

India-UK Water Security Capability Exchange Initiative

The Water Framework Directive Water Strategy, Planning and Delivery

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FOUNDATION *for*
WATER RESEARCH

Outcomes in the Environment - UK



Outcomes in the Environment - India



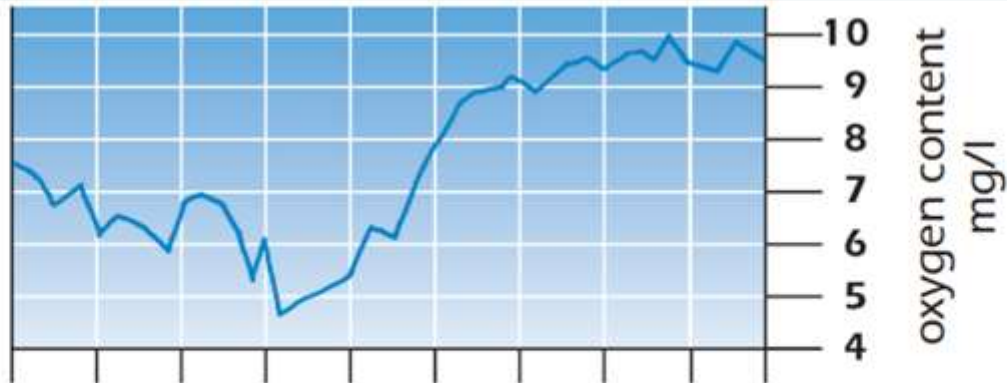
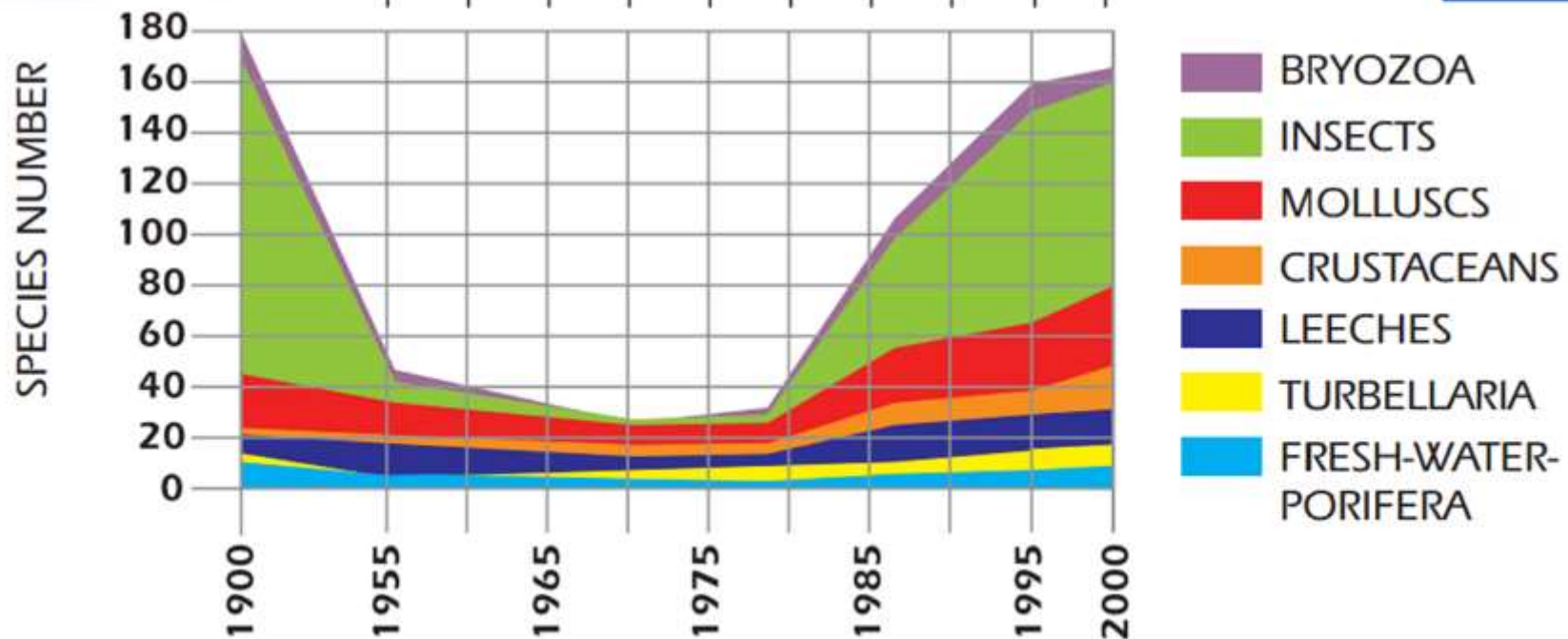
Integrated Catchment Management - Principles

Integrated Catchment Management

- Integrated catchment management (ICM) is at the intellectual heart of water management
- Rhine Commission and the Danube Commission provide best practice benchmarks from within Europe
- In 2000 the European Union adopted the Water Framework Directive (WFD) based on integrated Catchment Management approaches.

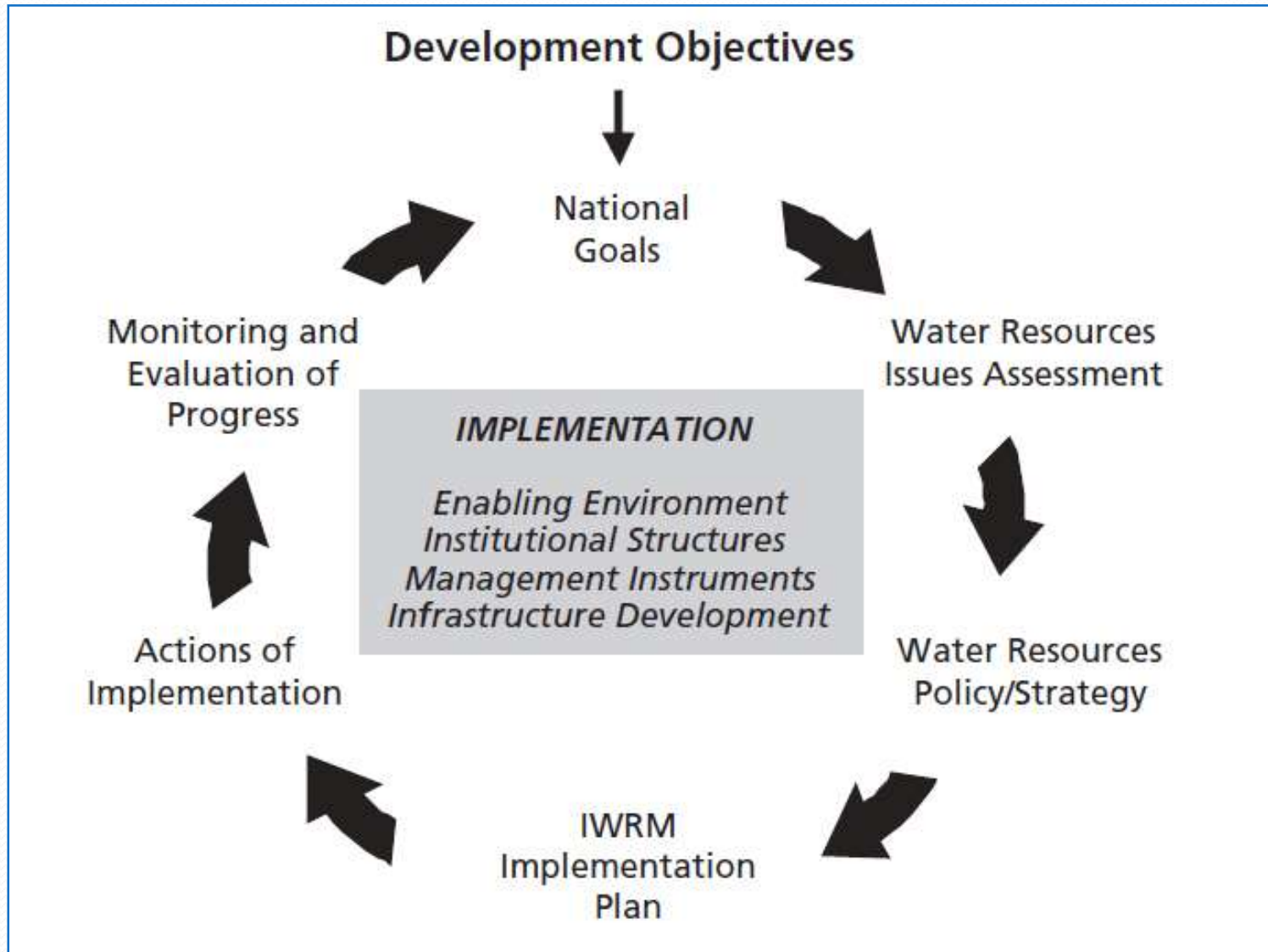
River Rhine Clean-up 1900 – 2000

Invertebrates



Species number of invertebrates in connection with the oxygen content of the Rhine

