River Basin Management in Europe

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EU Water sector legal acts prior to the introduction of Watershed management concept

- Acts aimed to control particular substances
- Acts controlling pollution from different sources (point or defuse sources)
- Acts controlling different polluting activities (Industry, agriculture etc.)
- "ELV" versus "EQS" acts
- Acts targeting protection of certain ecosystem components (fish etc.)
- Acts protecting different water bodies (groundwater, surface water etc.)
- Acts protecting water for different uses (bathing, drinking etc.)

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

or

Water Framework Directive

Integration – a key concept of WFD (1)

- Integration of water legislation into a common framework
- Integration of environmental objectives (ecological, chemical and physical quality, quantity)
- Integration of all water resources (surface and groundwater) at the river basin scale;
- Integration of water management between countries with shared river basins
- Integration of disciplines, analyses and expertise (hydrology, economy etc.)

Integration – a key concept of WFD (2)

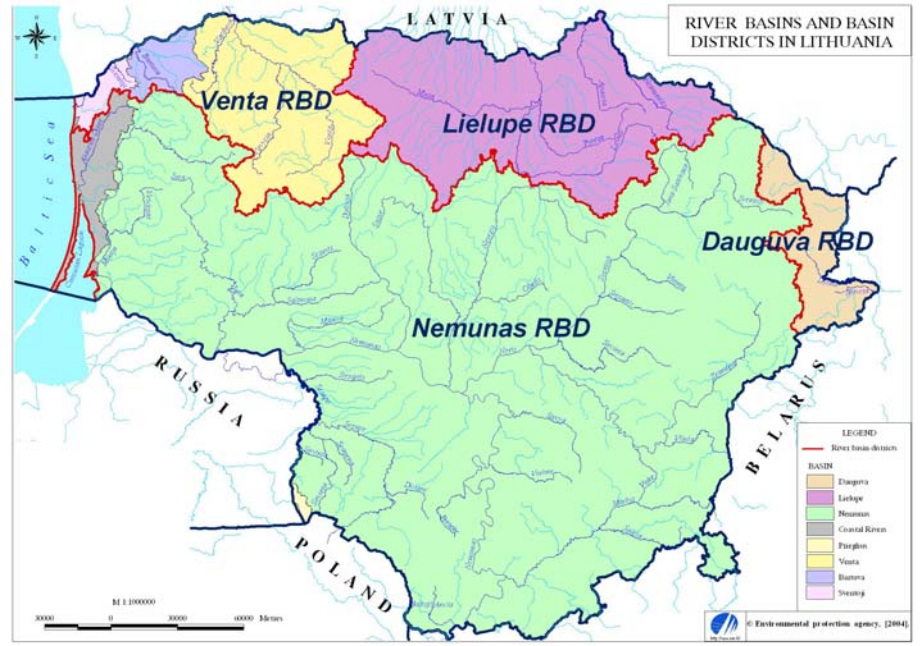
- Integration of a wide range of measures into a common management approach for achieving the environmental objectives (Basin management plans)
- Integration of stakeholders and the civil society in decision making
- Integration of different decision-making levels

Steps towards Basin Management Plan

- Administrative arrangements
- Characterization of Catchment
- Status assessment, problems identification
- Setting of Objectives
- Program of Measures
- Basin management plan
- Implementation of PMs
- Monitoring of Progress

Administrative arrangements

- Formation of river basin districts (RBDs)
- Appointment of competent authority for RBD
- Distribution of responsibilities among institutions
- International agreements



Water status classification system (1)

