

“Capacity Building and Strengthening Institutional Arrangement”

Workshop: “Hazardous substances and Wastes”

# **Hazardous Substances and River Basin Management**

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APAT

Agency for Environmental Protection and Technical Services

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# 1. Fundamental principles of the WFD

- **High protection level**: prevent all degradation and enhance the status of aquatic and terrestrial ecosystems connected to the hydrological network
- **Polluter-pays**: ensure resource availability for human consumption and economic use
- **Precautionary principle and preventive action**: minimise pollution and the release of pollutants into the environment and protect the inherent quality of waterbodies (integrated approach)
- **Integrate environmental policy**: into other community strategies with an approach combining economical, financial and political instruments
- **Security**: Réduce the impact of floods and droughts
- **Efficiency**: recover the full cost of environmental services

# 1. Fundamental principles of the WFD

## The subsidiarity principle

1. **The subsidiarity principle consists in reserving uniquely to the higher level**, here the European Community (EC), what the lower level, EC Member States, could not enact with the same effectiveness.
2. **Maastricht Treaty** (Aristotle, Saint Thomas from Aquino, the FRG Länder).
3. **The subsidiarity principle applies to questions characterised by a shared responsibility** between the Community and the Member States
4. Democracy & efficiency, decisions need to « be taken as close as possible to citizens », Art. 1 of the **European Union Treaty**
5. A **proportionality obligation** establishes that measures should not be in excess of what is required to reach the stated objectives (i.e. : avoid detailed legislation)



## 2. Operational principles of the WFD

1. extend protection to all waterbodies
2. “good status” for all aquatic ecosystems
3. manage resources at river basin level
4. combined approach : discharge **limits**, quality **standards** +  
priority substances **strategy**
5. public consultation and participation
6. economic analysis of interventions on ecosystems