Integrated Catchment Management - Process

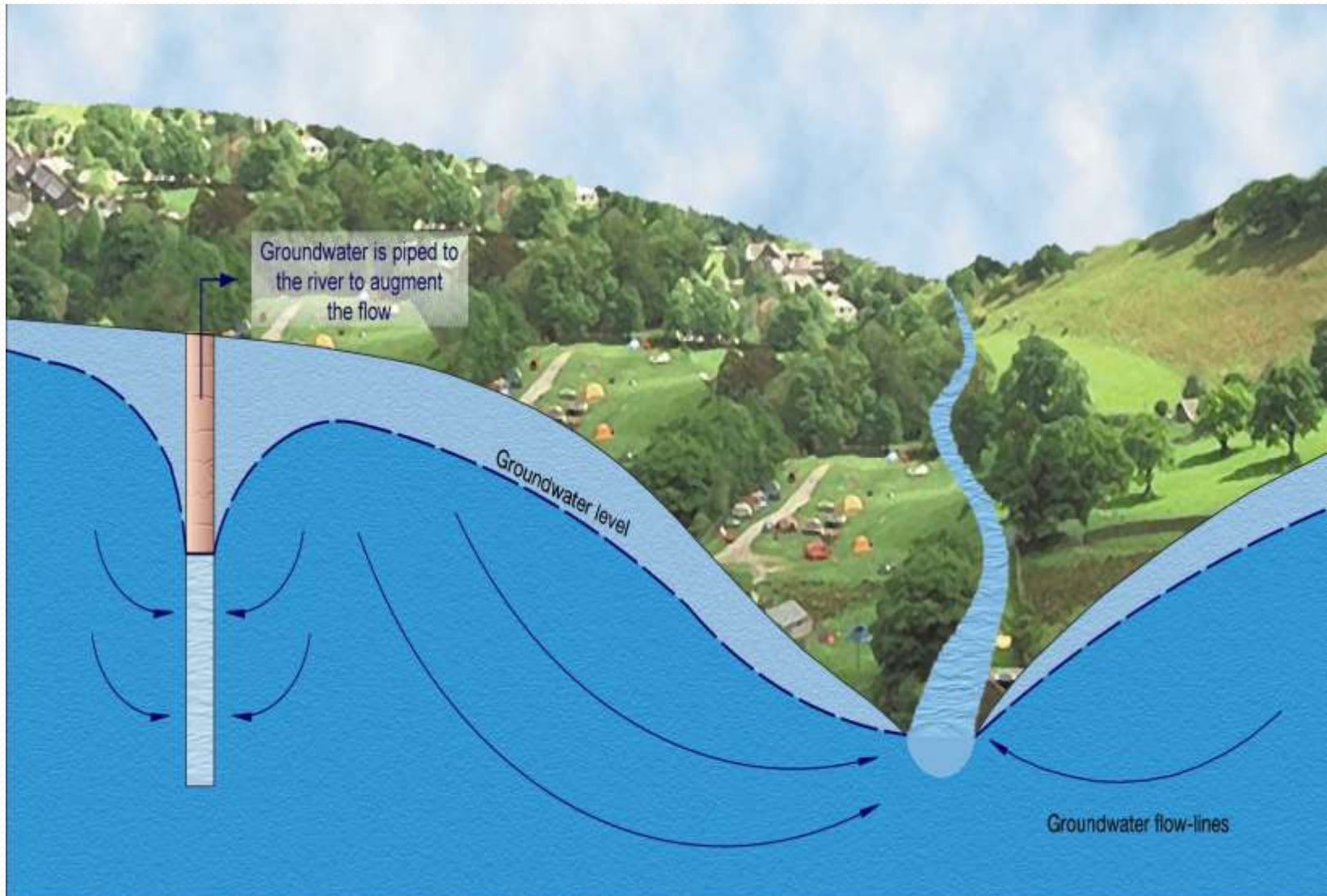


Water Framework Directive

Background

- Integrated catchment management in place for over 40 years
- There is a strong regulatory regime in place to issue permits and to ensure compliance
- The European Union Directives influence most standards in UK
- The EU Water Framework Directive provides a water planning framework for Europe for the next 30 years.

Integrated land and water management



Water Framework Directive

Objectives

- Consolidates Integrated Catchment Management across Europe
- Introduces new ways of protecting and improving rivers, lakes, groundwater, estuaries and coastal waters
- The emphasis is on achieving good environmental outcomes
- It provides a structure to enable us to develop a sustainable future for our natural waters.

Water Framework Directive

European River Basins



Water Framework Directive

Purpose

Prevent deterioration, enhance status of aquatic ecosystems & associated wetlands

Promote sustainable water use

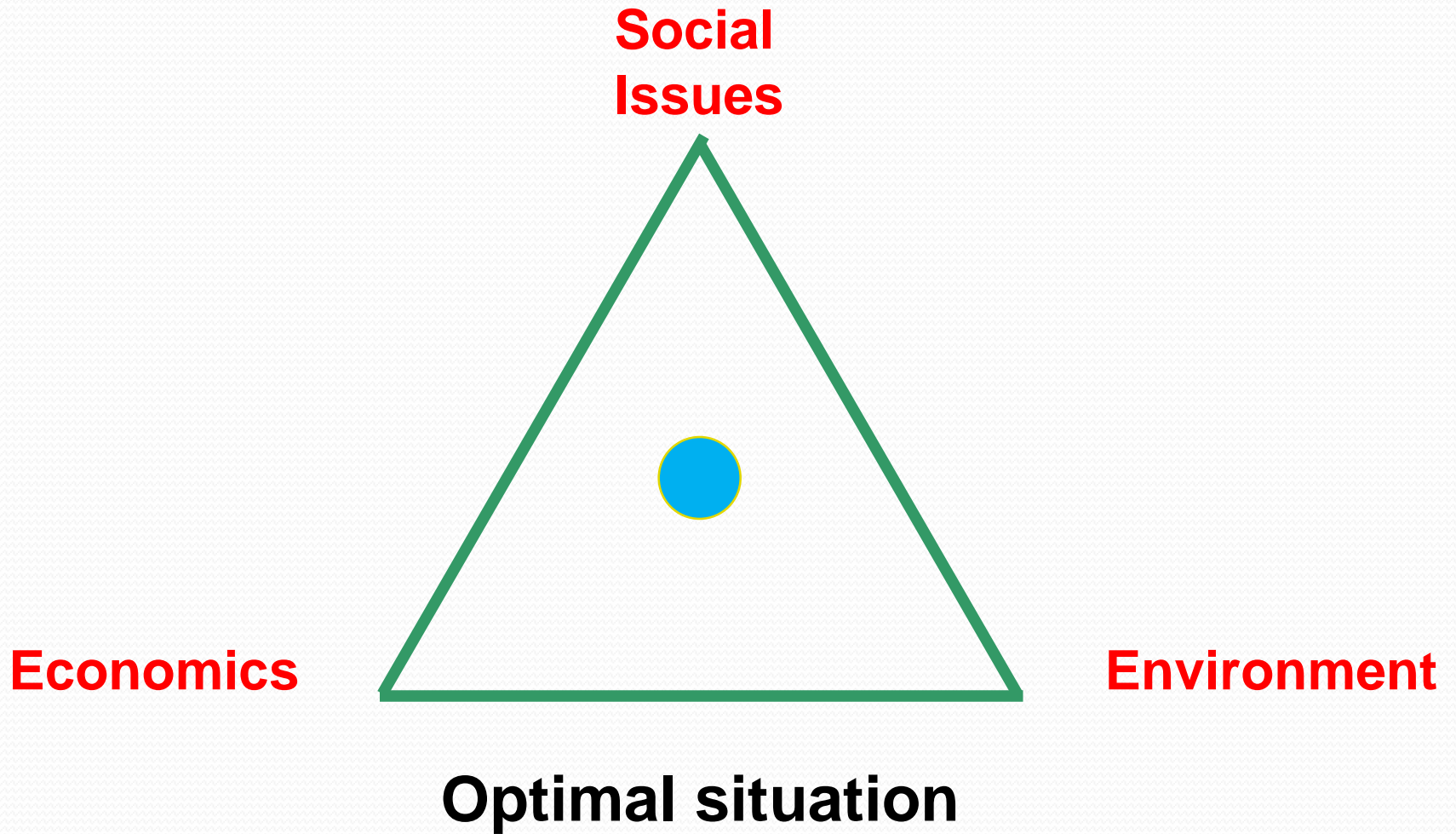
Reduce the impacts of floods and droughts

