



Water Framework Directive*

Juan-Pablo Pertierra

European Commission
DG Environment

* Directive 2000/60/EC of the European Parliament and of the Council of 23 Oct 2000 establishing a framework for Community action in the field of water policy

Scope and objectives of the **Water Framework Directive**

- **Scope**
 - Protecting all water bodies, including transitional waters and coastal waters.
 - Covering all impacts on waters.
- **Objectives**
 - Protect and enhance water bodies
 - No deterioration
 - Achievement of good status / potential by December 2015
- **Tools**
 - 2nd River Basin Management Plans and Programmes of Measures by December 2015
 - Existing legislation: habitats, nitrates, urban waste water, marine strategy, etc
 - Public participation



**The River Basin Concept –
integrated river basin
management**



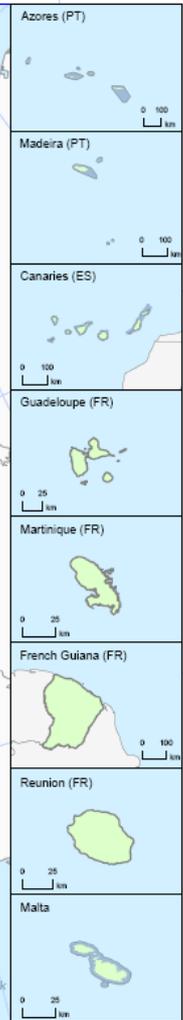
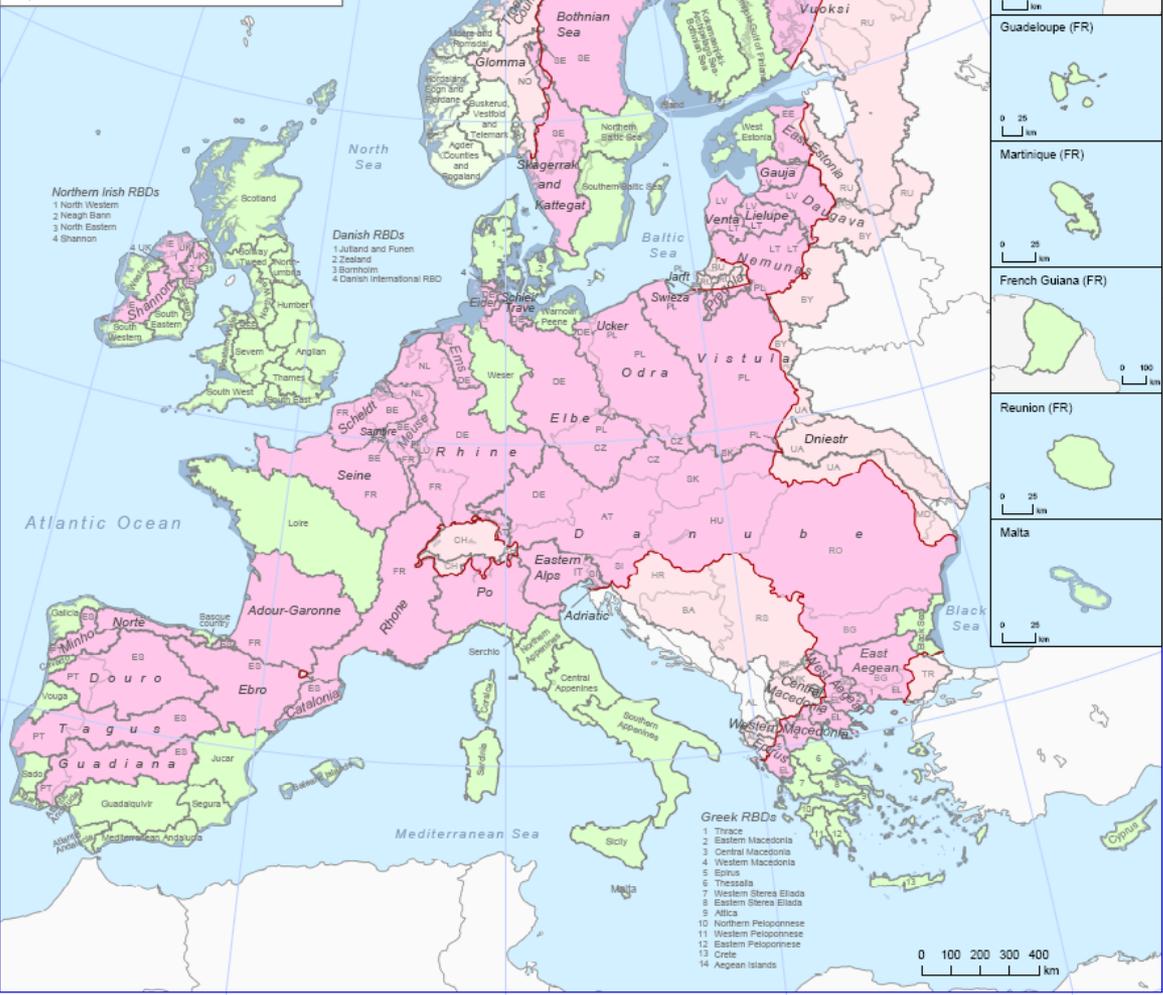
National and International River Basin Districts