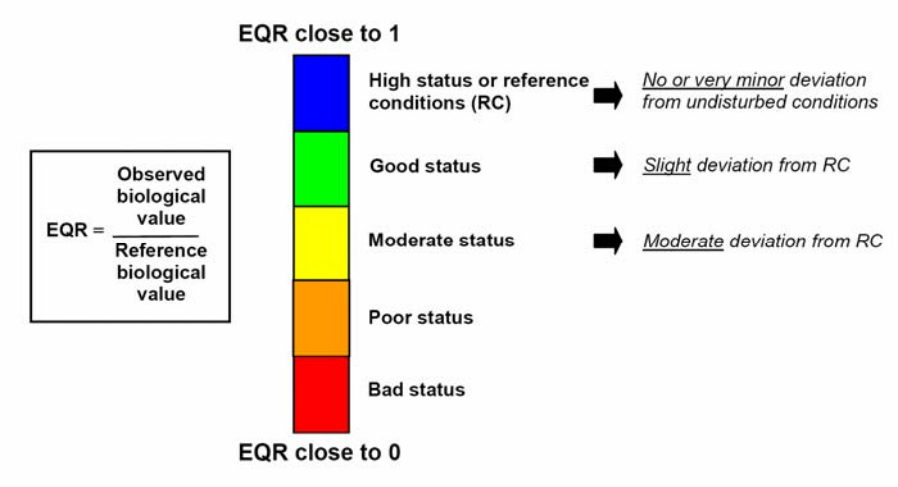
- Status is measured relative to undisturbed reference conditions (RCs)
- **Integrated assessment:**

  biology (phytoplankton, macrophytes and phytobenthos, benthic invertebrates, fish)

  hydromorphology, hydrology, chemistry

  physical conditions (nutrients, salinity, pH, oxygen, acid neutralising capacity, t0)
- Overall status defined by poorer of Ecological (5 classes) and Chemical (2 classes) status

Water status classification system (2)



Water status classification system (3)

- Different water body groups - different RCs.
- Therefore, development of Typology of water bodies is needed
- The more types – the more RCs and the water status classification systems

Factors that could be considered when developing Typology:

- Altitude, latitude, longitude, geology, catchment size, depth, salinity, tides, river discharge, slope, current velocity, wave exposure, residence time and any other factor affecting natural conditions (especially biological) and resulting in natural differences in RCs.

Setting of Objectives (1)

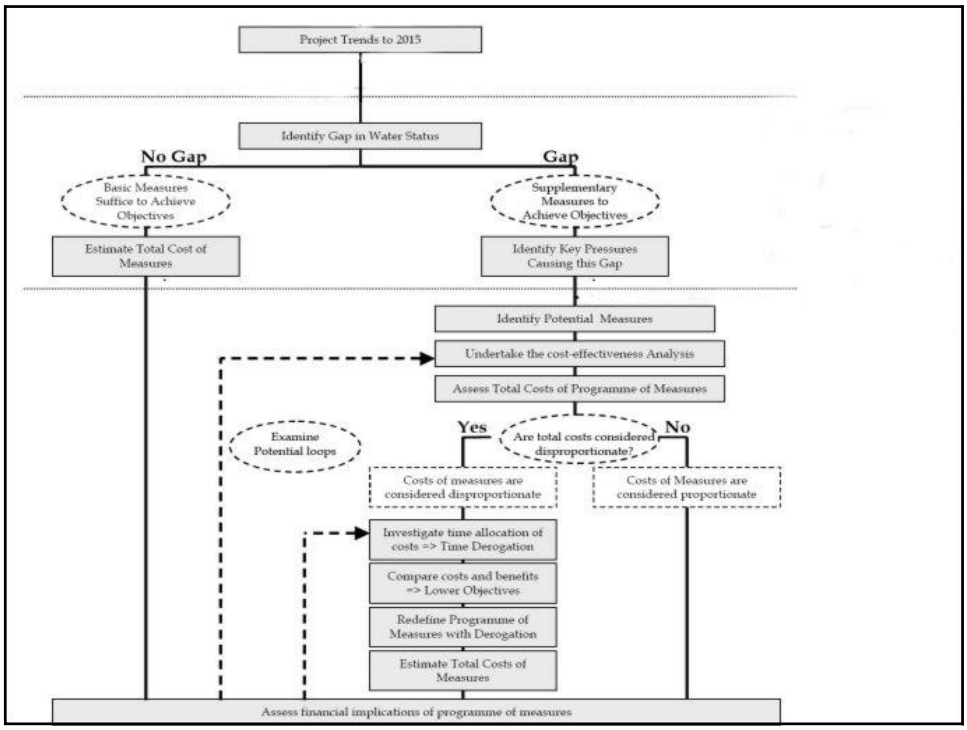
The Objective for all waters – GOOD STATUS