Water Framework Directive

Overview

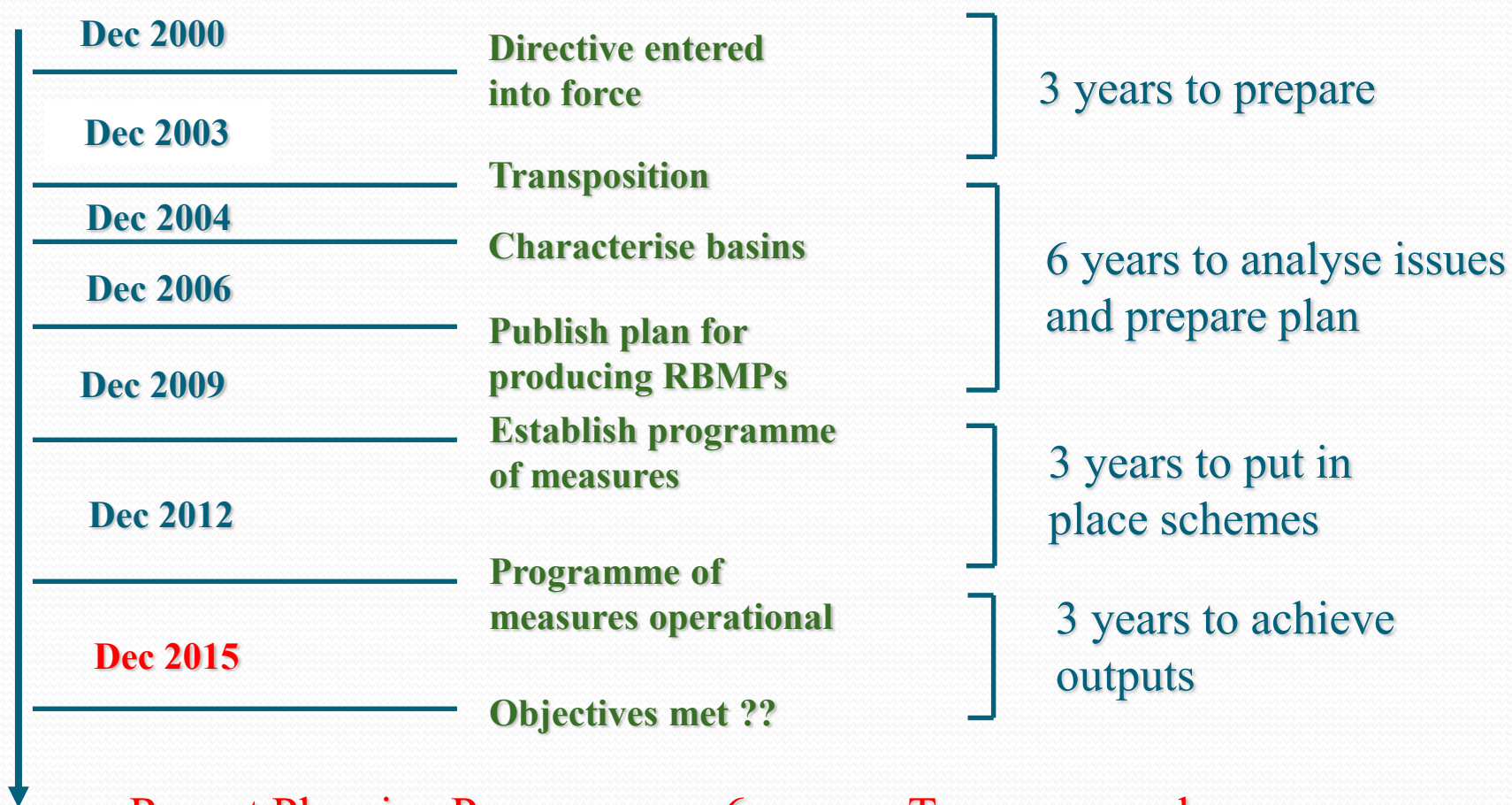
- Sets the future water planning process and agenda
- Sets timetable
- Sets outcomes
- New ways of thinking
 - Sustainable water management
 - Combined Approach
 - Ecological Standards
 - Point and diffuse pollution
 - Water and Land

Sustainability



Water Framework Directive

Timetable



Water Framework Directive

Regulations are in Force

The Environment Agency
is the Competent Authority

STATUTORY INSTRUMENTS

2003 No. 3242

WATER RESOURCES, ENGLAND AND WALES

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003

Made - - - - 10th December 2003

Laid before Parliament 11th December 2003

Coming into force - - 2nd January 2004

The Secretary of State and the National Assembly for Wales, acting respectively in relation to river basin districts that are wholly in England and river basin districts that are wholly in Wales(**a**), and jointly in relation to river basin districts that are partly in England and partly in Wales, being designated(**b**) for the purposes of section 2(2) of the European Communities Act 1972(**c**) in relation to matters relating to water resources, in exercise of the powers conferred upon them by that section, hereby make the following Regulations:

Title, commencement, extent and application

1. These Regulations—

- (a) may be cited as the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 and shall come into force on 2nd January 2004;
- (b) extend to England and Wales; and
- (c) apply only in relation to river basins districts identified by regulation **Error! Reference source not found.** (d).

Interpretation

2.—(1) In these Regulations—

“the Agency” means the Environment Agency;

“the appropriate authority” means—

- (a) in relation to a river basin district that is wholly in England, the Secretary of State;
- (b) in relation to a river basin district that is wholly in Wales, the Assembly; and
- (c) in relation to a river basin district that is partly in England and partly in Wales, the Secretary of State and the Assembly acting jointly;

“the Assembly” means the National Assembly for Wales;

“body of water” means a body of groundwater or a body of surface water;

(a) The terms “river basin district”, “England” and “Wales” have the same meaning for this purpose as in the Regulations, and are defined in regulation 2(1).

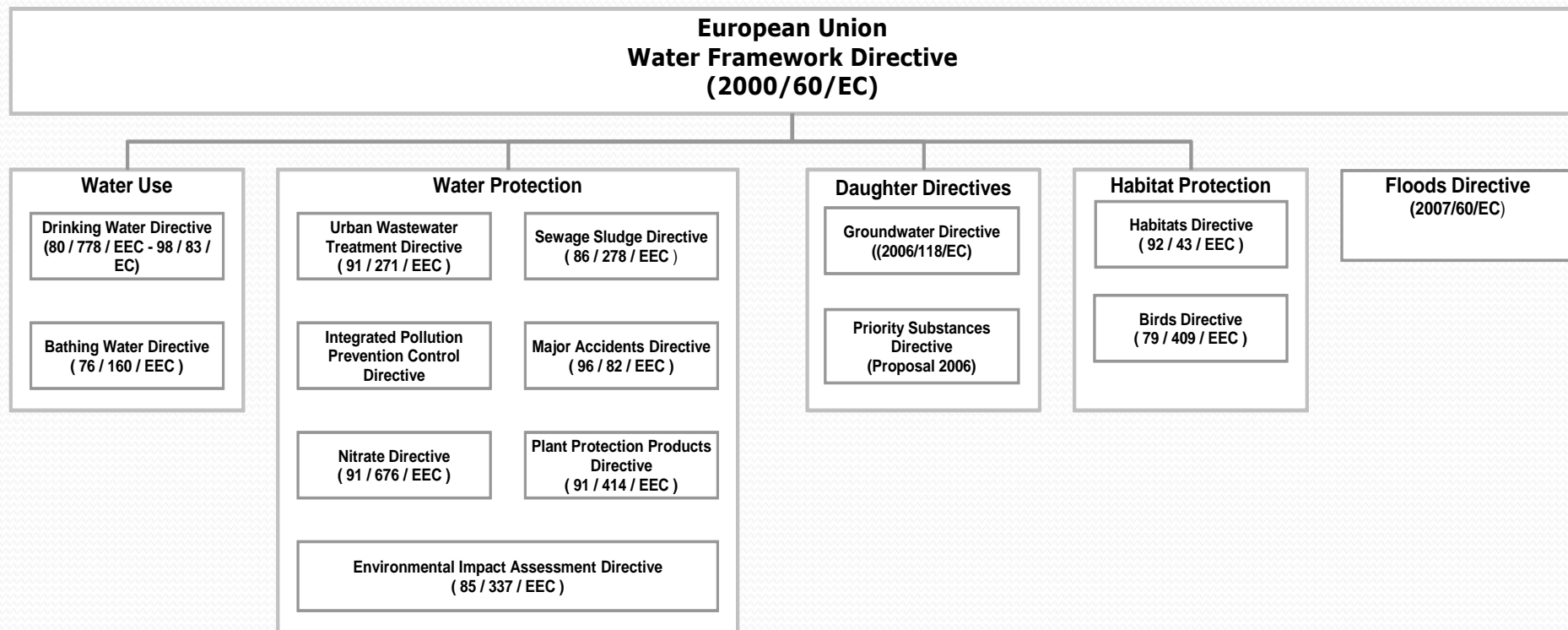
(b) S.I. 2003/2901.

(c) 1972 c. 68.

(d) The river basin districts identified by regulation 4(1) do not include any that are partly in England and partly in Scotland.