## 2. Operational principles of the WFD

### Environmental quality control

#### Surface waterbodies

evaluation of ***ecological status*** on the basis of the following parameters

*biological*

*hydro-morphological*

*chemical*

*physical*

#### Groundwater

parameters

*chemical*

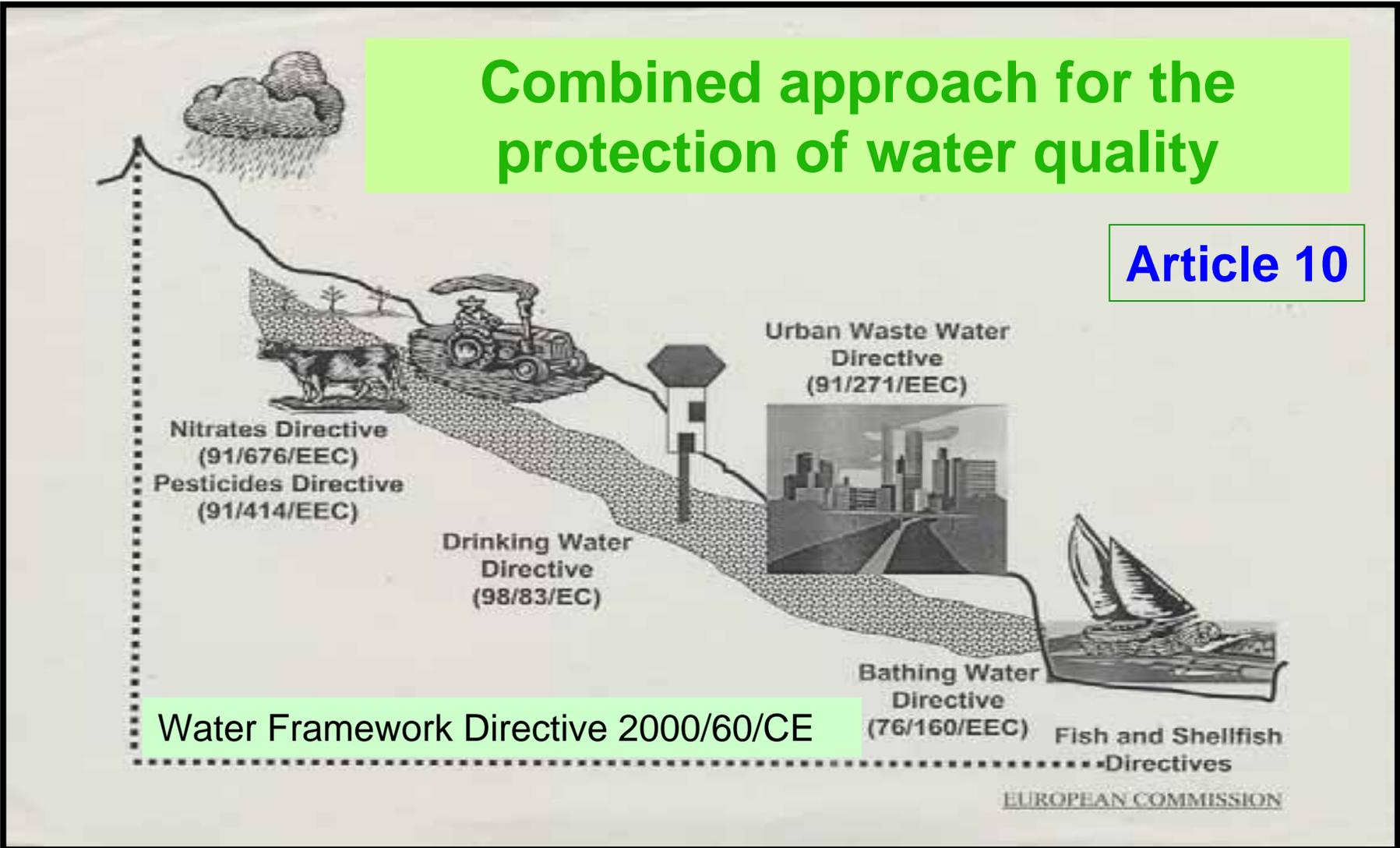
*quantitative*

Protected areas: specific evaluation programmes

## 2. Operational principles of the WFD

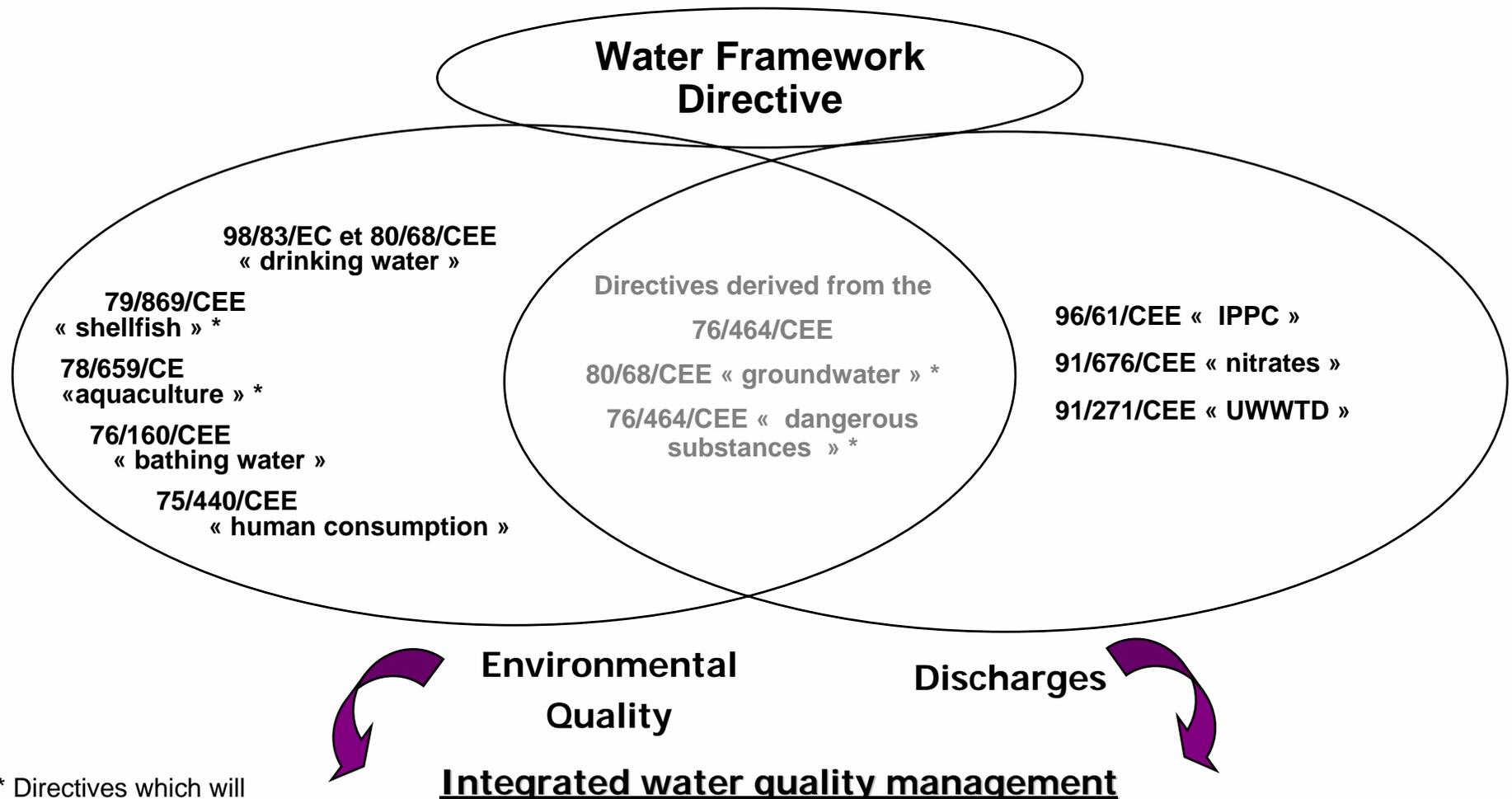
**Combined approach for the protection of water quality**