However, there are certain conditions for derogations

Setting of Objectives (2)

Time derogations or less stringent objectives under any of these conditions:

- Technically infeasible to reach “Good status”
- Natural conditions do not allow to reach “Good status”
- Disproportionally expensive to reach “Good status” and because the **overriding social and economic needs** served by the current or planned polluting activity can’t be satisfied by other means which are better environmental option without entailing disproportionate costs



Program of Measures (1)

- Structural (construction of WWTPs etc.)
- Legal (restrictions on activities etc.)
- Permitting
- Controlling
- Economical (fines, taxes, subsidies etc.)
- Environmental impact assessment of planned activities
- Campaigns
- Voluntary agreements

Program of Measures (2)

- Basic measures (obligatory)
- Suplementary measures (if Objectives are not to be achieved by the Basic measures)

Basic measures (1)

- Recovery of costs for water services (polluter pays principle)
- Promotion of efficient and sustainable water use
- Ensuring Good quality drinking water (esp. by protecting the "source")
- Controls of water abstraction and impoundment (prior authorization)
- Controls of artificial groundwater recharge (prior authorization)
- Emission controls from point sources (bans of sbst., permits based on BAT)
- Emission controls and prevention from non point sources (bans on sbst., permits, good agricultural practice, manure storage facilities etc.)

Basic measures (2)

- Controls for hydromorphological alterations
- Bans to discharge pollutants to groundwaters
- Measures to stop surfice waters pollution by priority (dangerous) substancies
- Measures to avoid accidents and prevent and mitigate their adverse effects
- Construction of WWTPs
- Fullfilment of requirements for Protected areas
- Environmental Impact Assessment
- Controls over the use of pesticides
- Measures to ensure adequate quality of "Bathing waters"
- Measures to ensure a proper use of sewage sludge

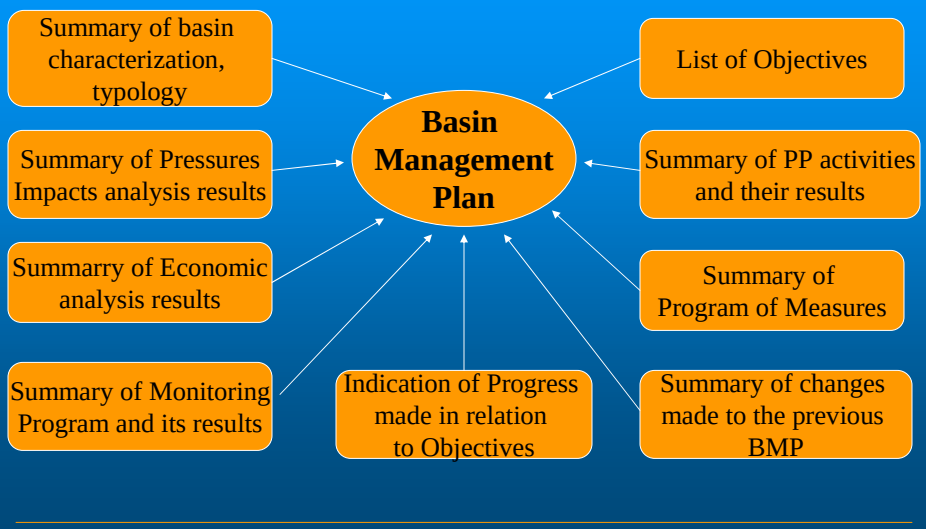
Supplementary measures (1)

- Legislative instruments
- Administrative instruments
- Economic or fiscal instruments
- Negotiated environmental agreements
- Emission controls
- Codes of good practice
- Recreation and restoration of wetlands areas
- Abstraction controls
- Demand management measures (promotion of adapted agricultural production such as low water requiring crops in drought areas etc.)

