

'Crash-course' on

EU Water Framework Directive (EU WFD)

Tor Haakon Bakken

Based on a presentation by

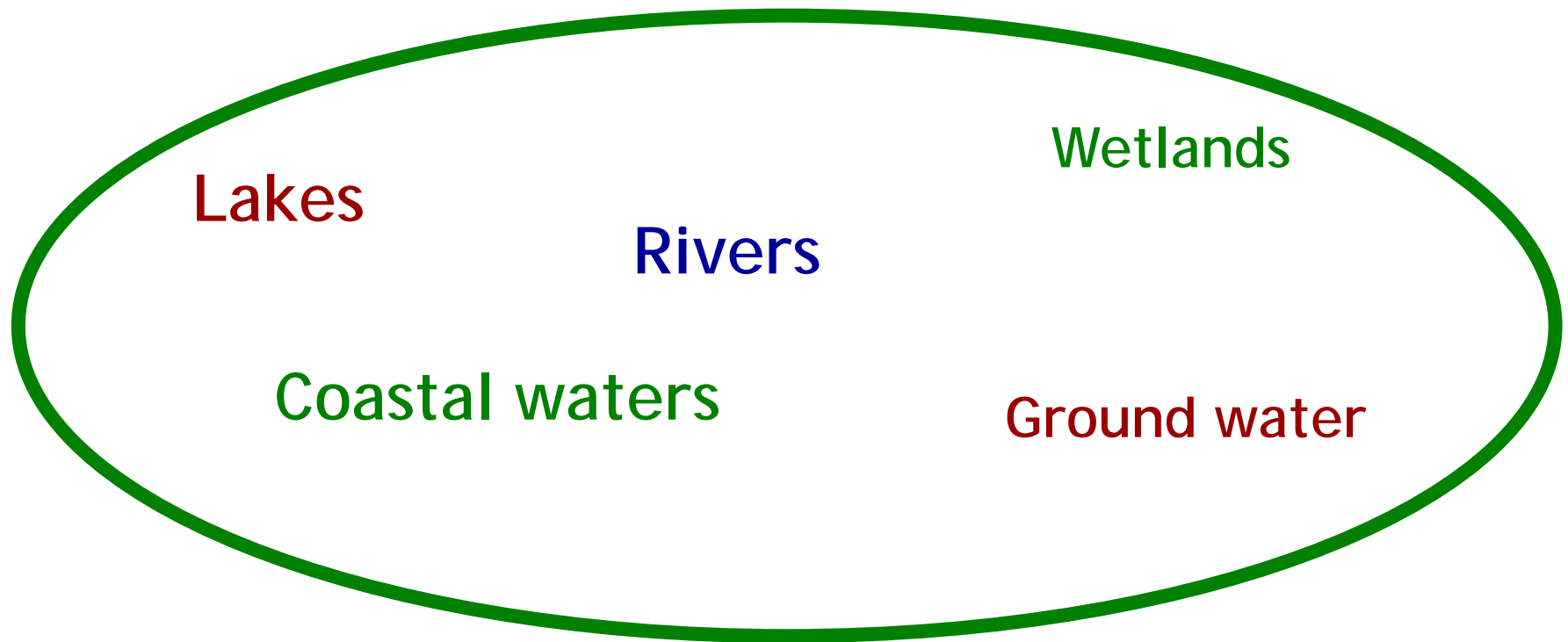
Jo H. Halleraker (Norwegian Environment Agency)