Water Framework Directive

Relationship to other EU Directives



Water Framework Directive

Environmental Monitoring

Biological Elements



Chemical Elements



Hydromorphological Elements



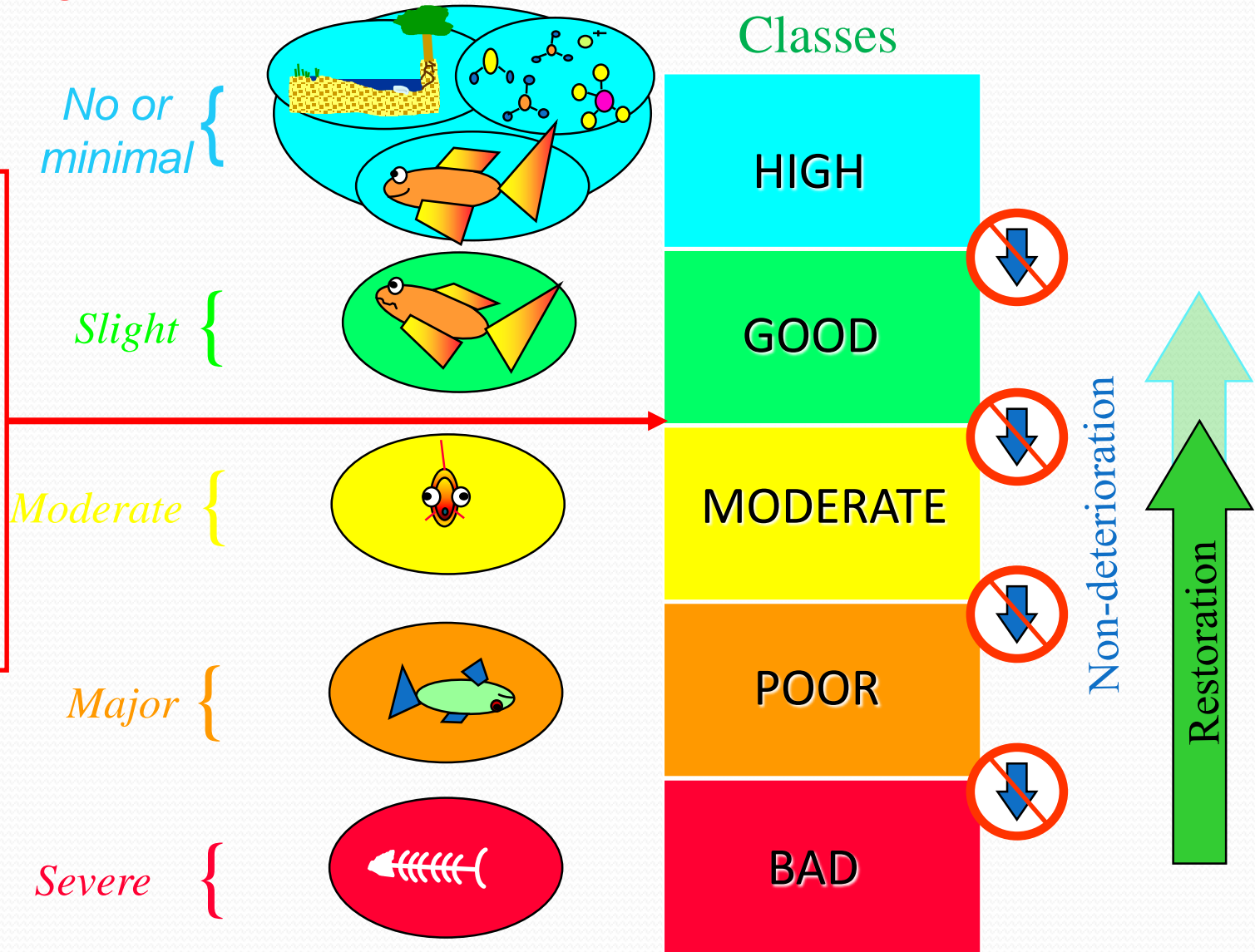
Physico-chem Elements



Water Framework Directive

Good Ecological Status Objective

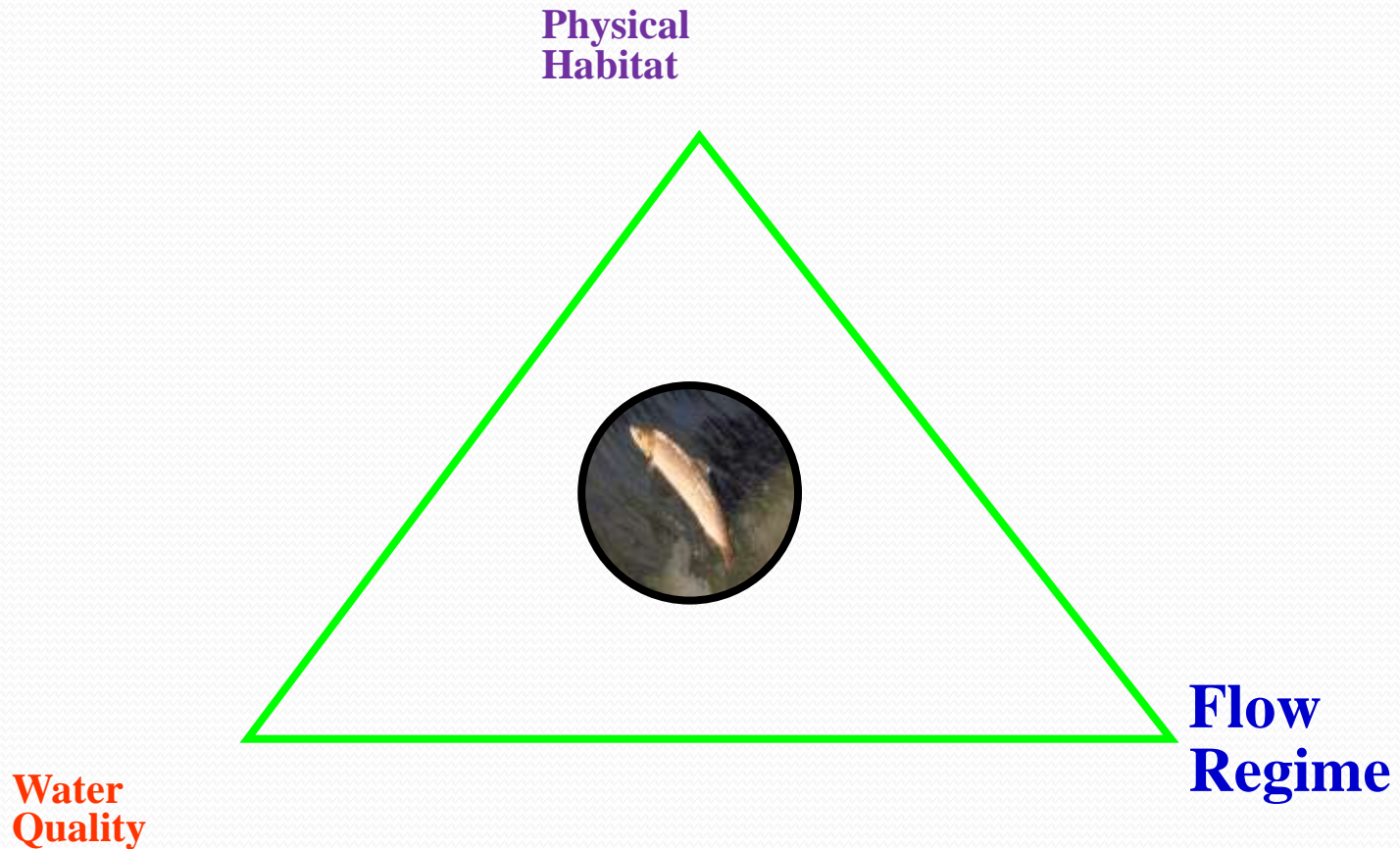
Intercalibration
Exercise:
Commission
Decision
2008/915/EC:
Harmonised
understanding of
good ecological
status consistent
with definitions in
Annex V



Water Framework Directive

Improvement Options

Integrated options for ecological improvement



Water Framework Directive

Programme of Measures

- An Improvement Plan
- A clear and public programme that aims to achieve good status
- Basic measures
 - Statutory instruments
 - Abstraction licences, effluent permits etc
- Supplementary Measures
 - Incentives
 - Codes of practice
 - Voluntary initiatives
 - Education
- Set a clear timetable
- Funding must be available

River Basin Management Plans

- Implementing Water Framework Directive River Basin Plans



Water for life and livelihoods

**River Basin Management Plan
Thames River Basin District**



River Basin Management Plans – Update 2015

- The second cycle of WFD is being progressed via an update to the first river basin plans
- <https://www.gov.uk/government/collections/river-basin-management-plan-update#thames-river-basin-district-rbmp>



Water for life and livelihoods



Part 1: Thames river basin district
River basin management plan
(2015 proposed update)