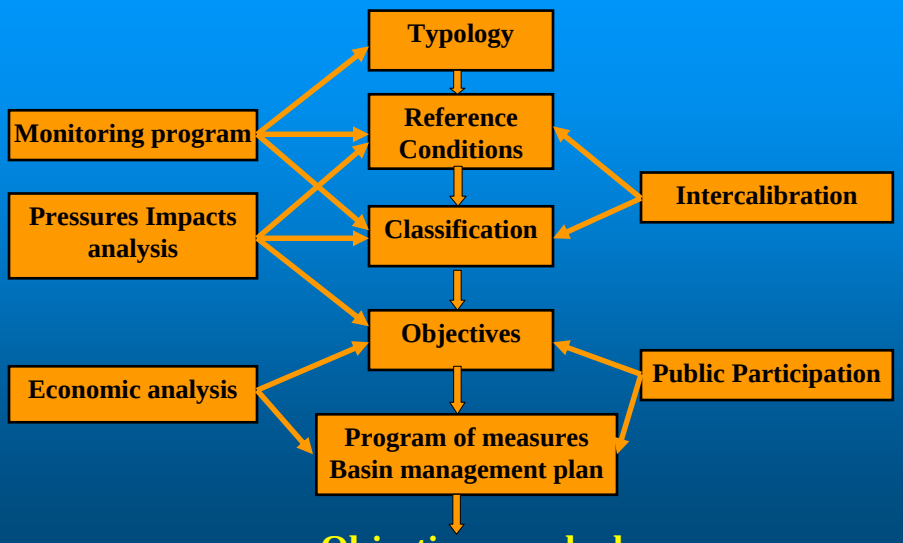
Supplementary measures (2)

- Efficiency and reuse measures (promotion of water-efficient technologies in industry and water-saving irrigation techniques etc.)
- Construction projects
- Desalination plants
- Rehabilitation projects
- Artificial recharge of aquifers
- Educational projects
- Research, development and demonstration projects
- Other relevant measures

Basin management plan



Detailed steps towards "Objectives"



BMP elaboration schedule (1)

Establishment of RBDs and CAs	2003 December
Characterization Typology RCs Pressures and Impacts analysis Baseline scenario (trends) Significant water uses Cost-recovery state	2004 December
Intercalibration Monitoring programme	2006 December

BMP elaboration schedule (2)

BMP elaboration Timetable and Workprograme for Public	2006 December
Significant water management Issues for Public	2007 December
BMP Draft for Public	2008 December
Program of Measures Basin Management Plan	2009 December
Program of Measures operational	2012 December
GOOD WATER STATUS	2015 December

Main implementation problems

- Lack of data (for elaboration of typology, RCs, establishment of links between chemistry and biology, pressures and impacts, physical elements and biology, identification of stakeholders)
- Lack of time (ambitious WFD timetable)
- Insufficient capacity
- Insufficient financial resources (mainly in new member states)

The RESULT- lots of "expert judgements" (typology, RCs…), assumptions

The SOLUTION - employment of iterative planning concept

Insufficient capacity

- Administration (lack of human resources and skills)
- Stakeholders, NGOs (lack of finances, awareness on basin management issues to act as a watch-dog or be equal partners while managing basins)
- Scientists (lack of awareness on emerging basin management issues, lack of their involvement due to financial costs)

Capacity building in Europe

- EU international Research projects to mitigate "insufficient data" problem
- Activities under "Common implementation strategy"
- Old Member states' support projects to former accession countries in implementing basin management concept
- Capacity building projects for local experts
- Organization of basin management courses for responsible national administrations

EU funded WFD-related research (1)

Project types (Clusters):

- CATCHMOD: Integrated catchment modelling and human aspects
- WFD-EQA: Ecological Quality Assessment and Reference Conditions
- ARID: Management of scarce water resources
- CITY-NET: Integrated Urban Water Management
- REBECCA: relationships between chemical/ecological status
- SWIFT: sampling, screening and testing methods

EU funded WFD-related research (2)

About 250 M€ invested on research in support to the WFD and other related EU Water policies in the period of 1998 – 2002.