**Article 10**



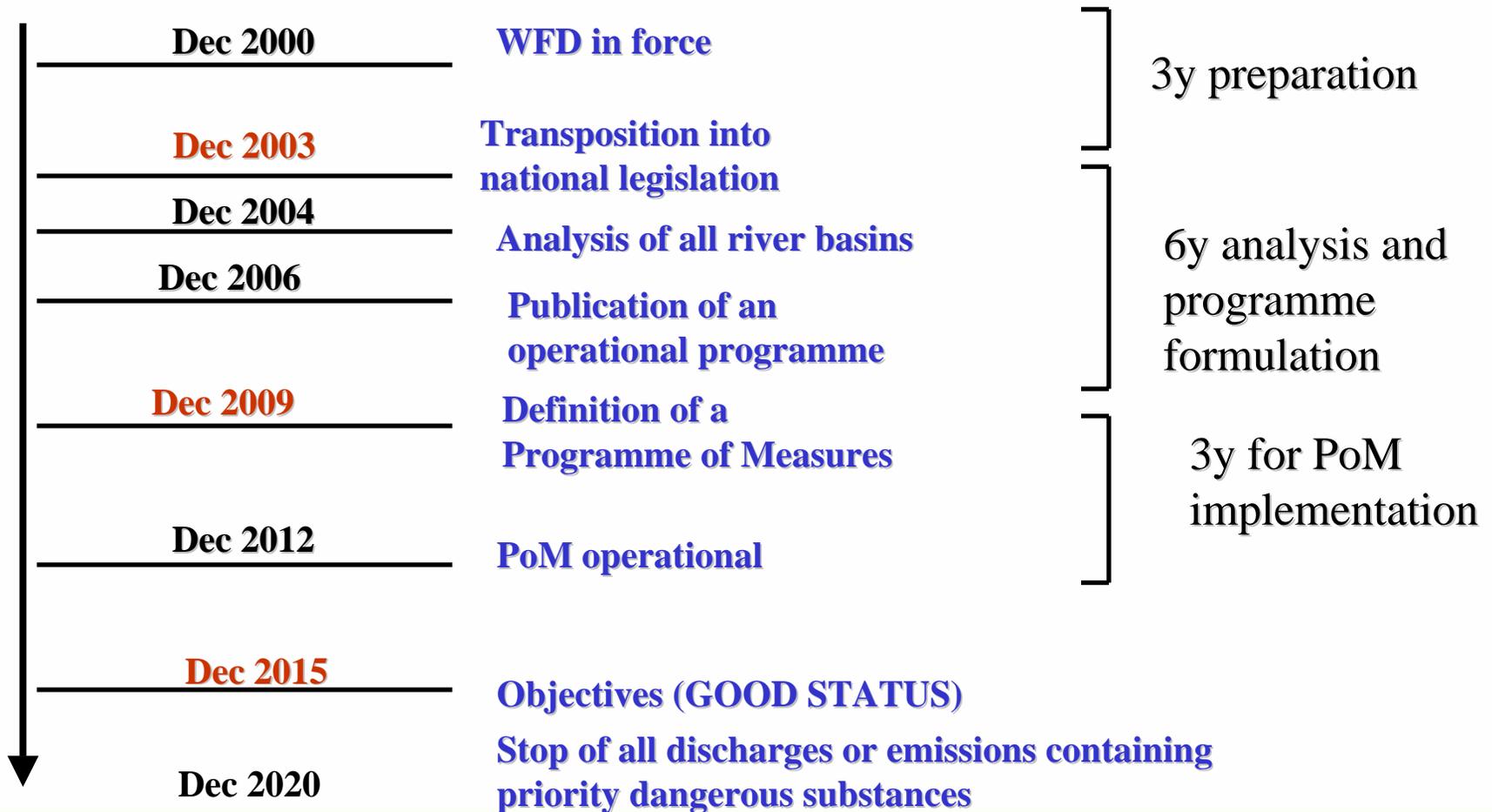
## 2. Operational principles of the WFD

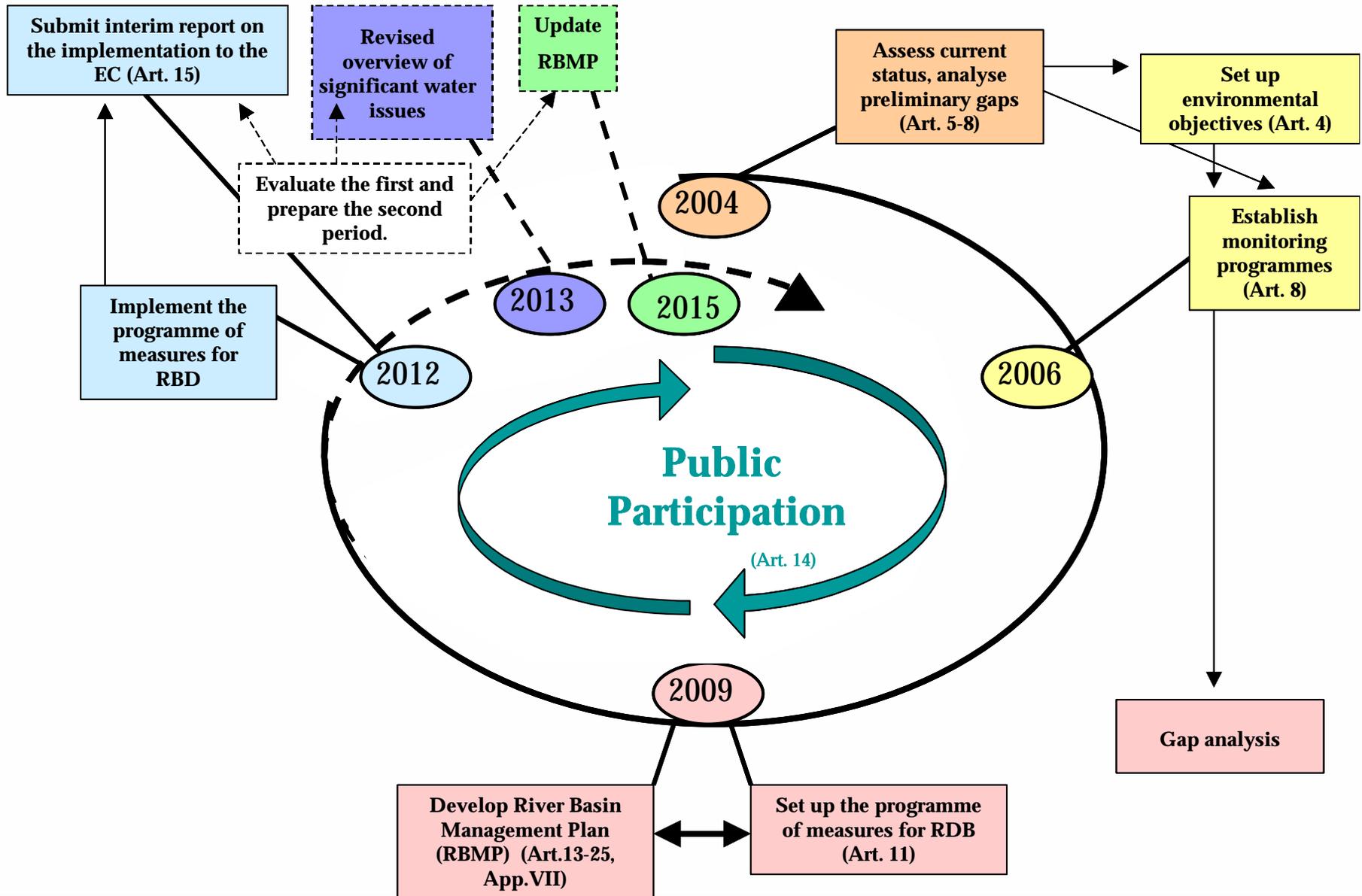
### The main texts concerning water management



\* Directives which will become part of the WFD

### 3. The step-by-step implementation process





### 3. The step-by-step implementation process

#### Objectives and standards finalised at river basin management

##### Surface waterbodies

- Rivers
- Lakes
- Transitional WB
- Coastal WB

##### Groundwater

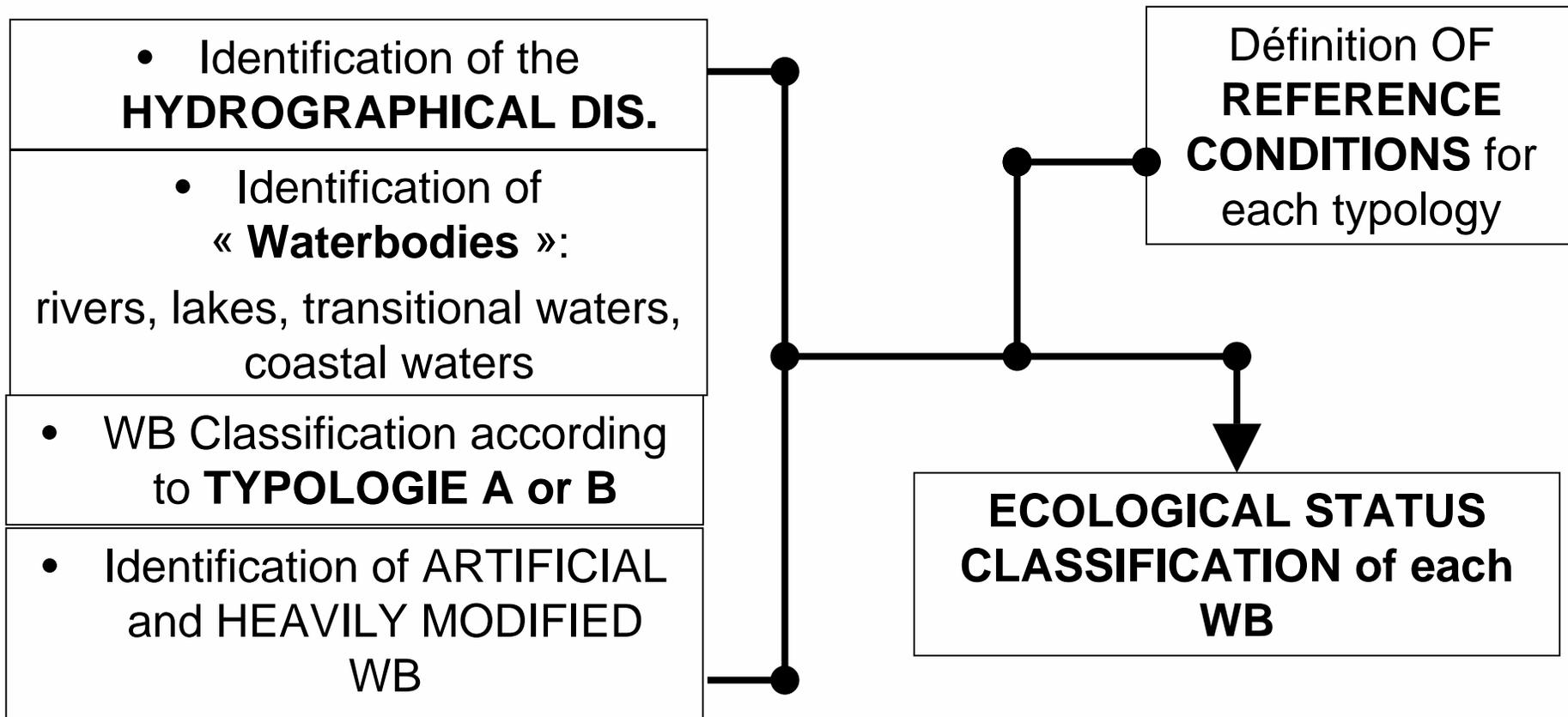
- Quality-quantity and prevention of impacts to terrestrial ecosystems which depend on groundwater

##### Protected areas

- Objectives established by other legislation

### 3. The step-by-step implementation process

#### The WFD approach to the protection of surface waters



## 4. Intercalibration

- Definition of common ecological criteria
- Translation of standard principles in measurable criteria (quantification)
- **INTER-CALIBRATION** of national water quality control systems
- Definition of a reference sites network and of a common classification scheme

## 4. Intercalibration

### What should be intercalibrated?

- State and Impact assessment methods implemented in each Member State
- **Biological quality elements** used
- N.B.: Member States are required to implement monitoring systems **compatibles with the Directive**

## 4. Intercalibration

### Biological quality elements

Biological quality elements	indices
Macrophytes and phytobenthos	Composition and abundance
Phytoplankton	Composition, abundance and "blooms"
Benthiques macroinvertebrates	Composition abundance, sensitive taxa and diversity
Fishes	Composition, abundance, sensitive taxa and age structure