Water Framework Directive

Public Participation

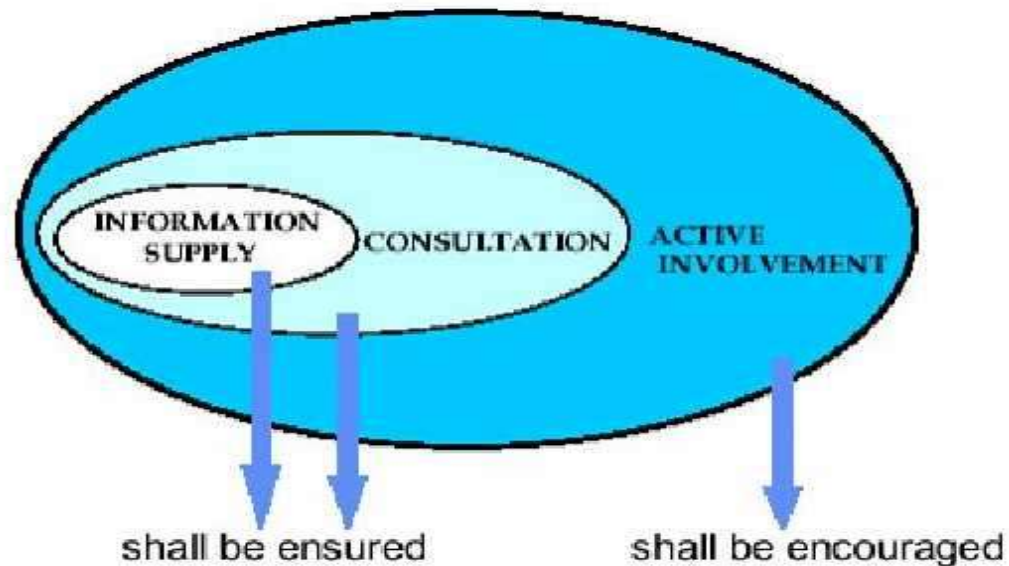


Water Framework Directive

Water for Life and Livelihoods

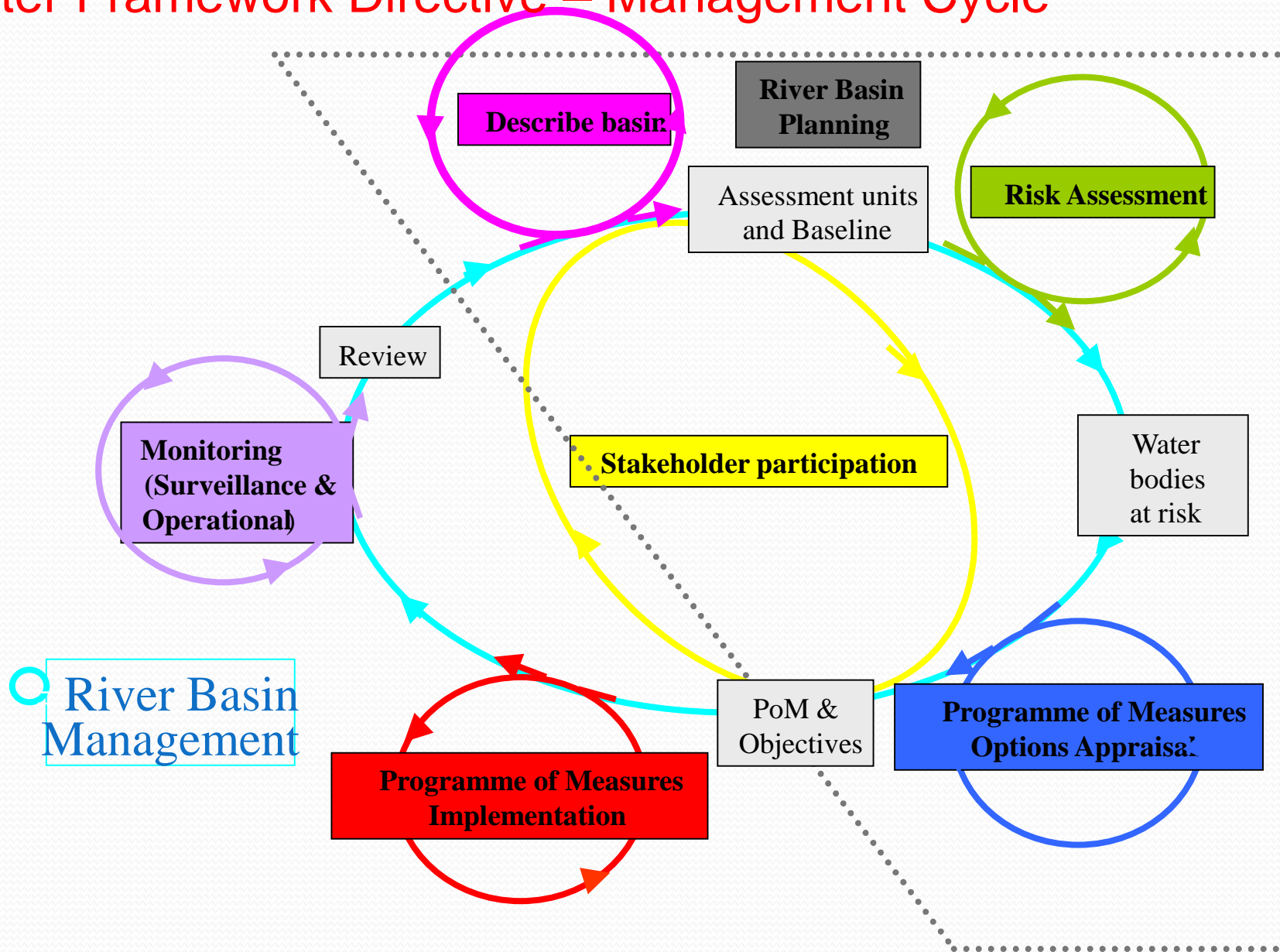
Public participation in the Water Framework Directive

