

“Workshop “Program of Measure under the Water Framework Directive”

20 – 22 June 2016

ECRAN 62432

Impact and pressures assessment in Drina RB - WFD Article 5



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Structure of the presentation

- WFD cycle
- Analysis of pressures and impacts
- IMPRESS Guidance Document
- DPSIR approach
- Identification of significant pressures
- Relation pressures and impact
- Main elements of the analysis
- Use of existing monitoring data
- Screening approach
- Pressures assessment in Drina JPM

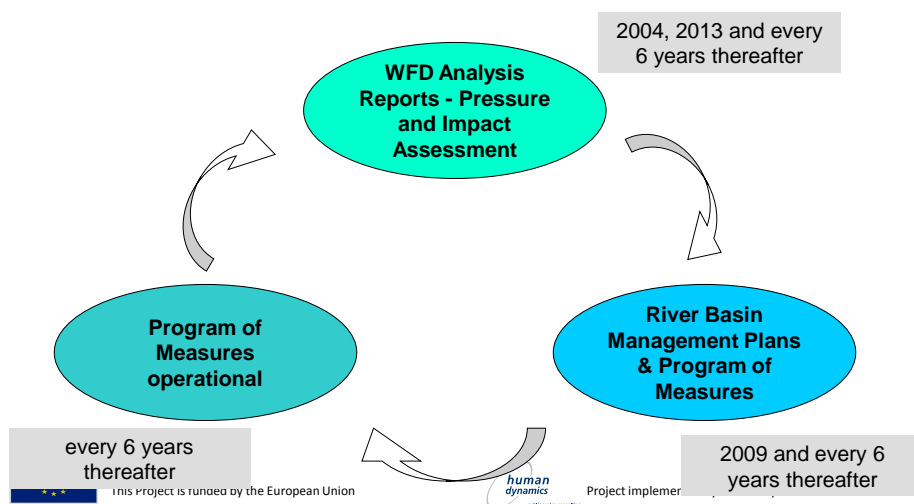


This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

WFD Implementation Cycle



Outline of RBMP

- General description of the **characteristics of the river basin district**, including maps.
- **Summary of significant pressures and impact of human activity** on the status of surface water and groundwater, including estimations of point source pollution, diffuse source pollution, and an analysis of other impacts of human activity.
- Map identifying protected areas.
- Map or the monitoring network with results of the **monitoring programmes** showing the ecological and chemical status of surface water, the chemical and quantitative status of groundwater and the status of protected areas.
- List of the **environmental objectives** established for surface waters, groundwaters and protected areas, including where use has been made of the derogations.
- Summary of the **economic analysis of water use**.
- Summary of the **programme or programmes of measures**.
- Register of any more detailed programmes and management plans and a summary of their contents.
- Summary or the **public information and consultation measures** taken, their results and the changes to the plan as a consequence.
- List of **competent authorities**, contact points and procedures for obtaining background documentation and information, including actual monitoring data.



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Basis

IMPRESS Guidance Document

- Develop common understanding of most effective approach to identification of pressures and assessment of potential impact of these pressures
- Identify appropriate tools to assist with this analysis, and where further development is needed
- Develop and disseminate guidance on the above



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Key Issues of the Guidance

- Defining “pressures” and “what is significant”
 - use of thresholds etc.
- Scale of analysis
 - what is a water body?
- Identification of key categories of pressures
- Identification of sources of pressure information
- Linking pressures to impacts
- Assessment of baseline and trends in pressures
- Appropriate tools / models etc.