## 4. Intercalibration

### Elements supporting the classification of ecological status

#### Hydro-morphological

Hydrological regime

River connectivity

Morphological conditions

#### Physico-chemical

Thermal conditions

Oxygen

Salinity

Acidification

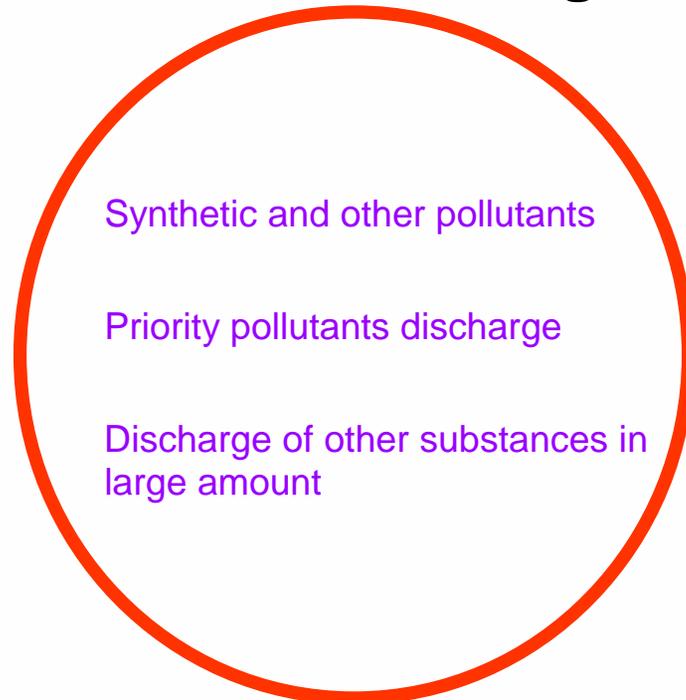
Nutrients abundance

Transparency (lakes)

Synthetic and other pollutants

Priority pollutants discharge

Discharge of other substances in large amount



## 4. Intercalibration

### System A- fixed typology

#### Ex. Rivers

**Ecoregions**

Annexe XI (WFD)

**Altitude**

high > 800 m,

medium 200 - 800 m

low < 200 m

**Hydrographic Basin Dimension**

small 10 - 100 km<sup>2</sup>

medium 100 - 1000 km<sup>2</sup>

large 1000 - 10000 km<sup>2</sup>

very large > 10000 km<sup>2</sup>

**Geological composition**

calcareous, siliceous, organic

# System B – ex. Rivers

## Alternative characterisation

Physical and chemical Factors which determine stream characteristics and are determinant for the structure and composition of the biological population

**Obligatory Factors :** Altitude, Lat/Long, Dimensions, Geological composition

## Facultative factors :

Distance from source  
Slope dependent discharge energy  
Mean width  
Mean depth  
Main channel shape and configuration  
Stream discharge category  
Valley configuration  
Solid transport  
Acid neutralisation capacity  
Mean substrate composition  
Chlorides  
Air temperature range  
Mean air temperature  
Precipitations

## 4. Intercalibration

### Intercalibration exercise

**WG. A – Ecological status (ECOSTAT)**

**GIG geographical intercalibration group (WB category)**

quality elements  
de (Q.E.)

WB category

WB common  
typology

- 25 ecoregions
- 6 transitional water types

- Nordic
- Atlantic
- **Baltic / Central Europe**
- Continental oriental Europe
- **Alpine**
- **Mediterranean**

- Rivers
- Lakes
- Coastal WB
- Transitional WB

- R-M1
- L-AL3
- .....

ex. rivers:

- Macroinvertebres
- Macrophytes
- Phytobenthos/Diatoms
- Poissons

## 4. Intercalibration

### Main intercalibration steps

- **1) intercalibration sites register (2003-4)**
- **2) intercalibration process (2004-6)**
  - *Hydrogrological basin definition*
  - *WB identification*
  - *Ecological status classification*
  - *Impact/Pressure Analysis*
  - *Programme of Mesures definition*

## 4. Intercalibration

**Objective: GOOD STATUS 15 years**

- **Surface WB**
  - Good ecological and chemical status
- **Groundwater**
  - Good chemical and quantitative status
- **Artificial and Heavily modified WB**
  - Good chemical status and good ecological potential

**THE WFD recognises the role of**  
**natural habitats**  
**within the European IRBM Strategy**

## 5. Ecological status

***Ecological status*** is a synthetic expression referring to the quality of the structure and of the functioning of aquatic ecosystems

Ecological status is assessed by means of 3 groupes of quality elements:

- **biological**
- **hydromorphological**
- **physico-chemical**

## WFD Environmental Objectives

### *Biological Quality Elements (rivers)*

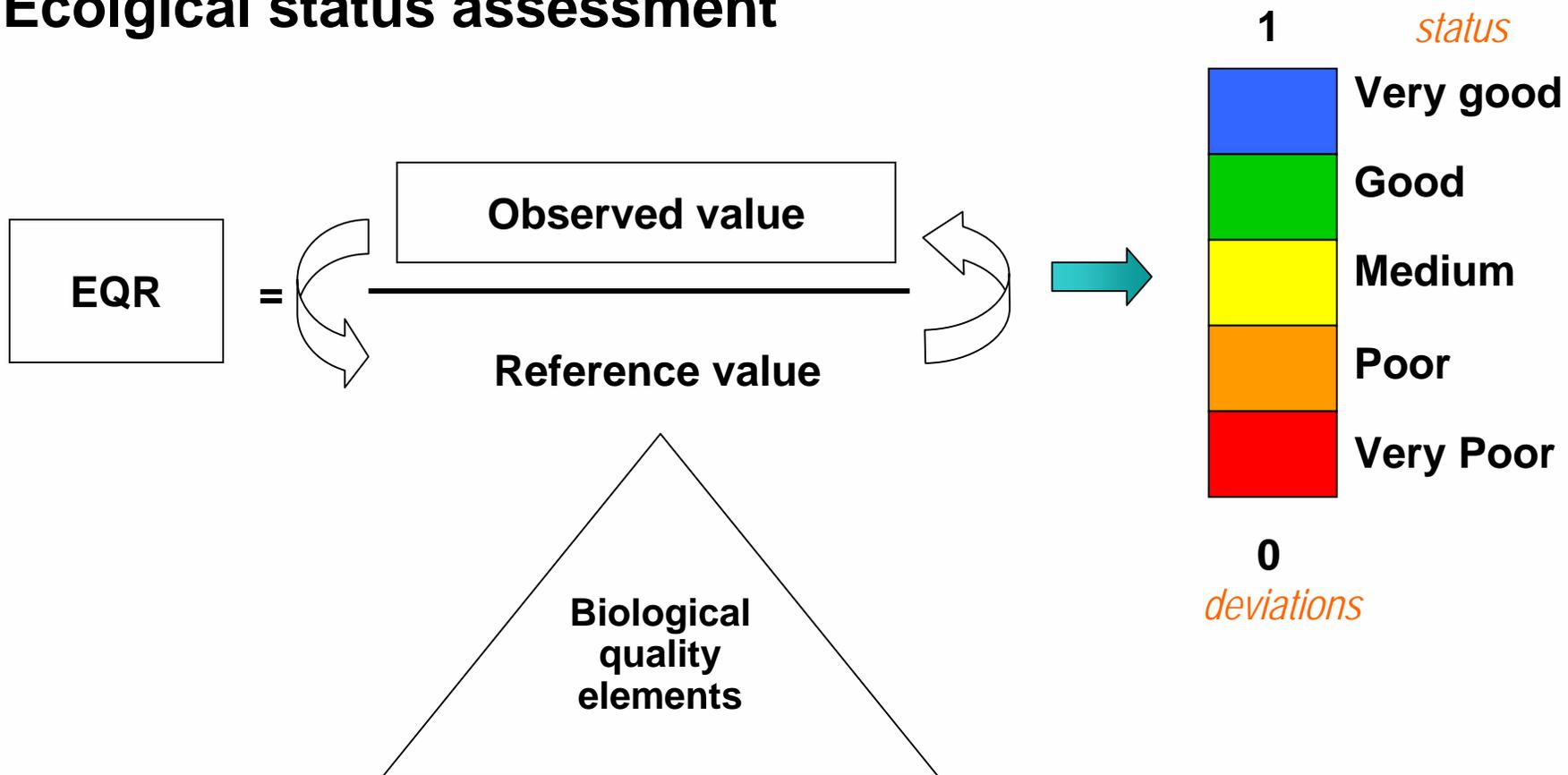
<b>Biota</b>	<b>Caractéristiques</b>				
Phytoplankton	Composition Taxinomique	Abondance			
Macrophytes phytobenthos	Composition Taxinomique	Abondance			
Macroinvertébrés	Composition Taxinomique		Proportion de taxa sensibles	Niveau de diversité	
Poissons	Composition Taxinomique	Abondance	Proportion des taxa sensibles		Structure en age des communautés