Submissions in accordance with Article 3 of the Water Framework Directive

Version 22/03/2007

- National River Basin Districts⁽¹⁾ (within EU27)
- National River Basin Districts⁽¹⁾ (outside EU27)
- International River Basin Districts⁽²⁾ (within EU27)
- International River Basin Districts⁽³⁾ (outside EU27)
- Coastal Waters⁽⁴⁾
- RBD boundary
- Country border
- EU27 boundary

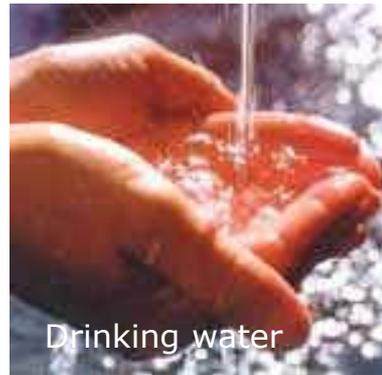
Map produced by WRc, UK on behalf of European Commission, DG Environment, March 2007.



River Basins Districts

- Diversity of river basins
- Many transboundary rivers
- RB Management Plans

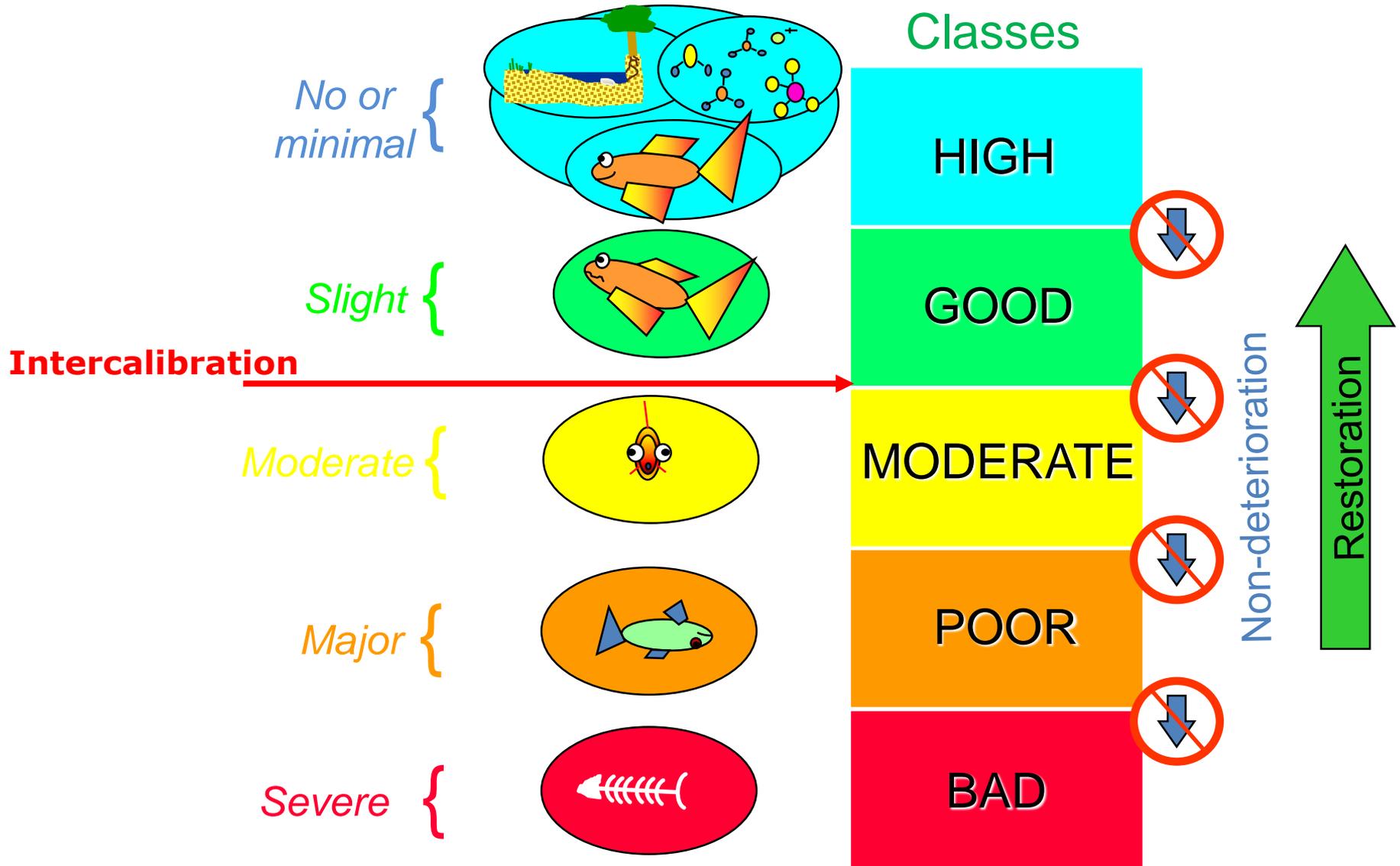
Diversity of water uses, pressures and impacts on WB