- supply of information
- consultation
- active involvement



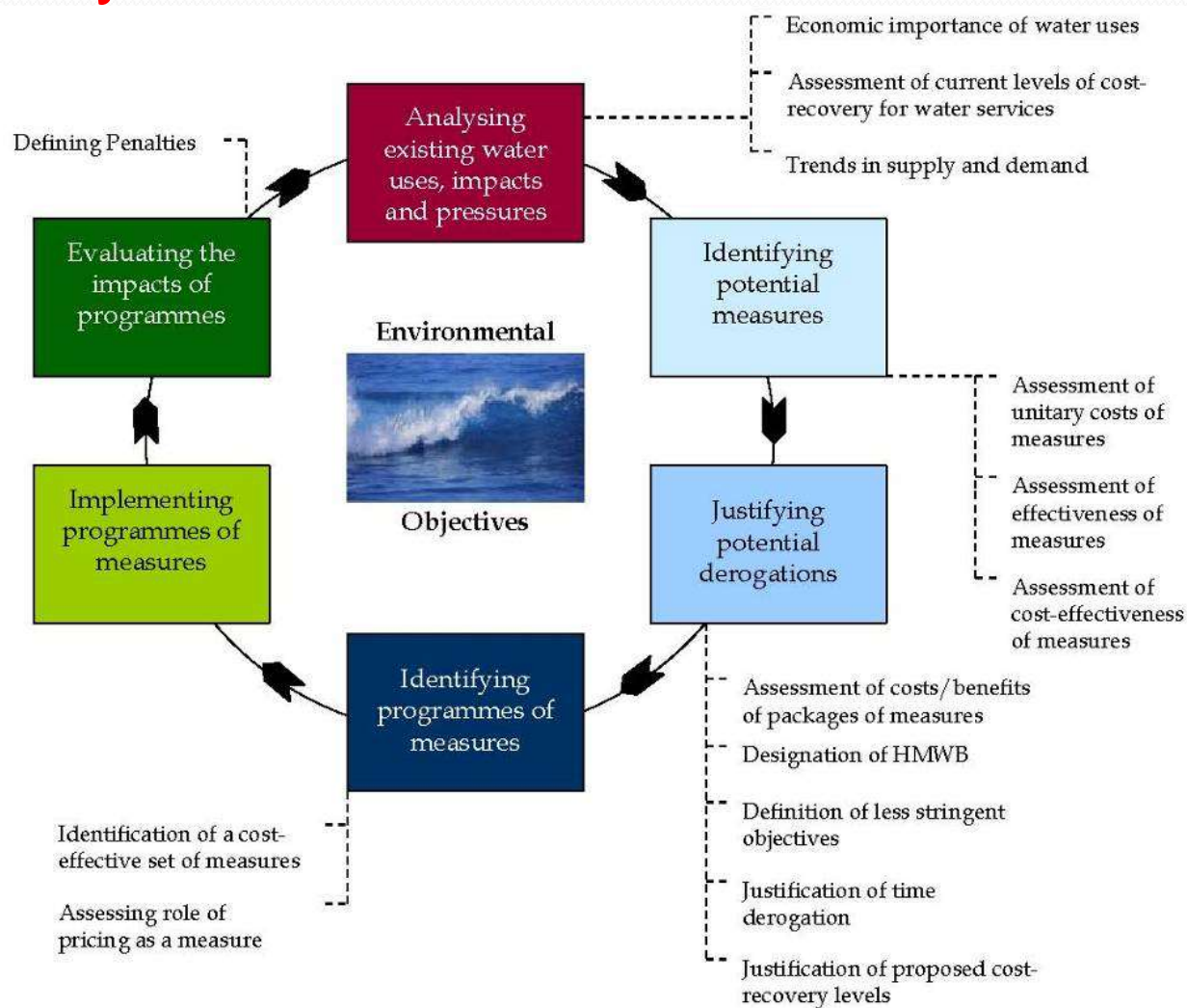
Water Framework Directive

Water Framework Directive – Management Cycle



Water Framework Directive

Economic Analysis



Water Framework Directive

Economic Analysis

The Costs of Environmental improvement



Water Framework Directive

Economic Analysis

Benefits of environmental improvement more difficult to communicate

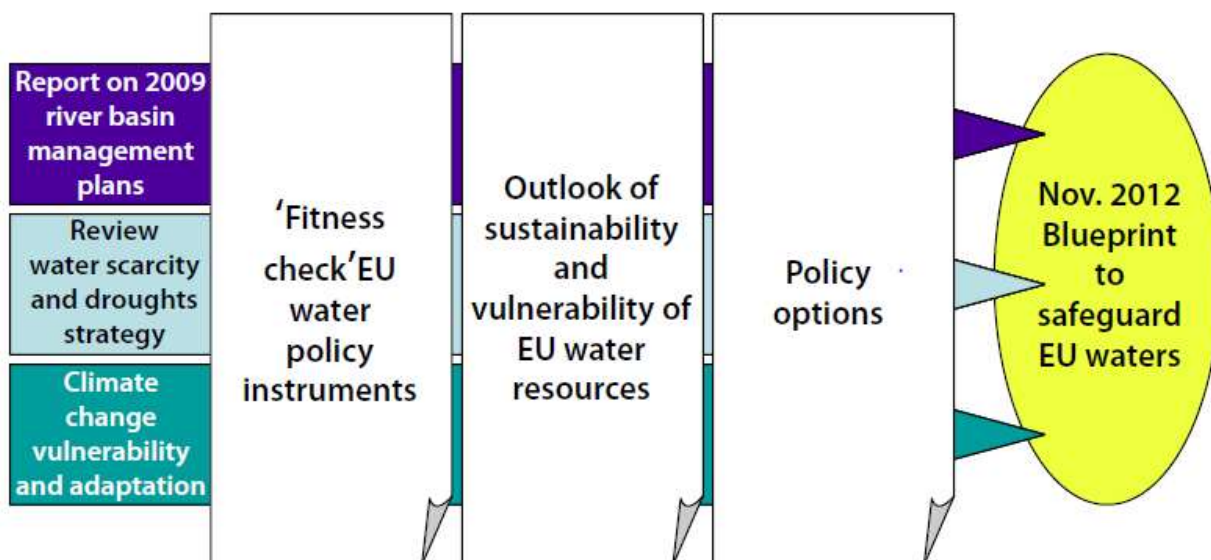


EU Blueprint assessment and implementation



**2012 Blueprint
to safeguard
Europe's water resources**

2012 Blueprint to safeguard EU waters



Water Framework Directive

Conclusion

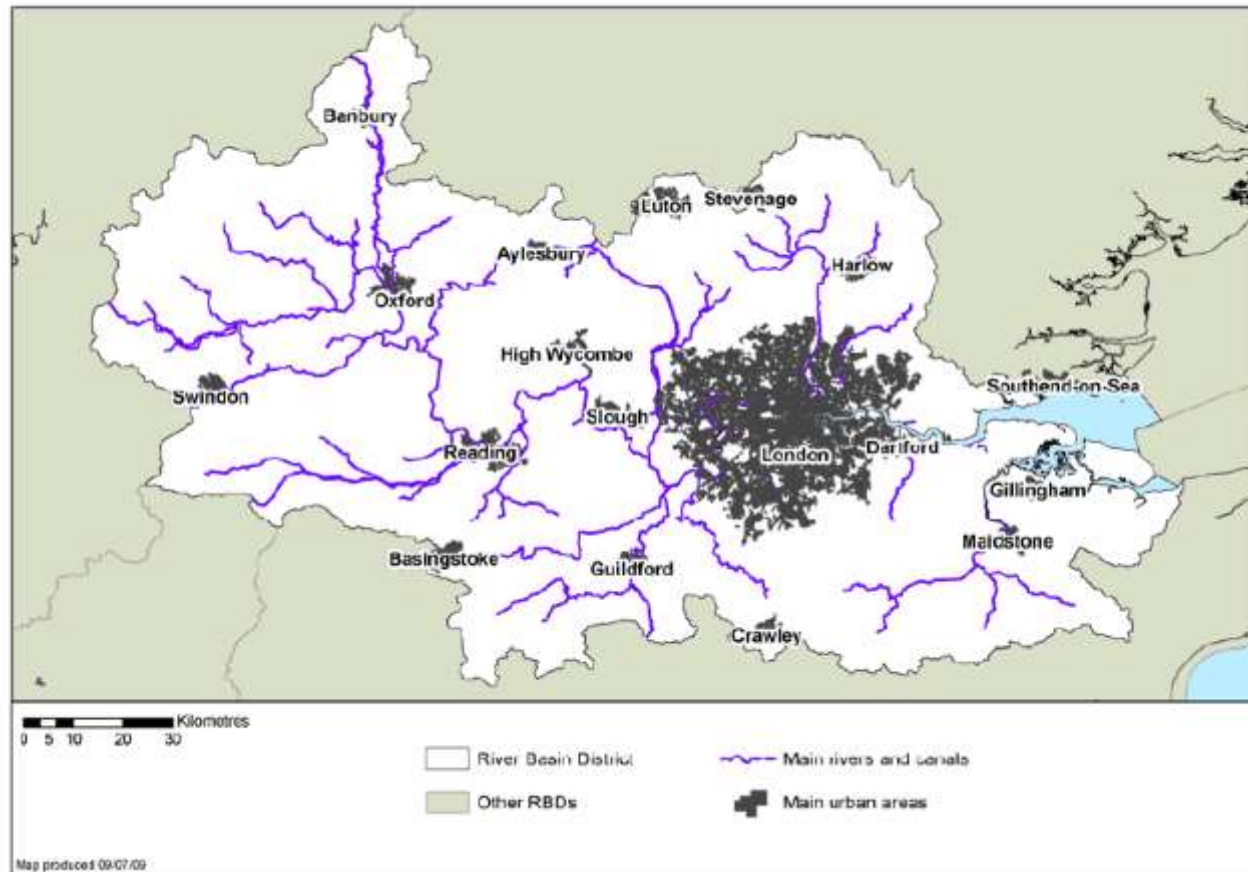
- Integrated River Basin Management has been essential in the protection and improvement of the water environment in UK
- It allows for dialogue and consultation
- It allows costs to be calculated and options evaluated
- It sets a timetable for improvement
- It allows scarce resources to be optimised

Optimise resources within a river basin

River Basin Management Plans

- Thames River Basin District

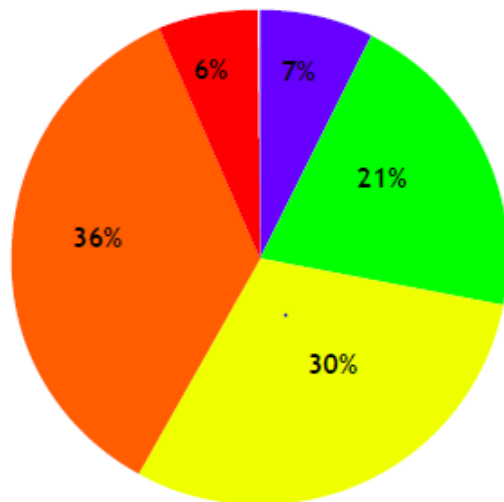
Figure 1 Map of the Thames River Basin District



Ecological and Biological Status Predictions

Figure 7 Biological status of surface water bodies now and in 2015

28% of assessed water bodies are at least good biological status now



34% of assessed water bodies will be at least good biological status in 2015

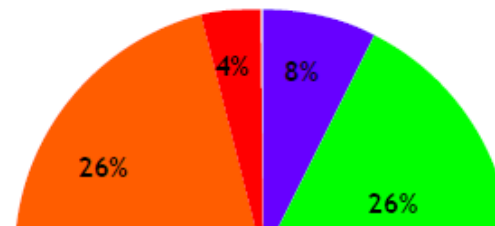
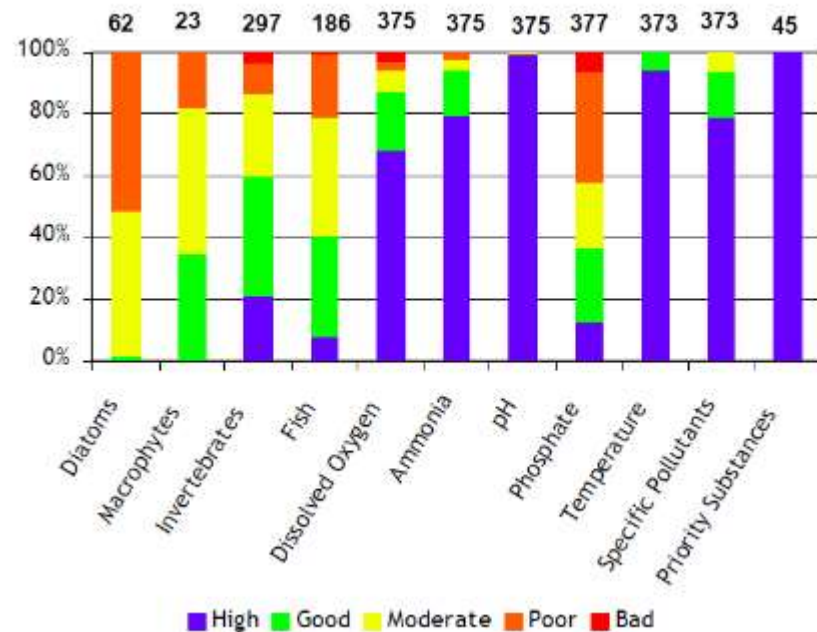


Figure 8 Predicted proportion of river water bodies in each status class, by element, for 2015 (numbers above bars indicate total number of water bodies assessed)



Thames River Basin Plan - Issues

Cherwell catchment



Catchment summary

This Cherwell catchment is predominantly rural with some urban areas including the towns of Banbury and Oxford. The river flows south and joins the River Thames at Oxford, but for part of the way it shares a channel with the Oxford Canal.

