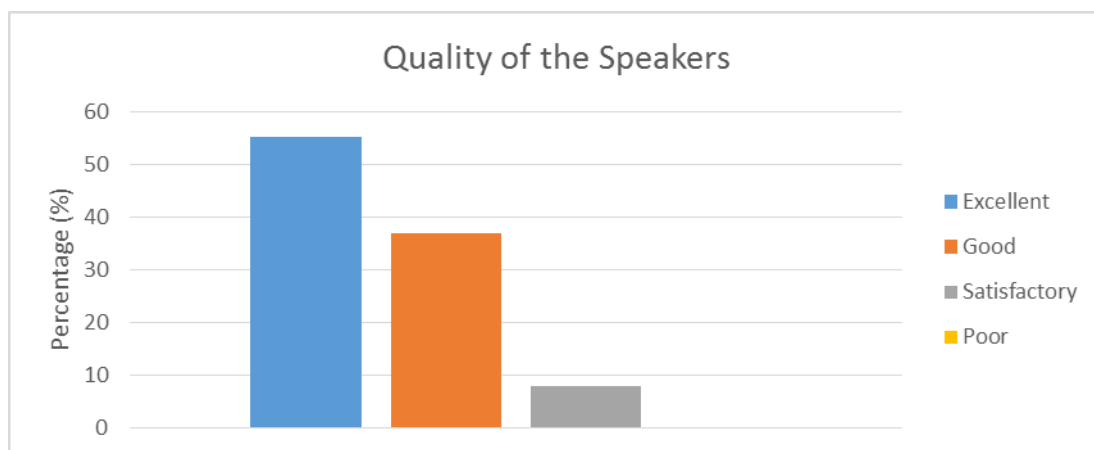
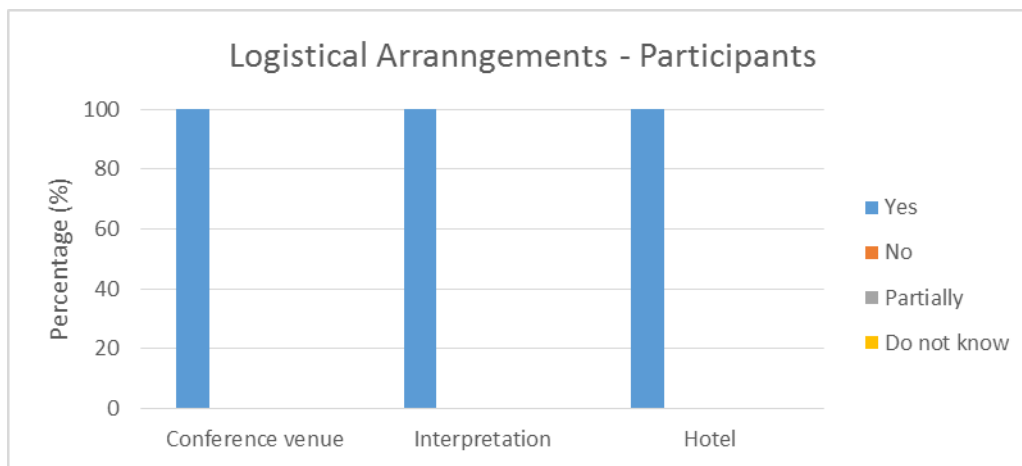
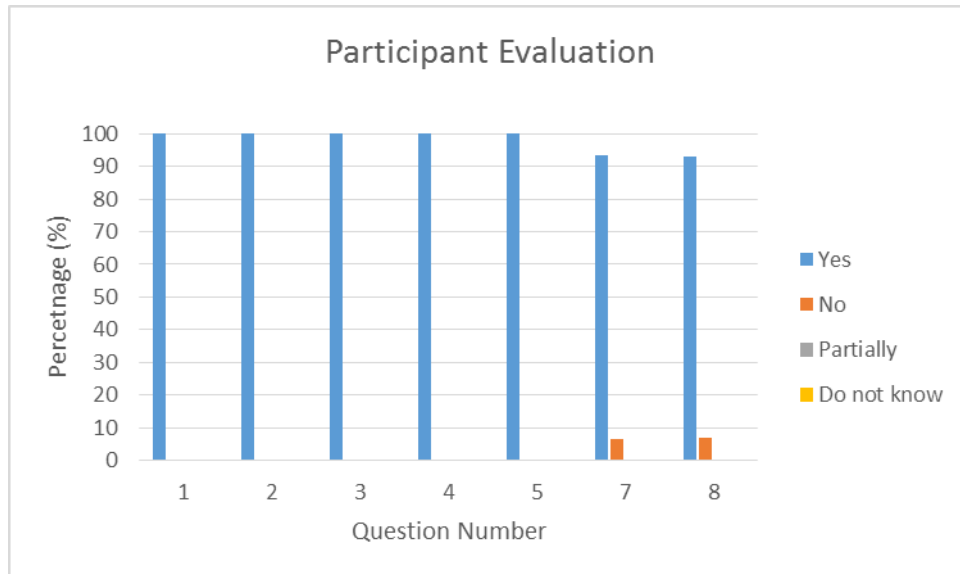