Environmental objectives: "Good ecological & chemical status"

- Biological elements
 - Composition and abundance of **aquatic flora**
 - Composition and abundance of **benthic invertebrate fauna**
 - Composition, abundance and age structure of **fish fauna**
- Hydro morphological elements
 - Hydrological regime
 - River continuity
 - Morphological conditions
- Physico-chemical elements
 - General (oxygenation, nutrients, salinity, etc.)
 - Specific pollutants (synthetic and non-synthetic)

Ecological Status (Annex V)



Article 4 (Exceptions)

- **WFD allows for deterioration by new anthropogenic modifications under strict conditions;**
 - Project is of overriding public interest/outweighing water protection benefits
 - No better environmental options
 - All mitigation measures are taken
 - Project and reasons are reported in RB Management Plan
 - Other water bodies within same RBD are not impacted
- **A water body can be designated as **heavily modified** and **good ecological potential** can be achieved instead of GES.**

Hydropower Generation

Possible alterations

**Structural barrier
to the movement
of aquatic fauna**

**Risk of fish
entrainment in
turbine intakes**

**Altered
sediment
dynamics**

**Altered water
level fluctuation
in reservoir**

**Altered flow
regime in
downstream
river**

**Altered
structure of
reservoir shore
zone habitats**



**Altered structure and
condition of bed,
banks & riparian zone
in downstream river**

**Altered physico-
chemical conditions
in downstream river
stretches**

**Altered physico-
chemical
conditions in
reservoir**

Good Ecological Potential

- **Objective set only for HMWB following Art 4.3**
- **GEP represents best possible ecological status considering the modification**
- **Physical modifications may impact some quality elements, not all. No impact → GES applies**
- **Mitigation measures should be included into MP in order to restore the WB to the best possible ecological condition**

Mitigation measures for hydropower generation

Approaches for good practice include:

- **Restoration of biological continuity (upstream and downstream) for securing migration and accessibility to habitats**
- **Ecologically acceptable flow conditions downstream of diversion plants**
- **Mitigation of the effects of hydro-peaking**
- **Re-creation and improvement of habitat structures**

Mitigation Measures - Examples Restoration biological continuity



Two types of functioning fish passes.

The more natural-like bypass channel (bottom) provides additional spawning ground.



Technical and nature-like bypass channel for fish migration next to hydropower dams.

Mitigation Measures - Examples

Ecologically acceptable flow requirements

Assuring ecologically acceptable flow requirements is essential for aquatic habitats but also continuity.

No water – No life.

**Negative example for a diversion
flow hydropower station –
downstream river stretch has
fallen completely dry.**



Mitigation Measures - Examples Hydro-peaking

Mitigation options against hydro-peaking are often limited and can involve high costs (loss of peak-load capacity and designated function).

However, examples for successful implementation of mitigation measures exist (e.g. coordination between HP's, conversion into pump-storage power stations, etc.).

Hydro-peaking: The same river stretch during the flush event (top) and during downsurge (bottom).



Few remarks after 1st RBMP cycle

- Need to ensure ecological continuity for species and habitats types of Community interest
- Researchers and industry to look into technical solutions to mitigate the impact of projects (dams, hydropower plants) including fish-friendly turbines, fish ladders, etc.
- Consider other significant pressures which could affect the good ecological or potential status, such as fisheries and navigation.

Few recommendations for 2nd RBMPs

- Improve assessment of hydro morphological pressures in relation to BQEs, particularly for the upper course of the Danube (fish)
- For existing infrastructure – restoration measures (hydropower permits, establishment of fish passes, etc)
- Tackle the fishing pressure (professional & recreational) and poaching, particularly in the lower course of the Danube.



More information

DG ENV webpages:

http://ec.europa.eu/environment/water/water-framework/index_en.html

Thank you very much!