Main principles of the WFD

1. Integrated management
2. Ecosystem focus
3. Participatory planning
4. Sustainable use

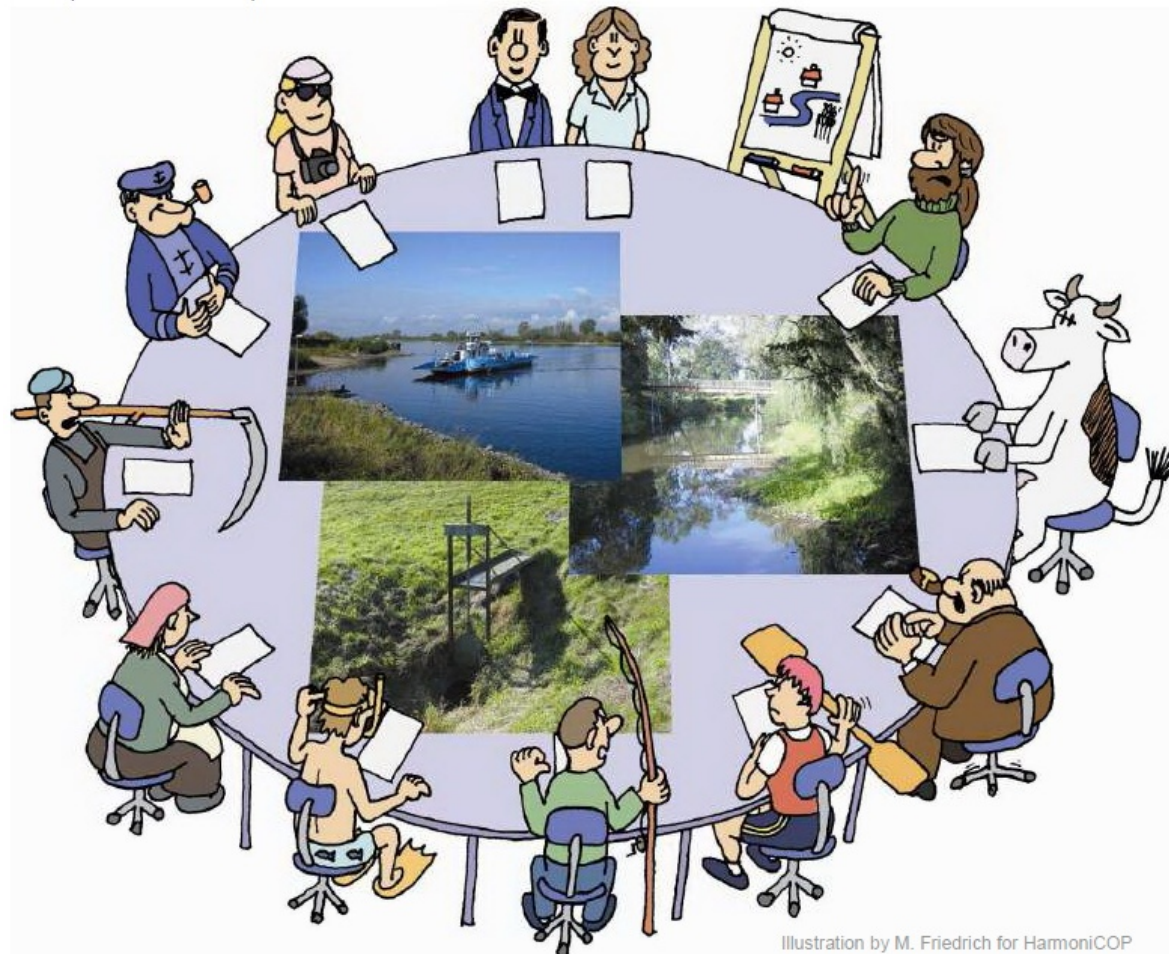


Integrated in river basins and across sectors

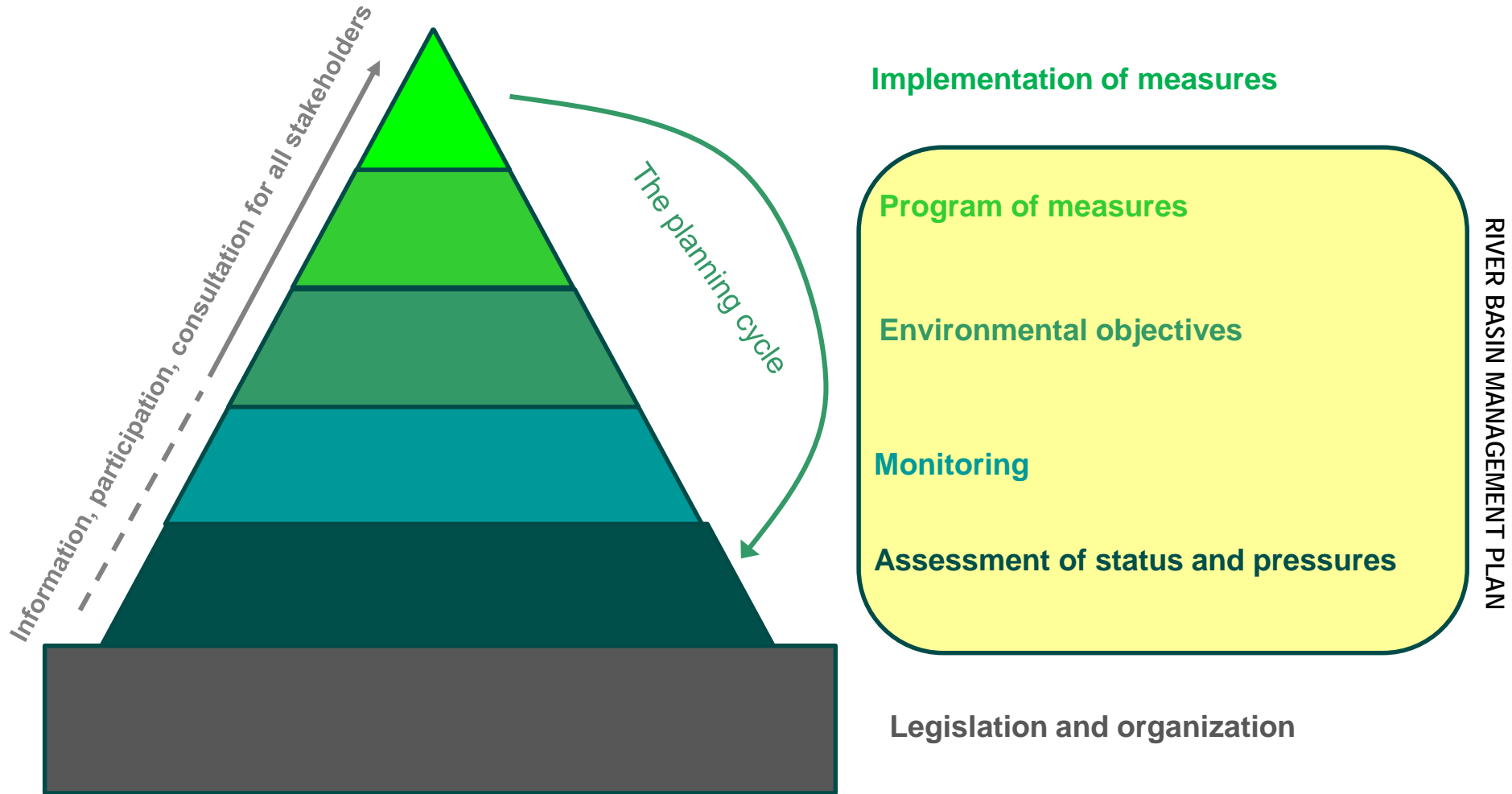


....to be managed *comprehensively* in river Basin Management plans with Programs of measures


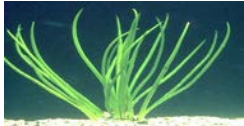
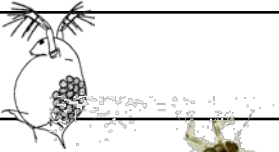


Integrated across sectors



WFD: Systematic management



Monitoring of ecological status

Quality elements	Coastal water	Lakes	Rivers
Phytoplankton 	X	X	
Macrophytes and Phytobenthos 	X	X	X
Zooplankton 	(X)	(X)	
Macro invertebrates 	X	X	X
Fish 		X	X

+ physical-chemical and morphological supporting elements

Ecological status and objectives

Ecological status

Objectives

Very good

*Measures to prevent
deterioration*

High- 2021

Good

Good - 2021

Moderate

Poor

Bad

GAP analysis
Measures or
exemptions

Good - 2021

Good - 2027

Moderate - 2021

Sustainable use - principles

Basic principle:

Use of the water must be sustainable:

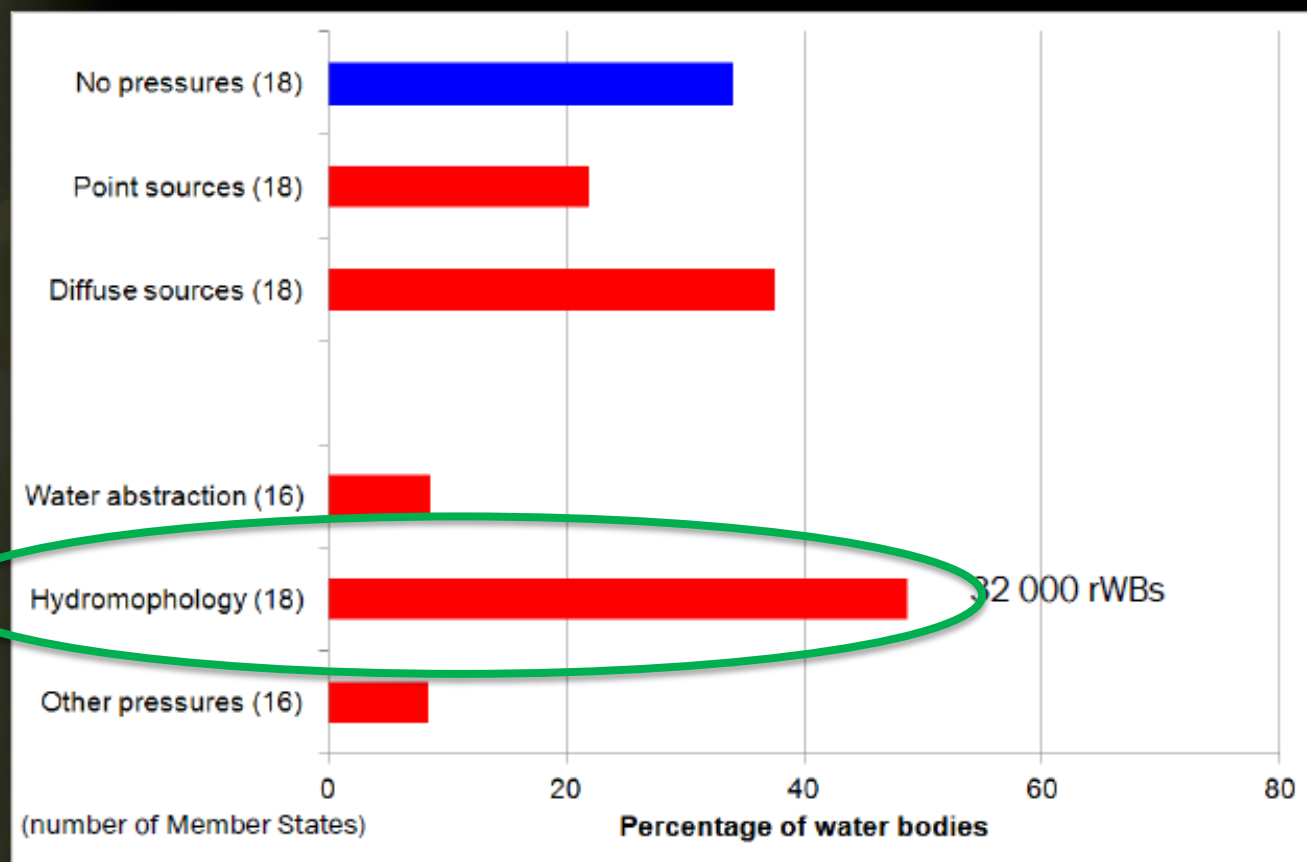
- Natural water bodies
 - Good ecological and chemical status

- Designation of Heavily Modified Water Bodies
 - Good ecological potential



Significant pressures

% of river WBs (65 000) being affected by pressures



Preliminary results from analysis of 141 RBD reported by 23 EU Member States to the WISE-WFD database

Sustainable use - hydropower

Existing hydropower:

Optimize ecological condition

- Ecological continuum (fish-passes etc.)
- Minimum environmental flow requirement.

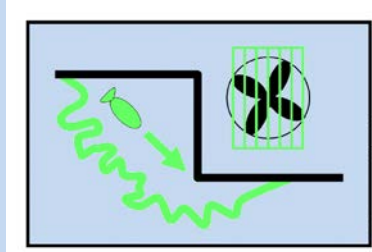
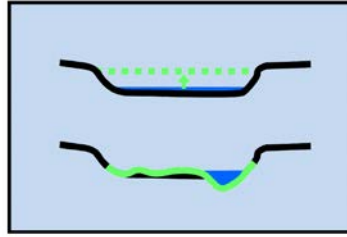
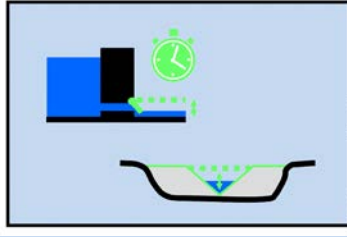

New hydropower:

EIA and Pre-qualification assessment:

- Predict ecological status.
- Justification of overriding public interest
- Assessment of alternatives.
- All feasible mitigation measures.