## V. Evaluation

### Workshop – Participants' Evaluation

Question	N°. Responses	Yes	No	Partially	Do not know	
1. Was the workshop carried out according to the agenda	15	14 (93)%	0 (0)%	1 (6)%	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	15 (100)%	0 (0)%	0 (0)%	N/A	
4. Did the workshop enable you to improve your knowledge?	15	15 (100)%	0 (0)%	0 (0)%	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?	<b>Speaker/Expert</b>	<b>N°. Responses</b>	<b>Excellent</b>	<b>Good</b>	<b>Satisfactory</b>	<b>Poor</b>
	4	38	21 (55)%	14 (36)%	3 (7)%	0 (0)%
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	14 (93)%	1 (6)%	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?	14	13 (92)%	1 (7)%	N/A	N/A	
9. Were you satisfied with the logistical arrangements, if applicable?	Conference venue	14	14 (100)%	0 (0)%	0 (0)%	0 (0)%
	Interpretation	15	15 (100)%	0 (0)%	0 (0)%	0 (0)%
	Hotel	14	14 (100)%	0 (0)%	0 (0)%	0 (0)%
Comments:						
<ul style="list-style-type: none"> <li>Logistical arrangements in Sarajevo are by far more better than any other in the region where water group had the workshops.</li> </ul>						

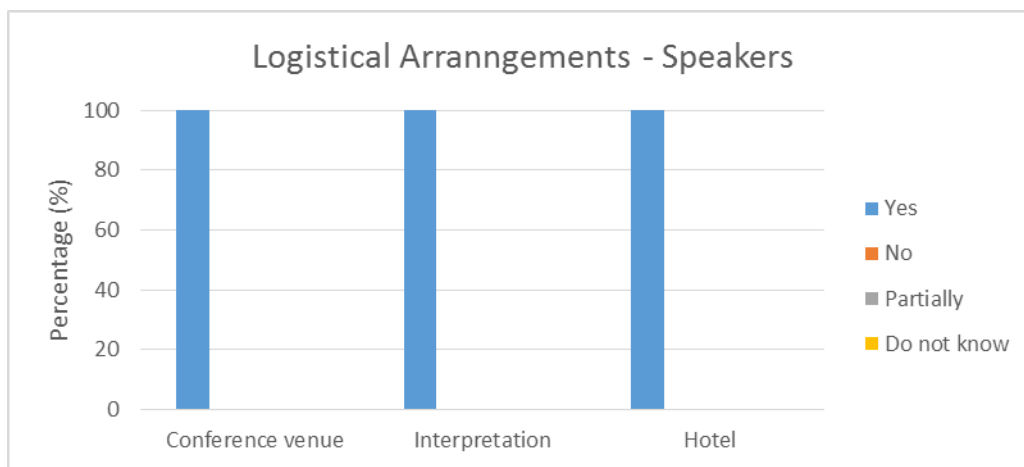
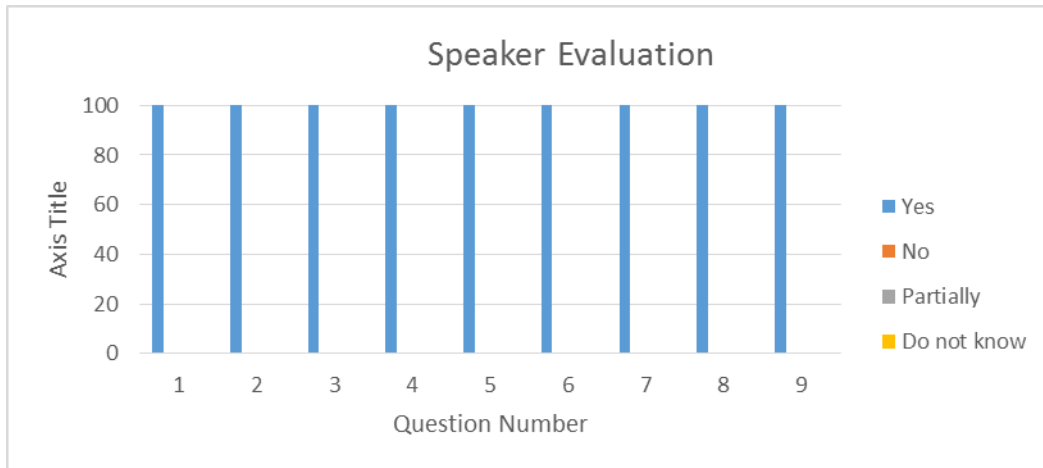