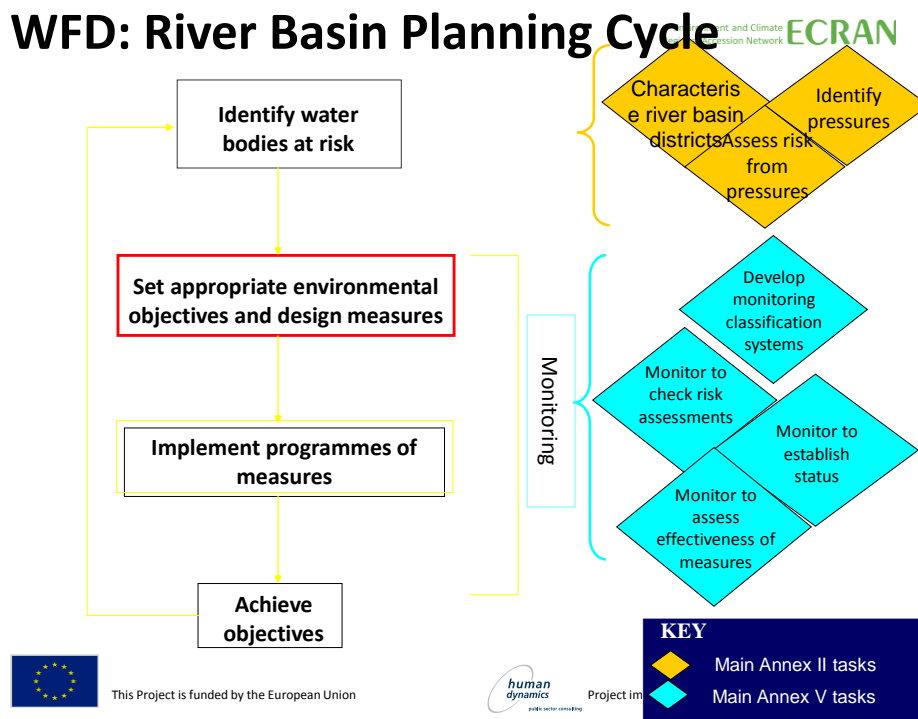


This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

WFD: River Basin Planning Cycle



WFD Requirements

- Set out in Article 5 and Annex II
 - Identification of significant human pressures on surface and groundwaters
 - Assessment of likely impact on water status
- WFD deadline

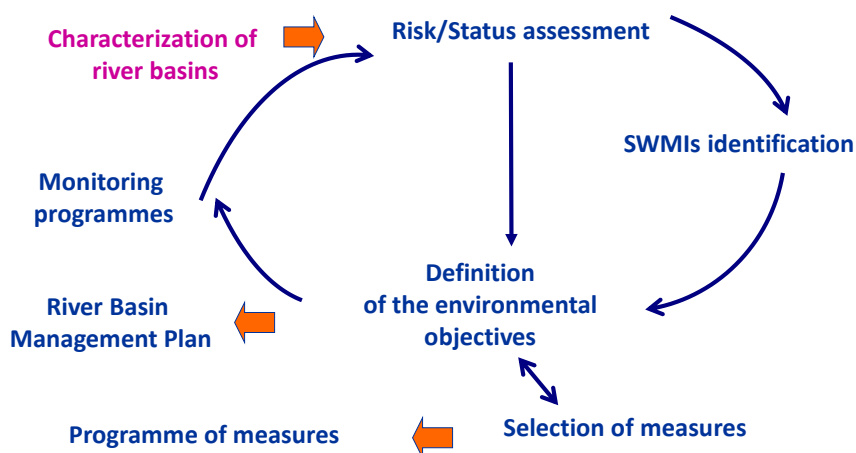


This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Pressures assessment in the RBMP



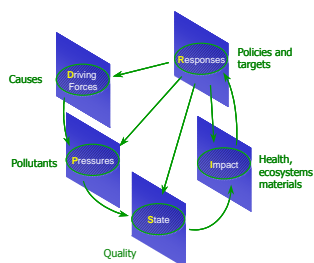
This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

DPSIR Concept

DPSIR Assessment framework (Source: EEA)



Driver - Activity effecting the water body (eg agriculture)

Pressure - Direct effect by the water body (N, P)

State - Condition as result from the pressure (eutrophication)