EU funded WFD-related research (3)

Information on WFD related projects and their results available at:

www.cordis.lu/eesd/ka1/home.html

Common implementation strategy (CIS)

Involved parties: European Commission, Member states, Main Stakeholders, NGOs

CIS Goals:

- To develop a common understanding and interpretation of WFD requirements
- To avoid "embarrassment" in a big variety of possible solutions and minimize the risk of bad application
- Share information, raise awareness, contribute to capacity building
- Elaboration of EU-wide guidelines for implementation of basin management concept
- Testing of guidance documents in pilot river basins
- Develop "best practices" document, manual for local basin managers

Current CIS working groups

- WG on Ecological status
- WG on Groundwater
- WG on Integrated basin management
- WG on Reporting

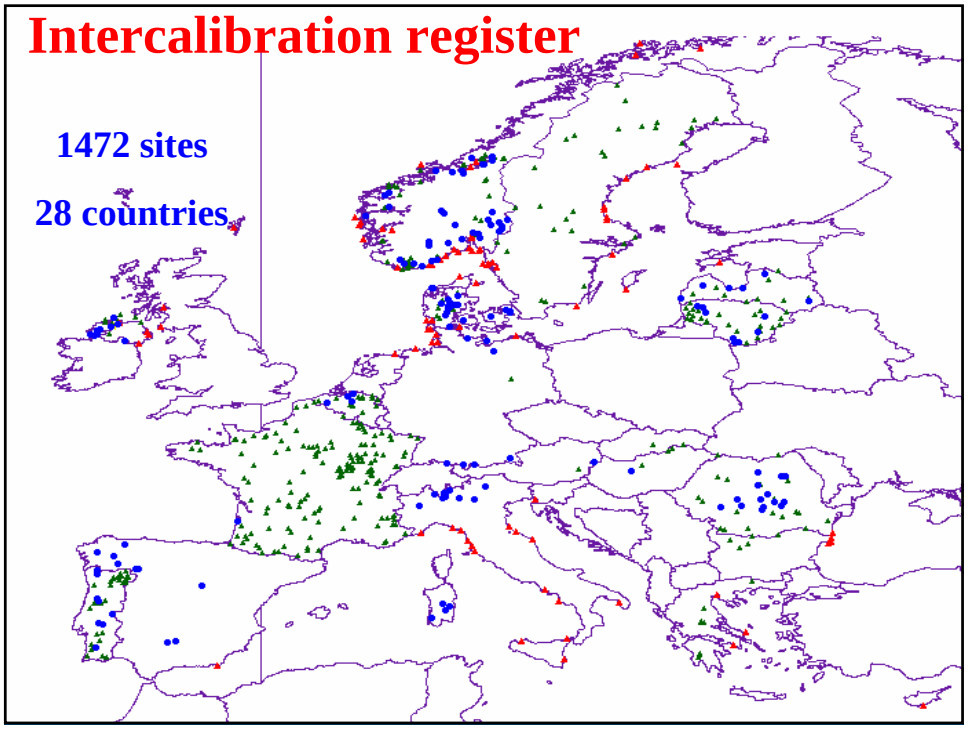
CIS outputs

- Approximately 2000 pages on 14 guidance documents:

  RBDs identification; Water body identification; Economic analysis; Pressures impacts analysis; Reference conditions; Ecological classification; GIS elements in WFD; Intercalibration; Monitoring; Wetlands; Ecological classification and typology for coastal and transitional waters; Planning; Public participation; Designation of artificial and heavily modified water bodies;

- Summary of first PRB testing results

Intercalibration register



Capacity building projects for local experts

- The Daugava project in Latvia (Swedish support)
- The US EPA transboundary projects for Lielupe (Lithuania-Latvia) and Sesupe (Lithuania-Poland-Russia) basins
- The US EPA support for voluntary monitoring in Lithuania
- The US EPA project for NGOs to prepare them for the participatory watershed management (Latvia, Lithuania, Estonia, Russia)