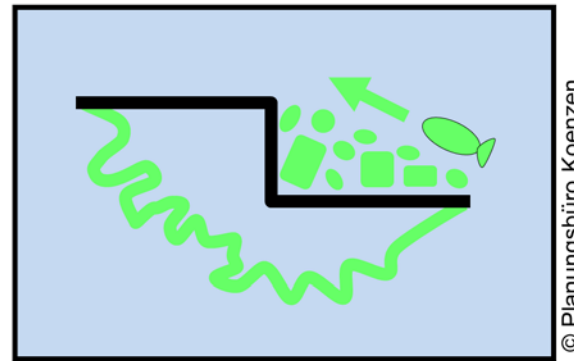


Hymo alteration → BQE impacts ↔ mitigation

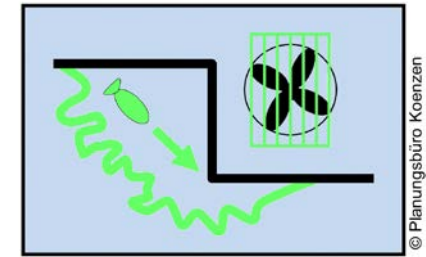
Hydromorphological alteration	Ecological impact	Mitigation measure for	Abb.	Pictogram
River continuity for <u>upstream</u> fish migration reduced or interrupted	Fish: Populations of migratory fish absent or abundance reduced	Upstream continuity for fish	CON 1	 <small>© Planungsbüro Koenzen</small>
River continuity for <u>downstream</u> fish migration reduced or interrupted	Fish: Populations of migratory fish absent or abundance reduced	Downstream continuity for fish	CON 2	
Artificially extreme <u>low flows</u> or extended low flows	Reduced abundance of plant & animal species. Alterations to composition of plant & animal species	Low flow	FLOW 1	 <small>© Planungsbüro Koenzen</small>
Loss of, or reduction in, <u>flows sufficient to trigger</u> & sustain fish migrations	Migratory fish absent or abundance reduced	Fish flow	FLOW 2	 <small>© Planungsbüro Koenzen</small>
Loss, reduction or absence of <u>variable flows</u> sufficient for flushing	Alteration/reduced abundance of fish & invertebrate species	Variable flow	FLOW 3	
				

Mitigation measures

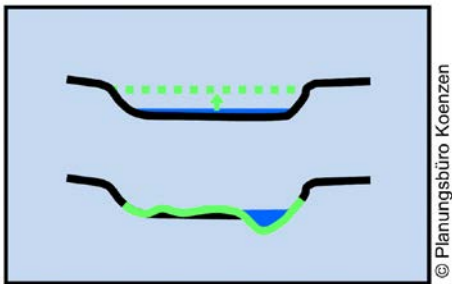
- European measure library - water storage mitigation
- Implementation thereof



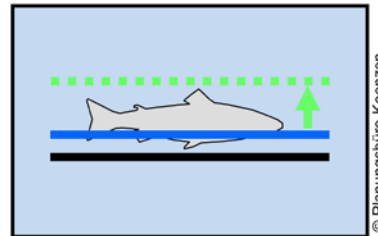
1. Upstream continuity fish



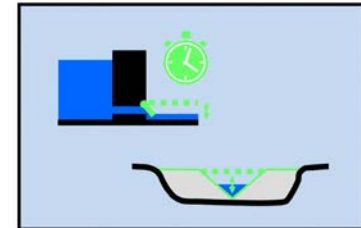
2. Downstream continuity fish



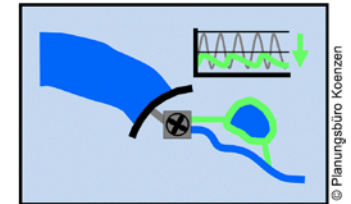
3. Mitigation low flow



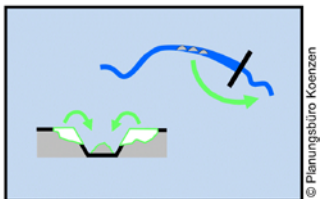
4. Mitigation fish flow



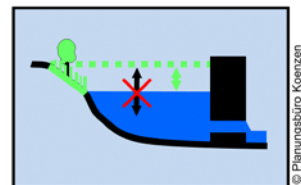
5. Mitigation variable flow



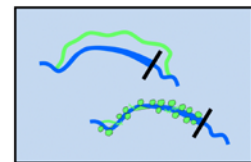
6. Mitigation for hydropeaking



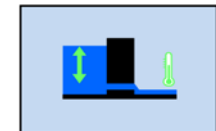
7. Mitigation for interrupted sediment movement



8. Mitigation lake level



9. Mitigation ponded river flow



10. Mitigation for temperature

Sustainable use - hydropower

Existing hydropower:

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WFD common implementation strategy

- Common guidelines.
- Sharing examples and experiences.
- Common deadlines and reporting.
- Harmonized status classification.
- Harmonized environmental objectives.
- Comparable use of exemptions.



Where to read more - websites

DG Environment WFD website:

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

European Commission – official WFD documents:

<https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>

Norwegian WFD website – English pages:

<http://www.vannportalen.no/english>

International Network of Basin organizations (INBO):

<http://www.inbo-news.org/>