Impact - Environmental effect of the pressure

Response - Measures to improve the state of the water body

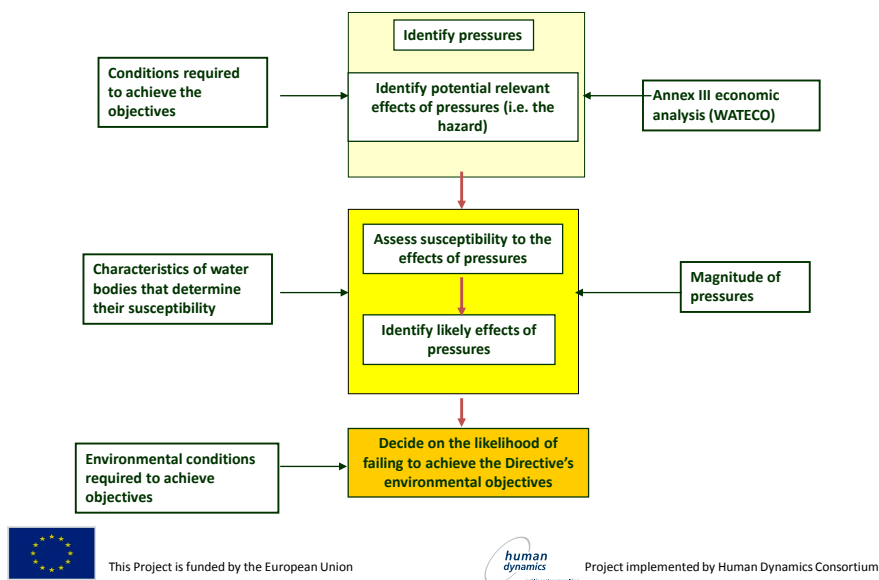


This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Main elements of the analysis



Steps in Analysis

- **Identify significant pressures**
 - Sources of point and diffuse contamination
 - Significant abstractions
 - Hydromorphological alterations: Hydraulic works, urban impacts
 - Land Cover, land use, etc
- **Assess the impact**
 - Effect of pressures on the water bodies status
- **Risk assessment**
 - Water bodies at risk
 - Water body does not reach the WFD environmental objectives (2015?)



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Pollution pressures from diffuse and point sources: examples

Driving Force	Pathway causing pressures	Possible change in state of impact
Diffuse sources Agriculture	Nutrient loss from agriculture	Modification in ecosystem
Point sources Industrial discharges	Effluent to surface or groundwater	Pollution with toxic substances



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Understanding the pressures

SURFACE WATERS

Identification of pressures: collect and maintain information on the type and magnitude of significant anthropological pressures.

- *Point source pollution*
- *Diffuse source pollution*
- *Water abstraction*
- water flow regulation
- morphological alterations
- other anthropological impacts
- *land use patterns*

Further characterisation where relevant

GROUND WATERS

Initial characterisation to identify pressures

- point source pollution
- diffuse source pollution
- water abstraction
- artificial recharge

To use land use patterns, discharge and abstraction data

Further characterisation to review:

- the impact of human activity on groundwaters
- the impact of changes in groundwater levels
- the impact of pollution on groundwater quality



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Screening approach to define significant pressures

Task WFD Annex II:

Identify significant anthropogenic pressures on surface and groundwater.
Surface water : rivers, lakes, transitional waters and coastal waters.

List of pressures:

For **surface waters**: point sources pollution (urban, industrial, agricultural), diffuse source pollution, water abstraction, water flow regulations, land use patterns, other morphological impacts and morphological alteration.

For **ground water**: point sources pollution, diffuse source pollution, water abstraction and artificial recharge.



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Steps towards identification of significant pressures

1.Screening approach: search for pressures on those areas and pressure types that are likely to prevent meeting the objectives.

2.Identification of significant pressures: combined approach of assessing monitoring data and expert judgment.

Example: to compare the magnitude of the pressure with a criterion, or threshold, relevant to the water body type, such pressure on the **significant impact areas**.