### *Eléments de qualité hydro - morphologique*

Rivières	Lacs	Eau de Transition	Eaux cotières
Régime hydrologique (débit et connexion aux eaux souterraines)	Régime hydrologique (débit, niveau, temps de résidence, connexion aux eaux souterraines)	Régime des marées (débit d'eau douce)	Régime de marée (débit d'eau douce, courants dominants)
Connectivité			
Conditions morphologique (Formes des canaux, variations de largeur et profondeur, vélocité de débit, conditions du substrat, structure et condition de la zone écotonale)	Conditions morphologique (variation de profondeur, substrat, structure et condition de la zone écotonale des lacs)	Conditions morphologique (variation de profondeur, conditions de substrat, structure et condition de la zone inter-tidale)	Conditions morphologique (variation de profondeur, conditions de substrat, structure et condition de la zone inter-tidale)

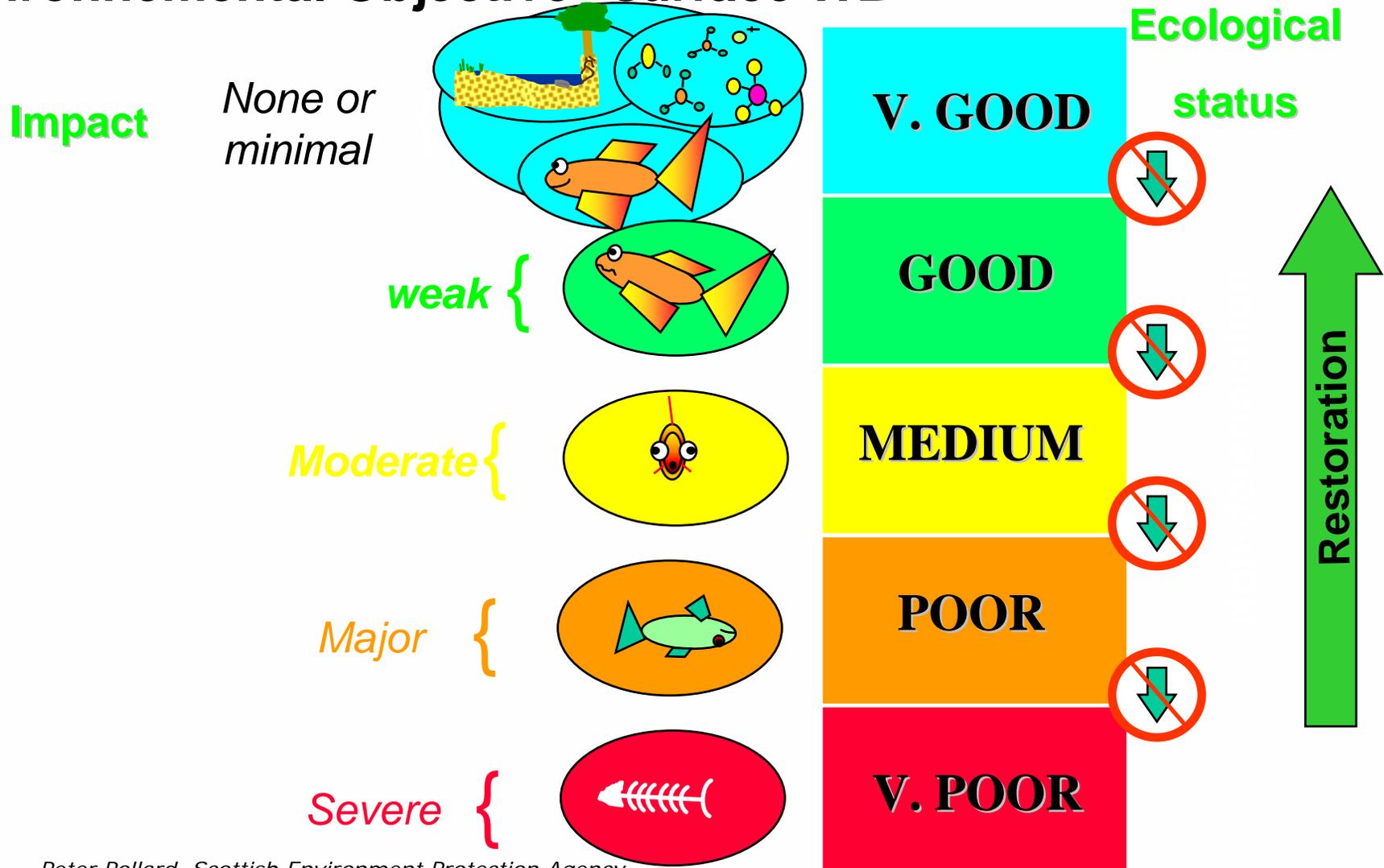
## 5. Ecological status

### Ecological status assessment



## 5. Ecological status

### Environmental Objective “surface WB”



Peter Pollard, Scottish Environment Protection Agency

## 5. Ecological status

### Intercalibration exercise

- Common interpretation of “good ecological status”, establish objectives for restoration and protection
- Class limits need to be consistent and comparable between MS
- Harmonised classification based upon Ecological Quality Ratios (EQR)



## 6. Remediation management

### Proposed plan of implementation

- Phase I. Guideline formulation (2001-2003)
- Guideline test within the river basins (2003-2005)
- Draft of a manual for integrated river basin management at the national level (2007?)