Ongoing-foreseen capacity building projects in Lithuania

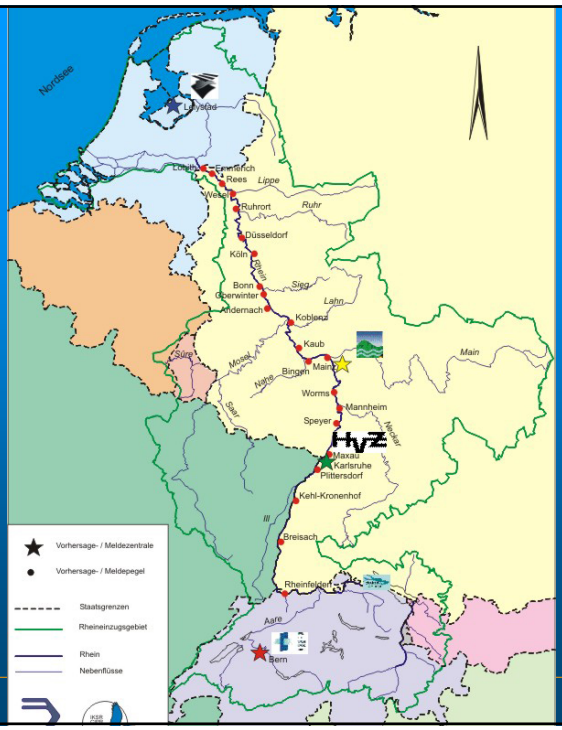
- The Northern Lithuania's basins project (Swedish support, just started)
- The Nemunas RBD management plan preparation project (Phare project, will start in 2005)

Success stories

- Not many because the WFD implementation have just started
- However, there are some owned to the early pre-WFD basin management initiatives

Successful Rhine basin management

- Rhine – probably the most famous and economically important rivers in Europe
- Area – 185 000 km^2, Length – 1 320 km
- Population – 50 mln



Antrophogenic pressures in the Rhine catchment

- Rhine area - Heart of Europe's economics:

  - Very widespread chemical, petrochemical, metal and other industries

  - The most intensive navigation in the World (Rotterdam – world's largest sea port, Duisburg - world's largest inland port)

  - Intensive agriculture

- 50 mln of population
- Abundance of dams, HES

Problems in the Rhine

- Result of pressures – since 1950s Rhine was known as "Europe's greatest sewer" with critically vanishing biodiversity, resources for drinking water supply, polluted bed sediments, the North Sea eutrophication

- Another problem – floods and their devastating damage (esp. for the Netherlands)

Response to the problems in Rhine

- International Commission for the Protection of the Rhine against Pollution (ICPR), established in 1950
- The ICPR emerged as the body which:
  - served as a platform for cooperation of countries' experts (150) in specifying goals, measures etc.
  - established contacts with stakeholders (economic sector, municipalities, environmental NGOs)
  - was responsible not only for technical questions and scientific analysis, but also for drafting recommendations, action programs, conventions for approval of countries' ministers
  - coordinated countries' efforts to "save the Rhine"

Measures taken by ICPR and Parties to solve Problems in Rhine (1)

- For prevention of accidents (spills) and liquidation of consequences:
  - - Inventory of "dangerous objects"
  - - Environmentally more friendly technology
  - - Safety measures (fire safety regulations, storage facilities for fire extinction water, overflow safety devices, storing of substances together regulations etc.)
  - - On site plan in case of accidents
  - - Warning and alert system (common surveillance, warning centers, predictive models)
  - - Participatory EIA

Measures taken by ICPR and Parties to solve Problems in Rhine (2)

- For Point pollution handling:
  - Target values (EQS) for dangerous substances
  - ELVs for dangerous substances
  - construction/modernization of WWTPs
  - Requirement for BAT in industries and WWTPs
  - Raising of connection rate of inhabitants to WWTPs
  - International agreement on collection and acceptance of bilge water from ships

Measures taken by ICPR and Parties to solve Problems in Rhine (3)

- For returning fish and solving floods problem:
  - Construction of fish passages
  - Bans to catch salmon all year round
  - "Giving space" for rivers by connecting the flood plain with river (lower floods, nutrients retention, enhances spawning grounds and wetlands habitats)

Results of measures in the Rhine Catchment

- Inputs of “dangerous substances” reduced by 70-100 % (1985-2000) or even undetectable
- Connection rate to WWTPs improved from 85 to 95 % (1985-2000)
- Warning reports decreased from 60 to 15 per annum (1985-2000)
- Fish already edible (except eel)
- Salmon, water fowl is back, biodiversity closing to natural

Use of ICPR experience

ICPR served as a model for WFD and Other transboundary Commissions and Conventions founded in 1990s:

- Elbe (1990)
- Danube (1994)
- Meuse and Scheldt (1994)
- Odra (1996)

Thank You for Your Attention!