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Screening significant pressures

Environment and Climate
Regional Accession Network **ECRAN**

Pressures: point sources	Criteria
Discharges of untreated municipal waste waters	>10,000 P.E. with no treatment or with mechanical treatment.
Discharges of municipal treated waste waters	>100,000 PE, at least biological treatment BOD > 25 mg/l O ₂ COD > 125 mg/l O ₂ Total nitrogen > 10** mg/l N (more than 100,000 p.e.) Total phosphorus > 1 mg/l P (more than 100,000 p.e.)
Agricultural point sources	Total nitrogen > 50,000 kg/year Total phosphorus > 5,000 kg/year
Pressures: diffuse sources	Criteria
Agricultural areas	0.5 kg P/ha/year ; 5 kg N/ha/year
Urban areas	0.15 kg P/ha/year; 1.5 kg N/ha/year



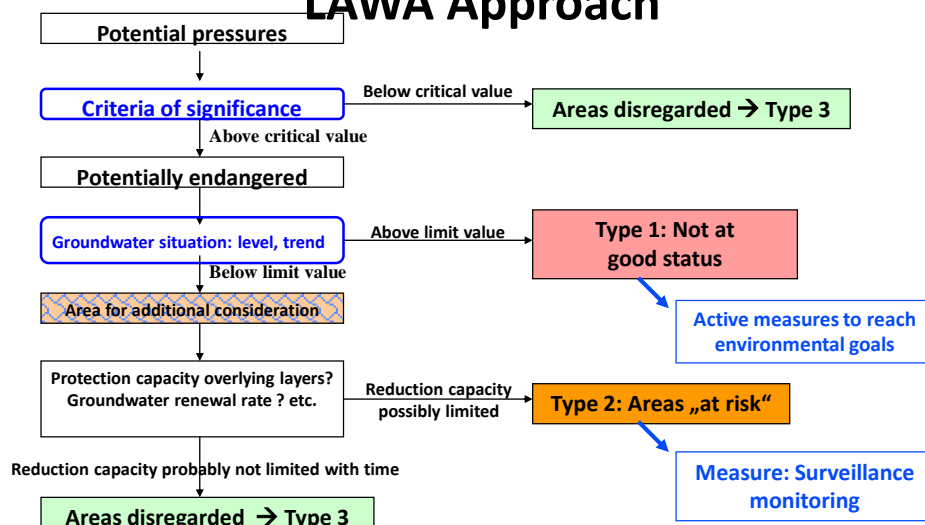
This Project is funded by the European Union

human
dynamics
public sector consulting

Project implemented by Human Dynamics Consortium

Pressures assessment: LAWA Approach

Environment and Climate
Regional Accession Network **ECRAN**

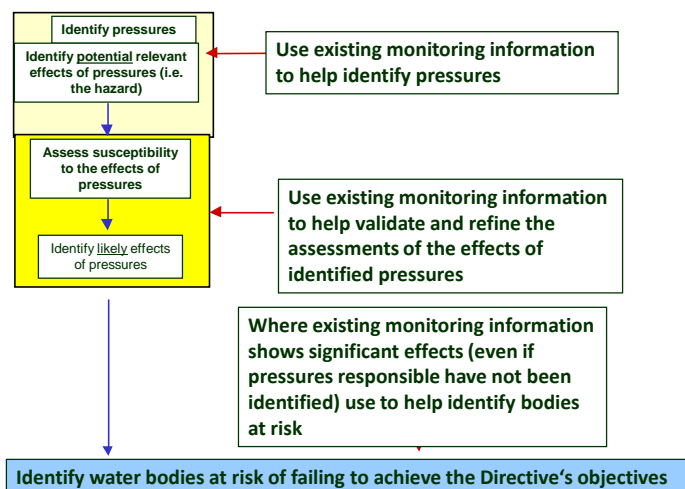


This Project is funded by the European Union

human
dynamics
public sector consulting

Project implemented by Human Dynamics Consortium

Use existing monitoring data



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Status indicators

- **Surface waters** => **ecological** biological, hydromorphological **chemical** physico-chemical
- **Groundwaters** => **quantitative and chemical**



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Linking pressures with impact (1)

- The identification of the pressures and the assessment of their impacts on surface water bodies require two steps (WFD Annex II, 1.4 and 1.5):
 - 1st Identification of pressures with possible impacts on the water status: Significant pressures (Annex II, 1.4)
 - 2nd Assessment of these impacts: Risk of failing the environmental quality objectives? (Annex II, 1.5) ⇒ For those water bodies further analysis shall be carried out in order to optimise the design of both the monitoring programmes (Art. 8) and measures (Art. 11).