## 6. Remediation management



European Commission, DG Environment  
Unit D.2: Water & Marine

### CIS Achievements



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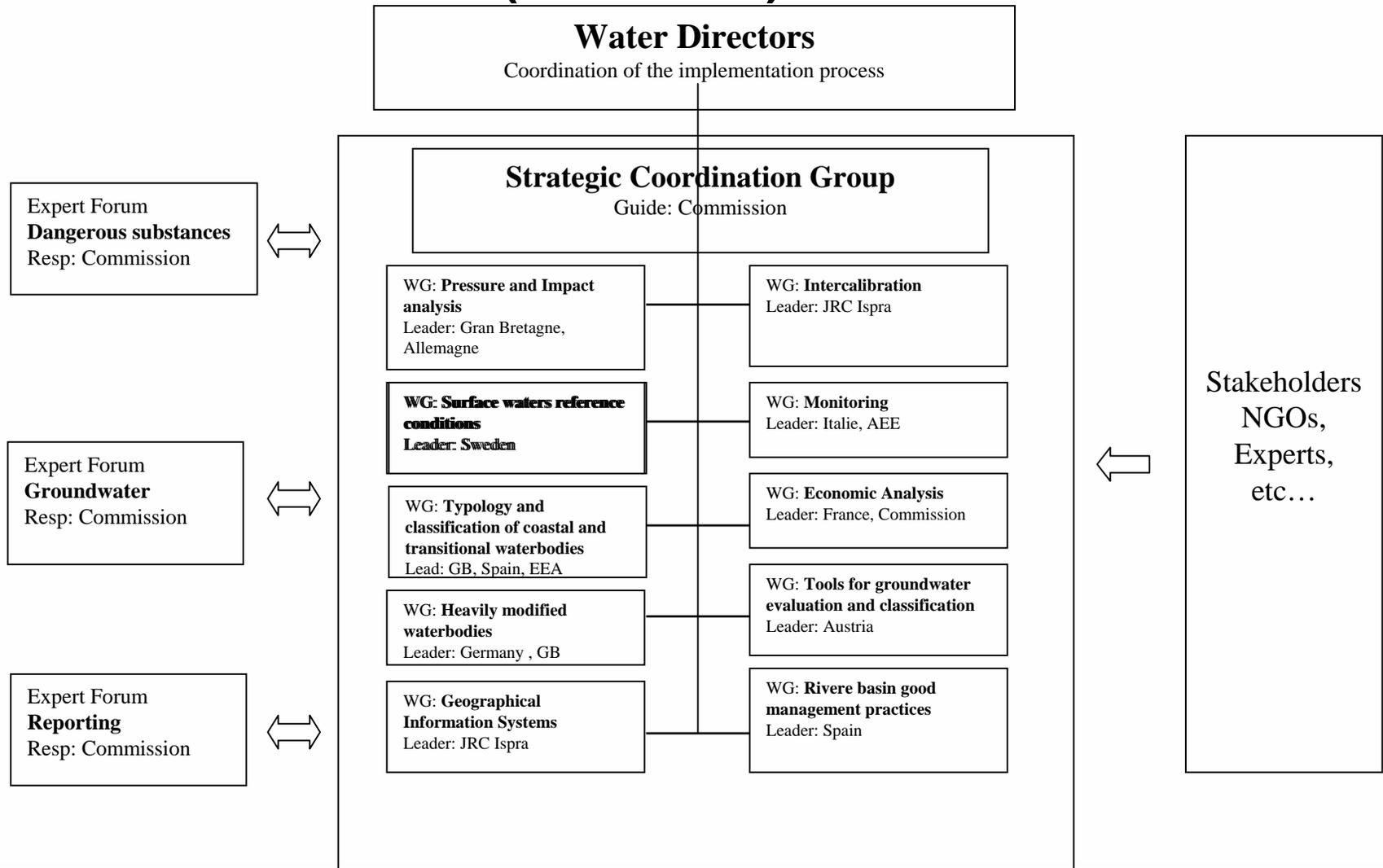
### Fourteen Guidance Documents

- 1) Economics and the Environment
- 2) Identification of Water Bodies
- 3) Analysis of Pressures and Impacts
- 4) Artificial and Heavily Modified Water Bodies
- 5) Transitional and Coastal Waters –Typology, Reference Conditions
- 6) Intercalibration Network and the Intercalibration Process
- 7) Monitoring
- 8) Public Participation
- 9) GIS and the WFD
- 10) Rivers and Lakes Typology
- 11) Planning Process
- 12) Wetlands
- 13) Classification
- 14) Intercalibration process



## 6. Remediation management

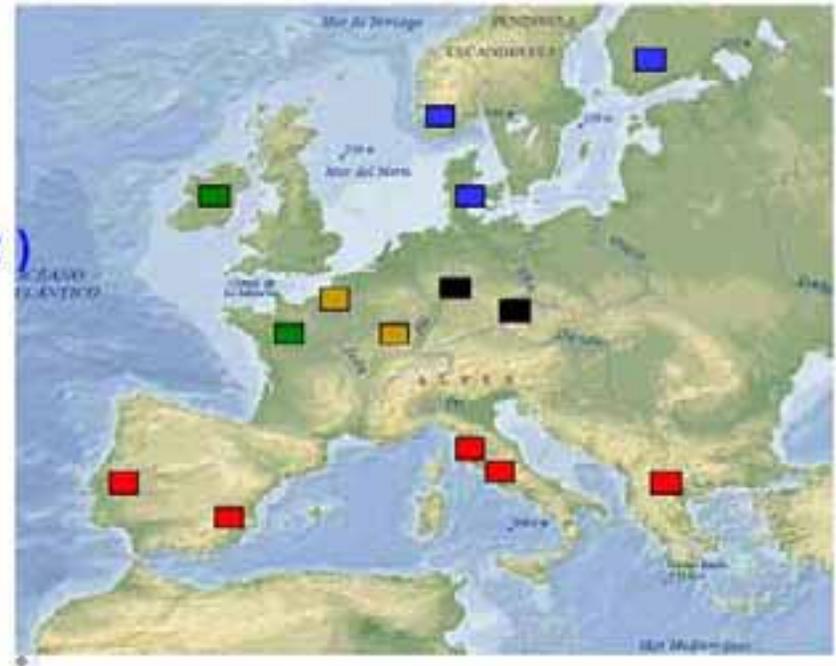
### STRUCTURE of the CIS (2001-2002)