## Workshop – Speakers’ Evaluation

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	2	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, 16 May 2016**

**Topic: WM WG – Workshop: “Eutrophication reduction measures under MSFD, WFD, UWWTD and Nitrates Directive” – Requirements of EC Directives and regional conventions regarding eutrophication**

**Chair and Co-Chairs: Mihail Dimovski and Mihaela Popovici**

**Venue: Sarajevo, B&H**

Start	Finish	Topic	Speaker	Sub topic/Content
<b>08:30</b>	<b>09:00</b>	<b>Registration</b>		
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
<b>10:30</b>	<b>11:00</b>	<b>Coffee Break</b>		
11.00	12.30	Overview and common understanding of eutrophication in EC and international policies	Mr. Gheorghe Constantin Head of Water Department, Ministry of Environment Romania TAIEX expert	1) Presentation of concepts, definitions and terms 2) Introduction of the classification of water bodies with regard to eutrophication Method : PPT and Q&A





			All participants	
<b>12:30</b>	<b>14:00</b>	<b>Lunch Break</b>		
14:00	15:00	Requirements of EC directives and regional conventions regarding eutrophication	Ms. Mihaela Popovici	Presentation of the requirements of the EC Directives (WFD, UWW Directive and the Nitrates Directive) to monitor parameters relevant to eutrophication and set ecologically relevant guideline values  Method : PPP and Q&A
15:00	15:30	Eutrophication and the designation of sensitive areas or nitrate vulnerable zone	Mr. Gheorghe Constantin TAIEX expert All participants	Implication of the designation of NVZ and sensitive areas within ND, UWWTD and WFD  Method : PPP and Q&A
<b>15:30</b>	<b>16:00</b>	<b>Coffee Break</b>		
16:00	16:30	Links of eutrophication assessment with pressure and impact analysis, and programme of measures	Ms. Mihaela Popovici All participants	Through this presentation, the use of the DPSIR framework in the eutrophication assessment is explained to understand the links between drivers/pressures, state/impact and the response  Method : PPP and Q&A
16.30	17.00	Approaches and methods for eutrophication target setting in the Baltic Sea region.	Ms. Mihaela Popovici All participants	The presentation will introduce the results of Baltic Sea project related to the constructing of the nutrient reduction scheme in the a (“in a cost-effective manner”) – Principles of the Nest Model



**Day 2 : Tuesday 17 May, 2016**

**Topic: WMWG - Workshop: “Eutrophication reduction measures under MSFD, WFD, UWWTD and Nitrates Directive” – Assessment of eutrophication**

**Chair: Mihaela Popovici and Gheorghe Constantin**

**Venue: Sarajevo, B&H**

Start	Finish	Topic	Speaker	Sub topic/Content
09.00	09.30	Current eutrophication assessment methodologies and criteria in European countries	Mr. Gheorghe Constantin TAIEX expert All participants	Presentation of an overview of the assessment methodologies and the used criteria in countries in the Danube and Black Sea Region  Method : PPP and Q&A
09.30	10.00	Impact and pressure criteria used in WFD Article 5 risk assessment	Mihaela Popovici All participants	Presentation of different pressures criteria used by countries in assessing pressures due to eutrophication Method : PPP and Q&A
10:00	10:30	Importance and effects of the Black Sea eutrophication on the EU water directives implementation within its basin	Mr. Gheorghe Constantin All participants	Presentation of the existing assessments related to the Black Sea eutrophication and measures provided within implementation of different EU water directives targeted to tackle this issue.  Method : PPP and discussions
<b>10:30</b>	<b>11:00</b>	<b>Coffee Break</b>		
11:00	12:00	Assessment methodologies and criteria used for water quality status classification for costal water	Mihaela Popovici All participants	Presentation of the existing methodologies and criteria used for water quality status classification for coastal waters within the EU and regional seas conventions