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Linking pressures with impact (2)

- Regarding the **pressures** affecting a water body the WFD forces to include:
 - Pollutions from point and diffuse sources
 - Alterations of the water regime (water abstraction, water flow regulation)
 - Alterations of the morphology of the water bodies
- Impairments of the good status of the water body regarding to the biological, the hydromorphological and the physico-chemical attributes resulting from one or a number of pressures are considered as **impacts**.



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Linking pressures with impact (3)

- Sources of Information
 - Other existing EC legislation, e.g. UWWTD
 - Existing national requirements
 - “State of the Environment” reports
 - National classification schemes
 - Inventories from national legislation
 - Operational information
 - e.g. “pollution incidents”



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Linking pressures with impact (4)

- Determining what is “Significant”
 - “Significant” can be considered in various ways:
 - Broad indices / indicator approach
 - Pressure is subject to specific EC legislation, e.g. GW Directive
 - Significance limits should be chosen so that results provide a practical solution
 - Future trends in pressure should be considered (in broad terms only)



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Linking pressures with impact (5)

– Determining Impact of a Pressure

- Impact of pressure - likely to cause failure of WFD objective
- Impact of pressure - contributes to upward trend
- Impact of pressure - contributes to / causes failure of existing standard (national or EC)
- Should take account of sensitivity of the water body
- Should take account of additive / synergistic effects



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Linking pressures with impact (6)

- Scale issues
- Define spatial scale
- Management unit (observation area): distinct part of the river basin district, which should be viewed during analysis of pressures and impacts
- Size: 500 km² to max. 2500 km²



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Linking pressures with impact (7)

- Availability of appropriate tools
 - Not all tools / techniques needed to identify pressures may currently exist, e.g. for GW
 - Three broad categories currently identified:
 - Monitoring data (environmental/discharge/abstraction)
 - Models, especially linking land use to water status
 - Pollution inventories
 - Also what role for “expert judgement”



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Risk category

- **At risk**
- **Probably at risk**
- **Probably not at risk**
- **Not at risk**
- **Not assessed**

- **High certainty, direct action**
- **Further information required, prepare action**
- **Further information required, wait and see**
- **High certainty, be happy**
- **No data available, or assessment not relevant to water body**

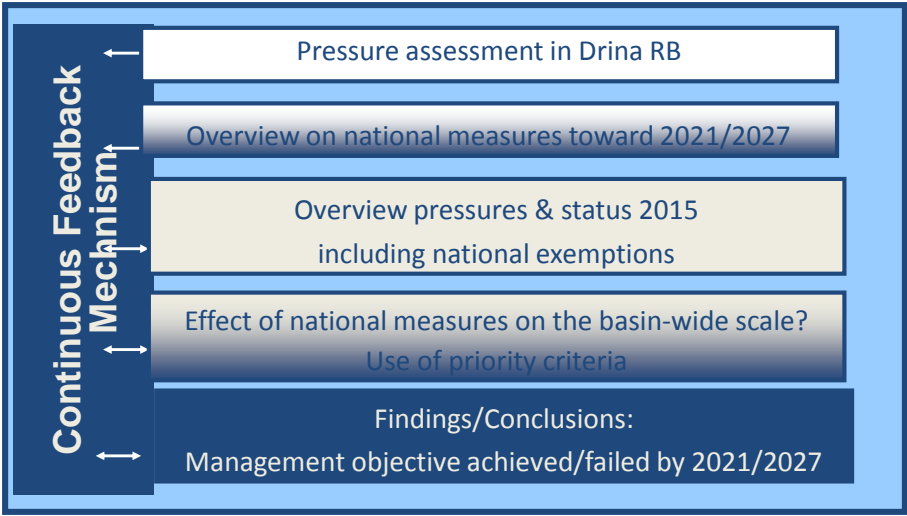


This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Pressures assessment in Drina JPM



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium

Thank you!



This Project is funded by the European Union



Project implemented by Human Dynamics Consortium