Surface water quality in most of the catchment is generally good with the River Ray having the poorest water quality. Phosphates, however, show high concentrations across most of the catchment due to diffuse and point source inputs. The catchment also suffers from degraded physical habitat, localised low flows and diffuse pollution.

The impact of water abstraction varies significantly across the catchment, with very little abstraction, for instance, from the Ray catchment. The Upper Cherwell catchment supports abstractions for public water supply at Banbury and from the Sor Brook at Adderbury. There are also a number of licensed abstractions for agriculture. There is concern that the flows in the Cherwell upstream of the Sor Brook confluence are unnaturally low due to abstractions at Banbury and those used to support the Oxford Canal. Some action has been taken with the water company to mitigate these impacts during low flows. Further proposed measures to tackle this include promoting water efficiency measures and liaising with British Waterways.

Thames River Basin Plan - Issues

Estuaries and coastal water bodies

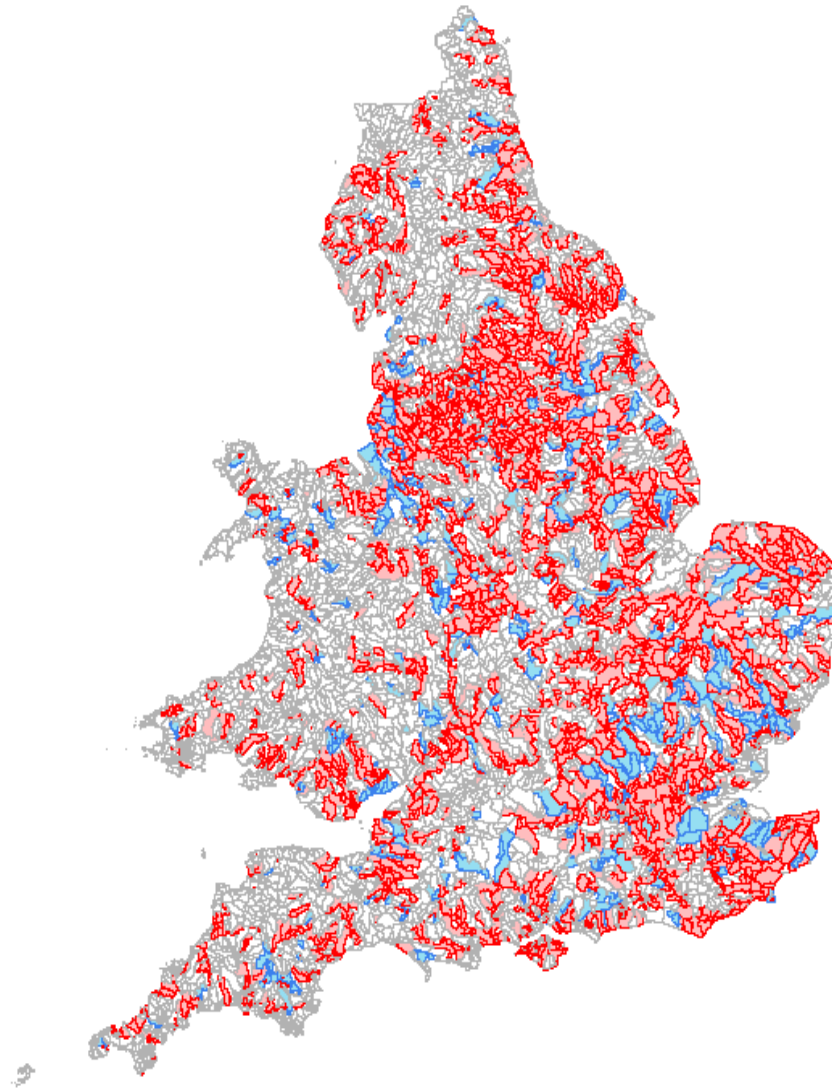


The Thames estuary is one of the most ecologically diverse estuaries in England and Wales, with over 45 species of fish resident at some stage in their lifecycle. Up to 350 benthic invertebrate species have been found during routine monitoring and the estuary plays a major role in supporting North Sea fish stocks. The catchment is also home to a number of invasive non-native species, including Mitten Crab and Zander.

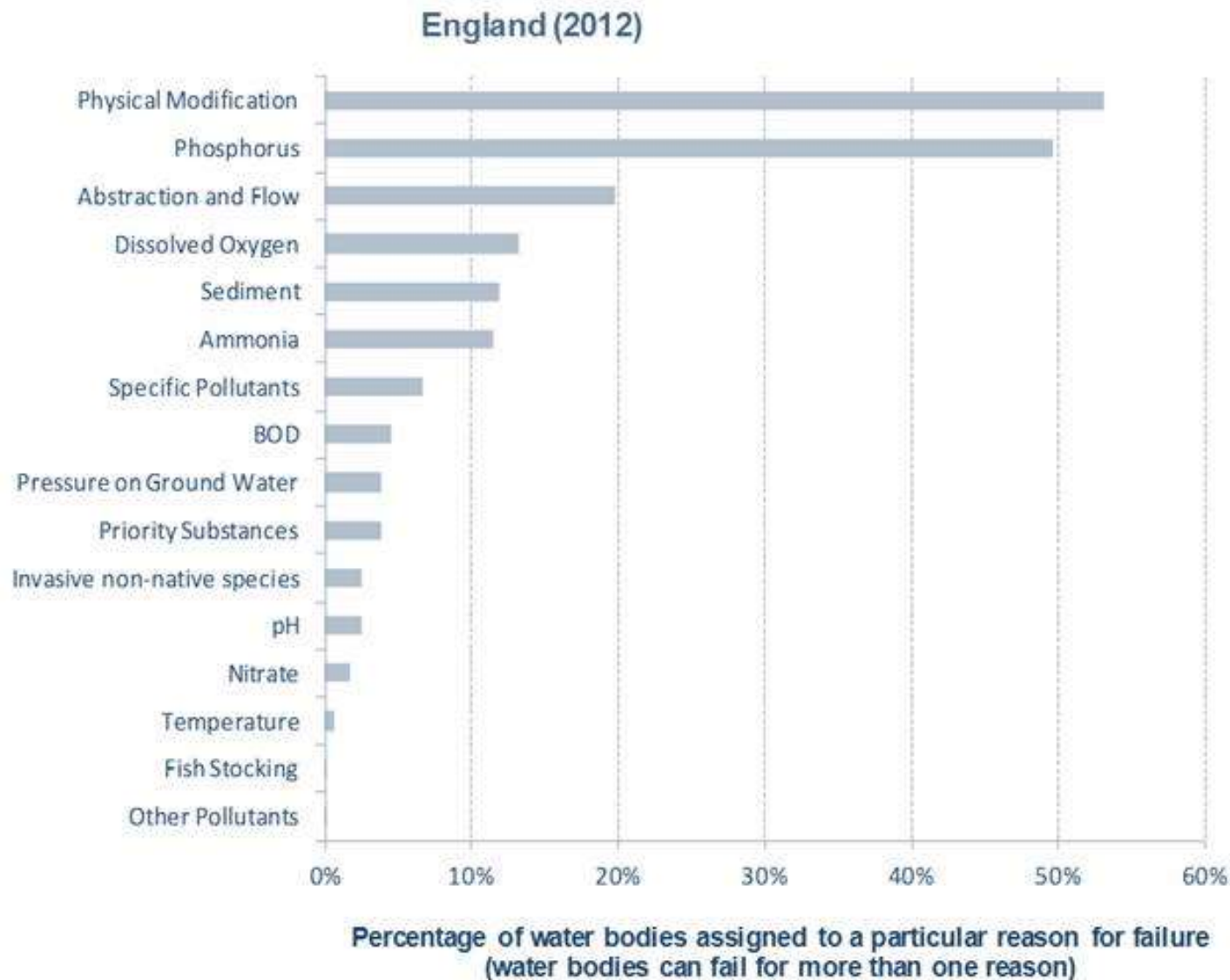
The estuaries and coastline provide varied biodiversity, recreation and industrial opportunities for the people living and working in the Thames River Basin District. But this has lead to many environmental pressures being concentrated in this area.