				Method : PPT and Q&A
12:00	12:30	Assessment methodologies and criteria used for water quality status classification for marine waters	Ms. Mihaela Popovici All participants	Presentation of the existing methodologies and criteria used for water quality status classification for marine waters within the EU and regional seas conventions  Method : PPP and Q&A
<b>12:30</b>	<b>14:00</b>	<b>Lunch Break</b>		
14:00	15:00	Case studies on assessing eutrophication in the ECRAN beneficiary countries	All participants	Short inputs from countries presenting case studies describing methods and results concerning eutrophication assessment  Method : PPP and Q&A
15:00	15:30	Eutrophication assessment in the context of the European water policies	Mr. Gheorghe Constantin, TAIEX Expert All participants	Presentation of the requirements and best practices at the European Union level related to the eutrophication assessment within marine and inland waters  Method : PPP and Q&A
<b>15:30</b>	<b>16:00</b>	<b>Coffee Break</b>		
16:00	17:00	Assessment of the eutrophication within the Drina Basin	Mihaela Popovici	Presentation of the approach proposed for the development of eutrophication assessment within the proposed Drina River Basin Management Plan  Method : PPP and Q&A



**Day 3 : Wednesday 18 May, 2016**

**Topic: WMWG - Workshop: “Eutrophication reduction measures under MSFD, WFD, UWWTD and Nitrates Directive” – Implication in the Program of measures**

**Chair and Co-Chairs: Mihaela Popovici and Gheorghe Constantin**

**Venue: Sarajevo, B&H**

Start	Finish	Topic	Speaker	Sub topic/Content
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	Presentation of a study case on tackle eutrophication within Nitrate Directive eutrophication in Romania	Gheorghe Constantin TAIEX Expert All participants	Presentation of the measures implemented within the project tackling nutrient pollution coming from agriculture in Romania  Method : PPP, short movie and Q&A
<b>10:30</b>	<b>11:00</b>	<b>Coffee Break</b>		
11:00	12:00	Promoting an integrated approach to the eutrophication at the national and regional level	Mr. Gheorghe Constantin TAIEX expert All participants	Presentation of the approach taken within national, Danube River Basin and Black Sea River Basin in order to tackle eutrophication. Study case Romania  Method : PPP and Q&A
12.00	12.30	Administrative and economic measures provided for managing the input of fertilizers within the marine and inland waters	Mr. Gheorghe Constantin TAIEX expert All participants	Presentation of the existing and proposed measures for the sustainable use of fertilizers within national, Danube River Basin and Black Sea River Basin  Method : PPP and Q&A
<b>12:30</b>	<b>14:00</b>	<b>Lunch Break</b>		



14:00	15:00	Case studies on measures intending for eutrophication management in the ECRAN beneficiary countries	All participants	Short inputs from countries presenting existing and proposed measures concerning control of marine and inland waters eutrophication  Method : PPP and Q&A
15:00	15:30	Influence of the climate change adaptation measures on the eutrophication assessment and management	Ms. Mihaela Popovici, All participants	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.
<b>15:30</b>	<b>16:00</b>	<b><i>Coffee Break</i></b>		
16.00	16.30	Measures related to eutrophication to be included within the Drina River Basin Management Plan	Ms. Mihaela Popovici	Presentation of the approach proposed for the development of eutrophication control measures within the proposed Drina River Basin Management Plan  Method : PPP and Q&A
16.30	17.00	Wrap-up and next steps	Ms. Mihaela Popovici,	



## ANNEX II – List of Participants

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<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.



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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\\_Reports\\_WFD\\_Eutrophication\\_May\\_2016\\_Sarajevo.zip](http://www.ecranetwork.org/Files/Workshop_Reports_WFD_Eutrophication_May_2016_Sarajevo.zip)



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