## 6. Remediation management

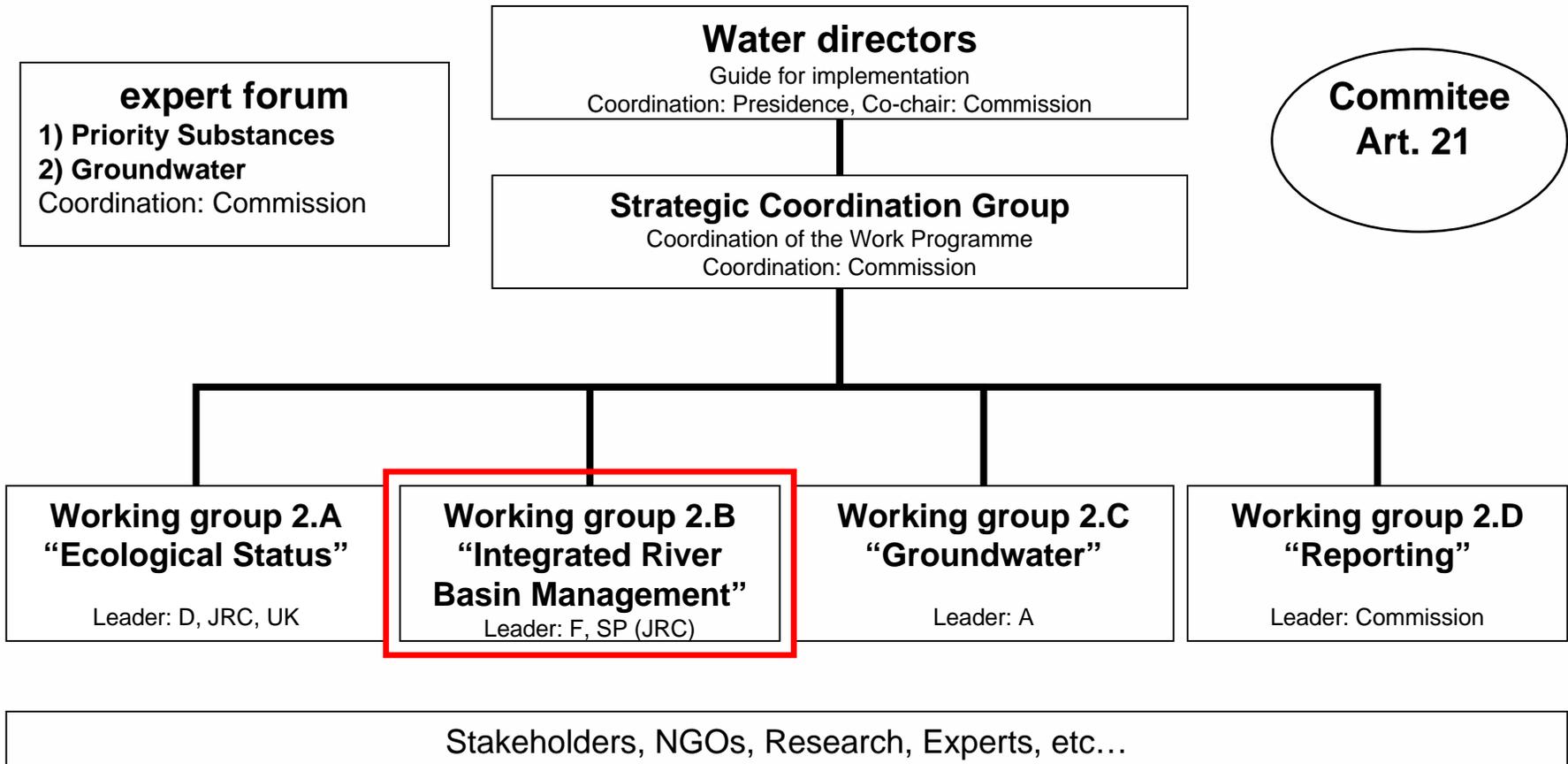
### Pilot Basins

- B, F, NL (Scheldt)
- D, F, Lux (Moselle-Sarre)
- Denmark (Odense)
- Finland (Oulujoki )
- Norway (Suldalsvassdraget)
- France (Marne)
- Ireland (Shannon)
- Greece (Pinios)
- Portugal (Guadiana)
- Spain (Júcar )
- Italy ( Cecina, Tiber )
- Romania Hungary (Somos)
- CZ, D, PL (Neisse)



## 6. Remediation management

**CIS 2003/2004**



## 6. Remediation management

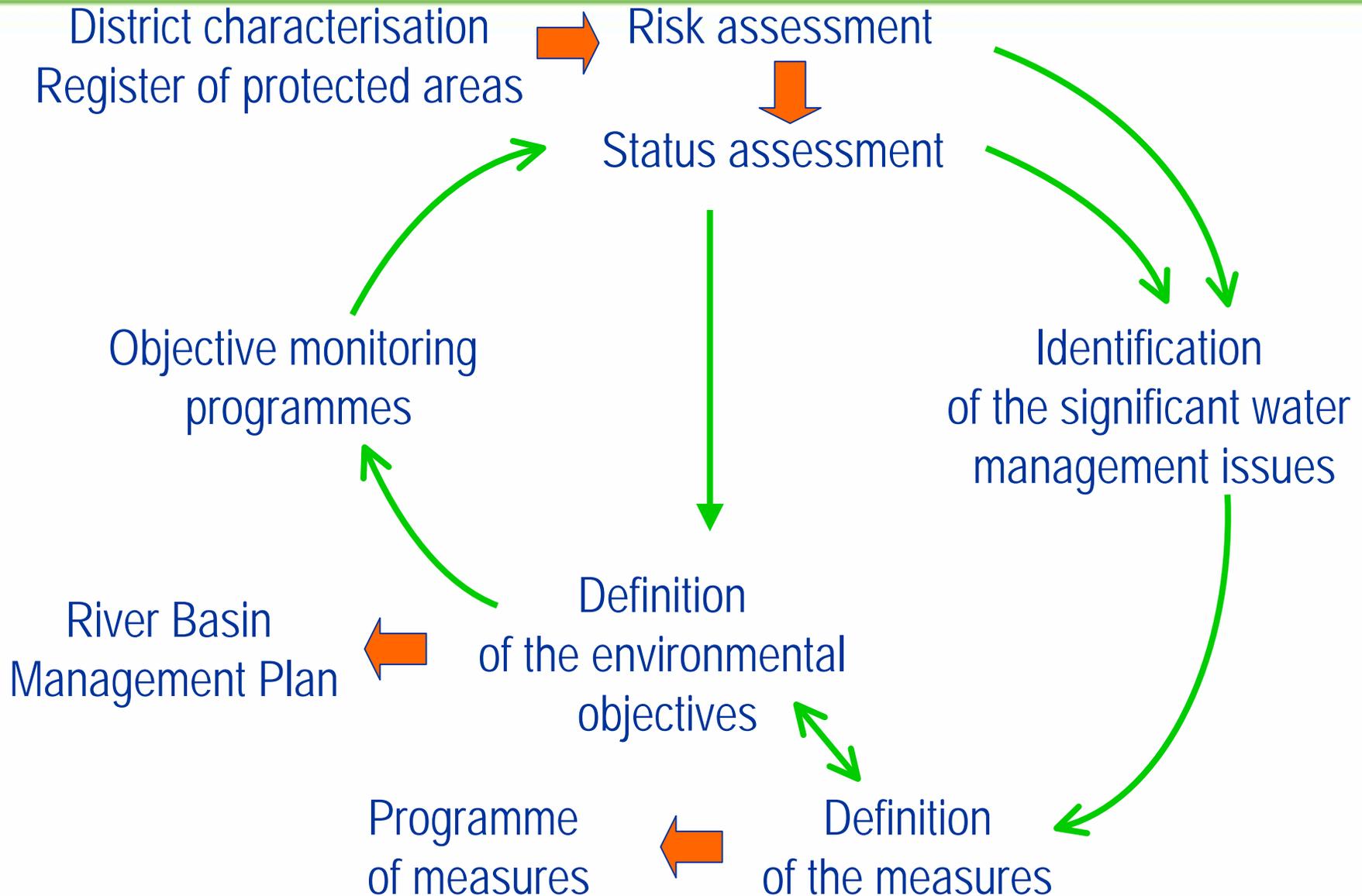
### Guidelines

- <http://europa.eu.int/comm/environment/water/water-framework/implementation.html>

Test of the CIS Guidelines (national guidelines do exist)

