

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

16-18 May 2016

ECRAN 62260

**Links of eutrophication assessment
with pressure and impact analysis,
and programme of measures**



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Structure of the presentation

- DPSIR framework
- How to use the DPSIR
- Steps in the development of a measure
- Tools, mechanisms and guidance



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DPSIR framework (1)

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**.

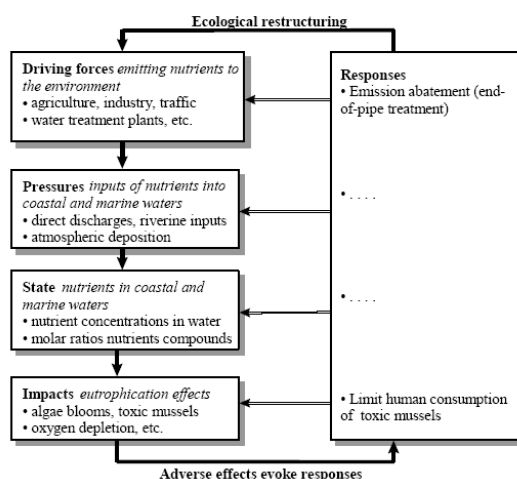


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DPSIR framework (2)



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DPSIR framework (3)

- 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.



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How to use the DPSIR framework

Within the DPSIR framework, eutrophication assessment belongs to the part of "state" and "impact".

The outcome of the assessment might result in responses and measures.

In order to be able to formulate the response, there is a need to understand the links between drivers/pressures, state/impact and the response.

If the result of eutrophication assessment is that a water body (or part of marine area) is eutrophic or may become eutrophic in the near future, than appropriate response/measures will be developed.

The objective of the measures should be to move to a situation where a water body (or part of marine area) is not eutrophic, in order to assist the achievement of the environmental objectives for a water body.



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Steps in the development of measures for a water body (1)

Step 1

- the **assessment of all the sources** that (may) contribute to the nutrient load to a water body. The assessment should include also retention processes (denitrification and sedimentation), atmospheric deposition and re-suspension from sediments.

Step 2a

- consider the possible (combination of) reduction measures for these sources, including the effect of those reduction measures on the eutrophication status (= effectiveness of a measure) and the costs associated to the implementation of those measures (= **selecting the most effective measure for the least costs = cost-efficiency**).

- define the **scale** at which measures need to be considered

- ensure **synergy with the relevant existing measures in EU context** are the Nitrates Directive, the Urban Waste Water Treatment Directive, the IPPC Directive, the Groundwater Directive, the National Emission Ceilings Directive, the Thematic Strategy on Air Pollution, the Marine Strategy Framework Directive.



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Steps in the development of measures for a water body (2)

Step 2b

- identify **measures, with their related costs, nearby the affected water body**: alterations of the morphological characteristics of the water body, e.g. restoration of banks or floodplains, changes to the flow conditions, other changes to the infrastructure.

-Step 3

- decide which **combination of measures** at source and in the water body is most appropriate and cost-effective to reduce and eliminate eutrophication in a water body or part of marine area.

- decide on the balanced **division of costs** between upstream and downstream areas and between the various sectors, taken into account the principles of polluter-pays and proportionality.

The mechanism for the decision making is laid down in the WFD by preparing river basin management plans and agreement on this at the transboundary level.



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Tools, guidance and mechanisms (1)

Step 1: the assessment of all the sources the **assessment of all the sources**

Tools: the pressures and impact analysis according to Article 5 of the WFD and the river basin management plan has an overview and assessment of all the sources.

Step 2a: selecting the most effective measure for the least costs = cost-efficiency

Tools: Guidance document on cost effectiveness.

Step 2b: identify measures, with their related costs, nearby the affected water body

Tools: Several tools and examples exist to establish in a quantitative way the link between measures at sources of nutrients and the expected reduction of eutrophication effects in the fresh water and marine environment.



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Tools, guidance and mechanisms (2)

Tools: examples

- **Black Sea**

Convention on the Protection of the Black Sea Against Pollution (Bucharest Convention) – 4 thematic protocols

- Protocol on the Protection of the Black Sea Marine Environment Against Pollution from Land Based Sources (LBS Protocol)
- Strategic Action Plan (SAP) on the Protection and Rehabilitation of the Black Sea – adopted in 1996 and amended in 2009

- **Mediterranean Sea**

Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention). 7 thematic protocols

- Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources
- Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean (MAP Phase V). It involves 21 countries bordering the Mediterranean and the EC.



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Tools, guidance and mechanisms (3)

Tools: examples

- **Other**
 - OSPAR HARPNUIT guidelines (Riverine Inputs and Direct Discharges, Monitoring Programme)
 - EUROHARP project included nine different methodologies for quantifying diffuse losses of N and P, and a total of 17 study catchments across gradients in European climate, soils, topography, hydrology and land use. These methodologies have been selected to include those approaches - applicable at catchment scale - that are currently used by European research institutes to inform policy makers at national and international levels.
 - COST action 626 European aquatic modelling network
 - HARMONICA - Harmonised Modelling Tools for Integrated Basin Management.



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Tools, guidance and mechanisms (4)

Step 3: decide which **combination of measures** at source and in the water body is most appropriate and cost-effective

Tools: the results of the CIS Activity on cost-effectiveness deliver a useful framework to assist in the decision making.



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