The water quality concerns for the Thames estuary centre around the impacts of storm discharges from the five major sewage works which serve London and from the combined sewer network. These discharge to the estuary frequently, resulting in drops in dissolved oxygen, and increases in aesthetic pollution, risk to health and fish kills.

Failure against Water Framework Directive Standards, 2013



UK Reasons for failure from Environment Agency's Database, 2012



Water Framework Directive

Conclusion

- Integrated River Basin Management has been essential in the protection and improvement of the water environment in UK
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- It sets a timetable for improvement
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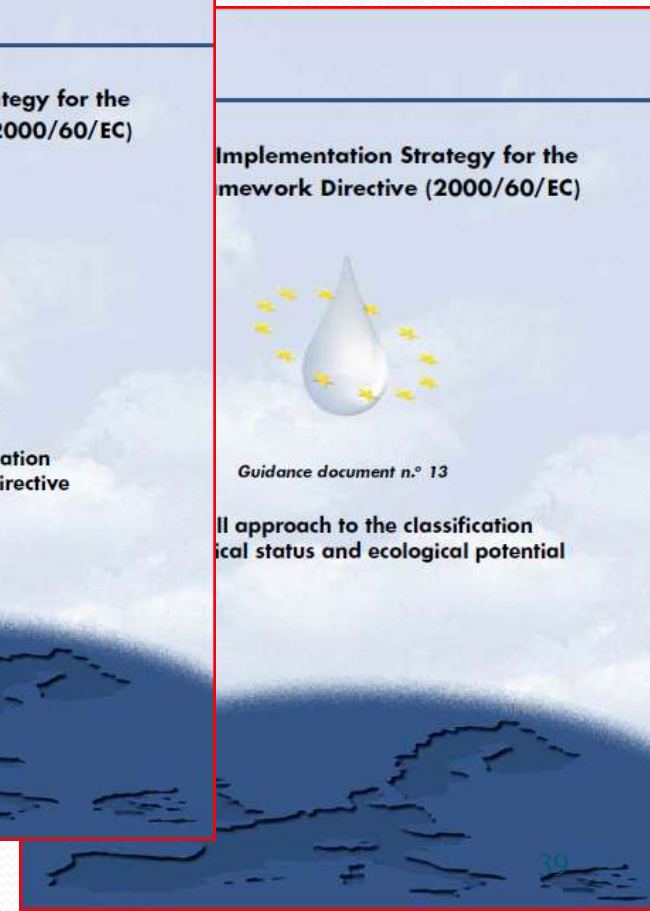
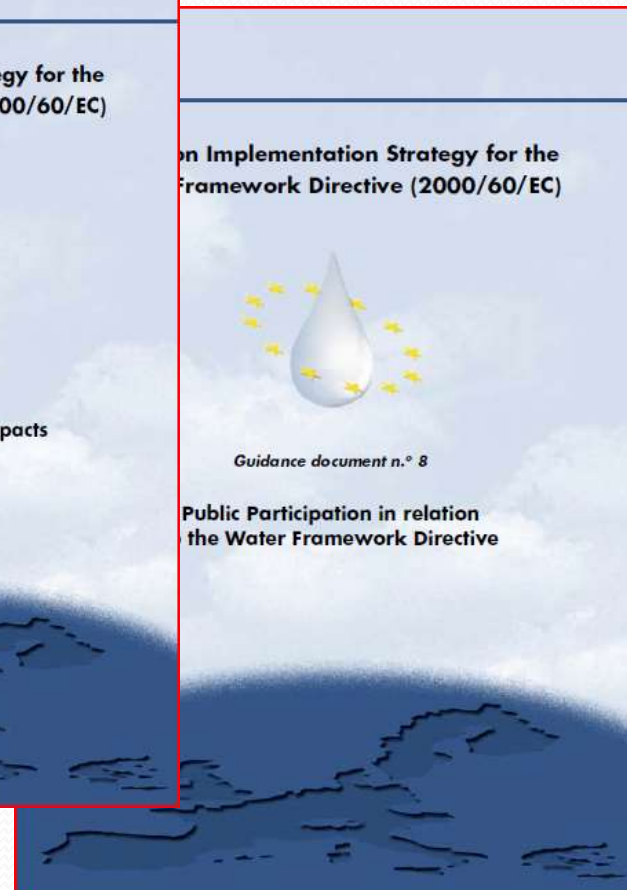
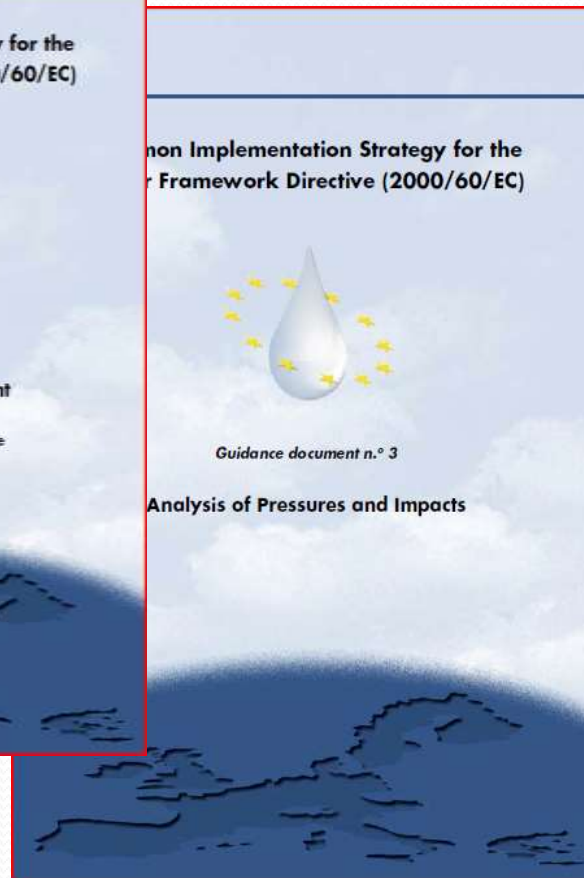
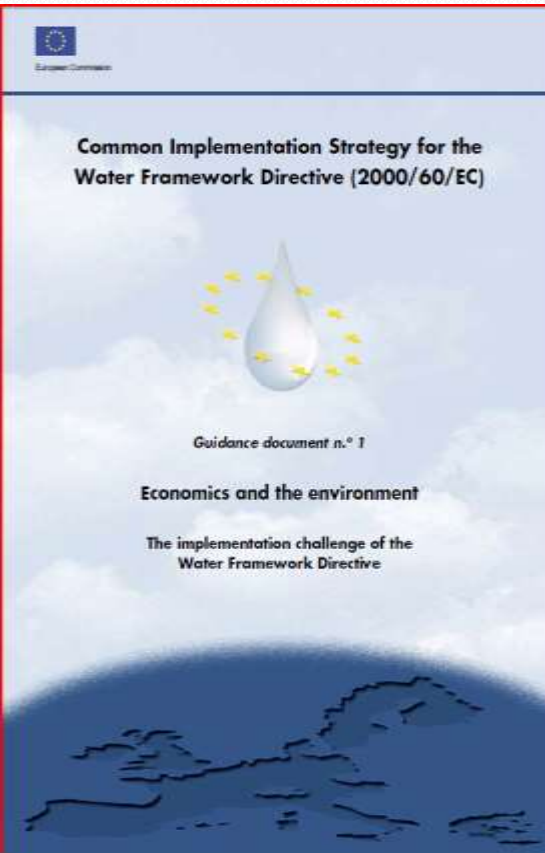
Optimise resources within a river basin

The Challenge Ahead



Water Framework Directive

Common Implementation Strategy



Water Framework Directive Overview

Environment Agency – River Basin Management Plans – Update 2015

<https://www.gov.uk/government/collections/river-basin-management-plan-update#thames-river-basin-district-rbmp>

Foundation for Water Research, Water Framework Directive Information Centre

<http://www.euwfd.com/>

UK Technical Advisory Group (UKTAG) <http://www.wfduk.org>

WFD CIRCA

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

Department for Environment, Food & Rural Affairs (DEFRA)

<http://www.defra.gov.uk>

Environment Agency (EA)

<http://www.environment-agency.gov.uk>

Environment Agency, February 2006. Water for life and livelihoods. A Framework for River Basin Planning in England and Wales – Summary

Environment Agency, March 2005 ,WATER FRAMEWORK DIRECTIVE Summary report of the characterisation, impacts and economics analyses required by Article 5 - SOUTH WEST RIVER BASIN DISTRICT

Environment Agency, January 2010. Water for life and livelihoods: First Cycle River Basin Management Plans

<http://wfdconsultation.environment-agency.gov.uk/wfdcms/en/southwest/Intro.aspx>

EU, 2012, Blueprint for water security

http://ec.europa.eu/environment/water/pdf/blueprint_leaflet.pdf

Environment Agency, 2013,Water for Life and Livelihoods - Highlighting issues for the second WFD Plan

Griffiths, Jin Hai and Liu Dengwei, June 2013, Water 21, Water Security in China and Europe