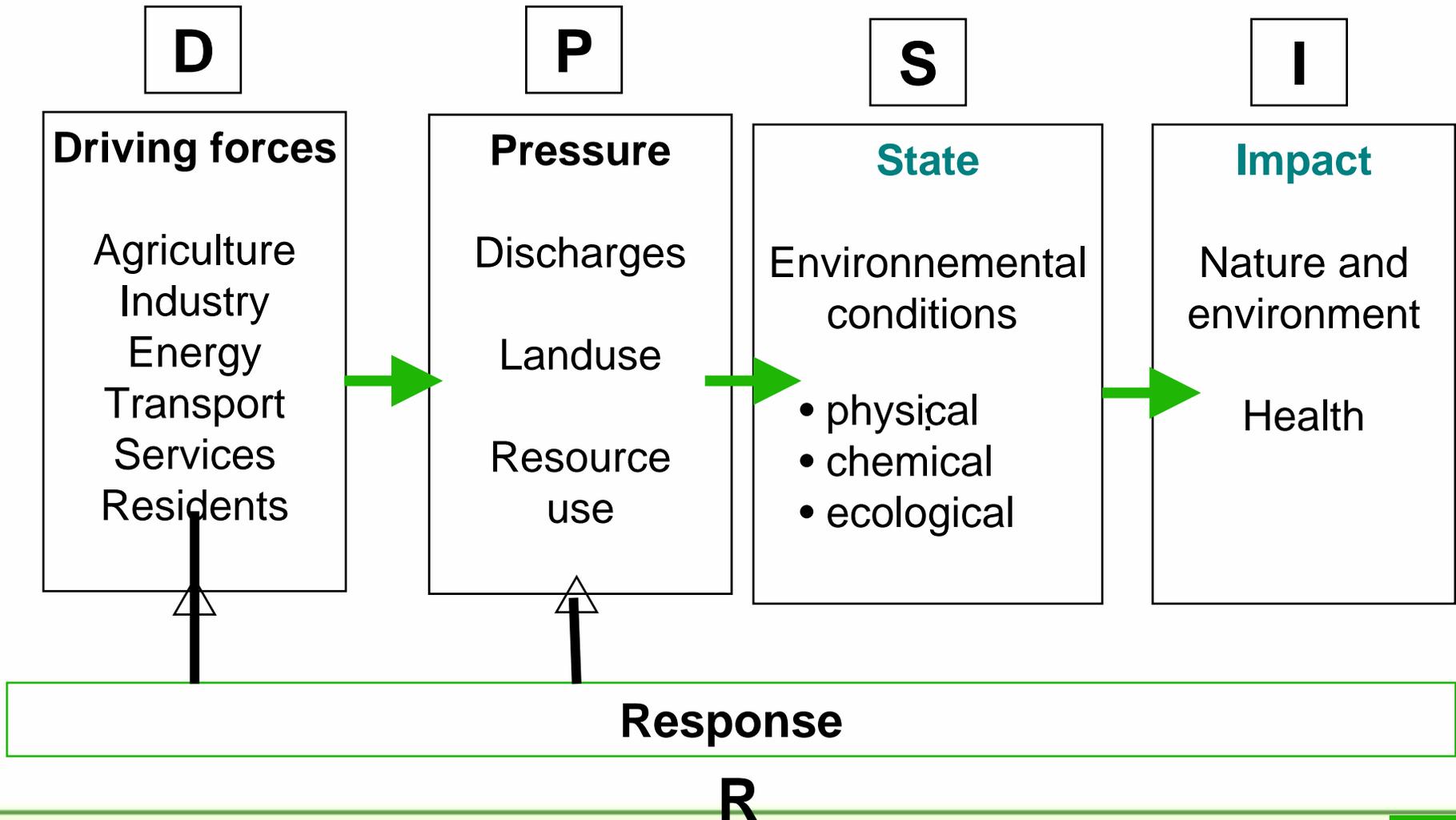
### Limitations:

- Not sufficiently specific
- Lack of standard emission limits
- Lack of specific impact indicators
- Lack of interrelation between GLs (WATECO/IMPRESS)
- Lots of documents, little information



## 6. Remediation management

### The DPSIR concept



## 7. Dangerous substances

The 6th Environmental Action Programme identifies measures for **priority substances** as a key action

A multiple strategy is launched, including:

- Controls on registration, trading and use
- REACH, The Pesticides Directive, The IPPC Directive, The WFD

Article 16(6) For the priority substances, the Commission shall submit proposals of controls for:

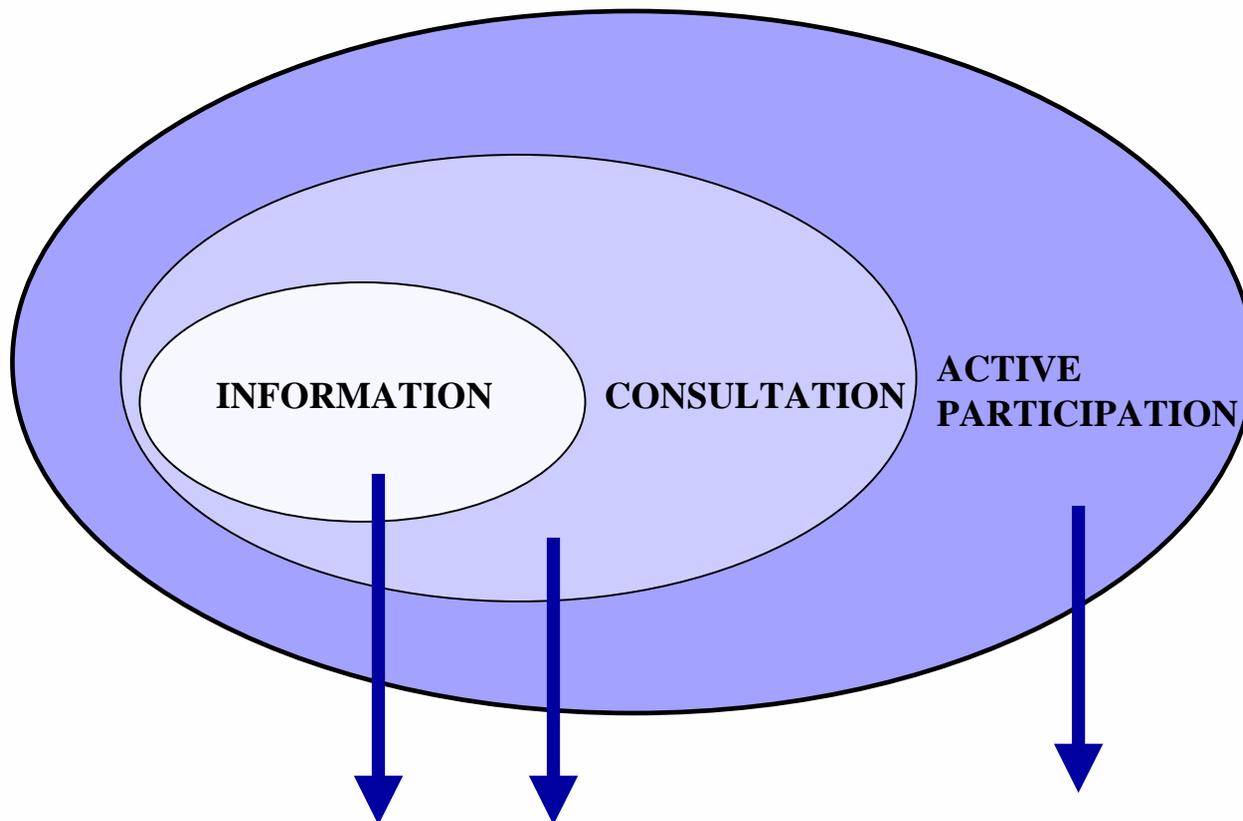
- the **progressive reduction** of discharges, emissions and losses of the substances concerned, and, in particular
- the **cessation or phasing-out** of discharges, emissions and losses of the [hazardous] substances...

## 7. Dangerous substances

### Consultation with interested parties about dangerous substances

- Advisory Forum on Priority Substances: MS experts, NGOs, Article 16(5), regular meetings 2001-2004 with the SCTEE
- Methodology to establish EQS
- Concept paper on pollution controls (source screening, existing measures...)
- Expert Group on Analysis and Monitoring report
- Identification of Priority Hazardous Substances report
- Potential economic impact of pollution control report
- EQS compliance, cost-benefit

## 8. Participation



**Must be ensured**

**Must be encouraged**

**Consensus** cannot be always considered to be the aim to reach,  
**Transparency** Instead, is essential!

## 8. Participation

### Why participation?

- Assemble key-partners
- Obtain contributions for new ideas
- Share « ownership » and responsibility of programme implementation
- Focus on the production of results
- Bring together aims and stakeholders
- Manage expectations
- Enhance consciousness of being part of the process
- Identify potential conflicts in advance