

Water Renovation in Ukraine

Project no. 22320101



Water policy of UE

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History of Water Policy



- **First wave of legislation 1975**
 - with subsequent legislation; binding quality targets, quality objective legislation on fish waters, shellfish waters, bathing waters and groundwaters
- **Second wave of legislation 1988-early nineties** addressing urban and agricultural pollution in water
 - the Urban Waste Water Treatment Directive and the Nitrates Directive, addressing water pollution by nitrates from agriculture.
- **EU Rethink 1995: Third Wave**
 - Whilst EU actions of the past such as the Drinking Water Directive and the Urban Waste Water Directive can duly be considered milestones, European Water Policy has to address the increasing awareness of citizens and other involved parties for their water. At the same time water policy and water management are to address problems in a coherent way. This is why the new European Water Policy was developed in an open consultation process involving all interested parties.
- The result is **The Water Framework Directive**

History of Water Policy



- 1988 Council requested Commission to propose improvisation of water quality
- 1991 Hague Ministers requested programme of actions management and protection of freshwater resources by 2000
- 1996 Communication and Presentation of Water Framework Proposal to EP and Council-Action Programme for integrated protection and management of groundwater
- Result: The final proposal is a key initiative aimed at improving water quality and applies to rivers, lakes, groundwater and coastal waters.

Water management before 2000

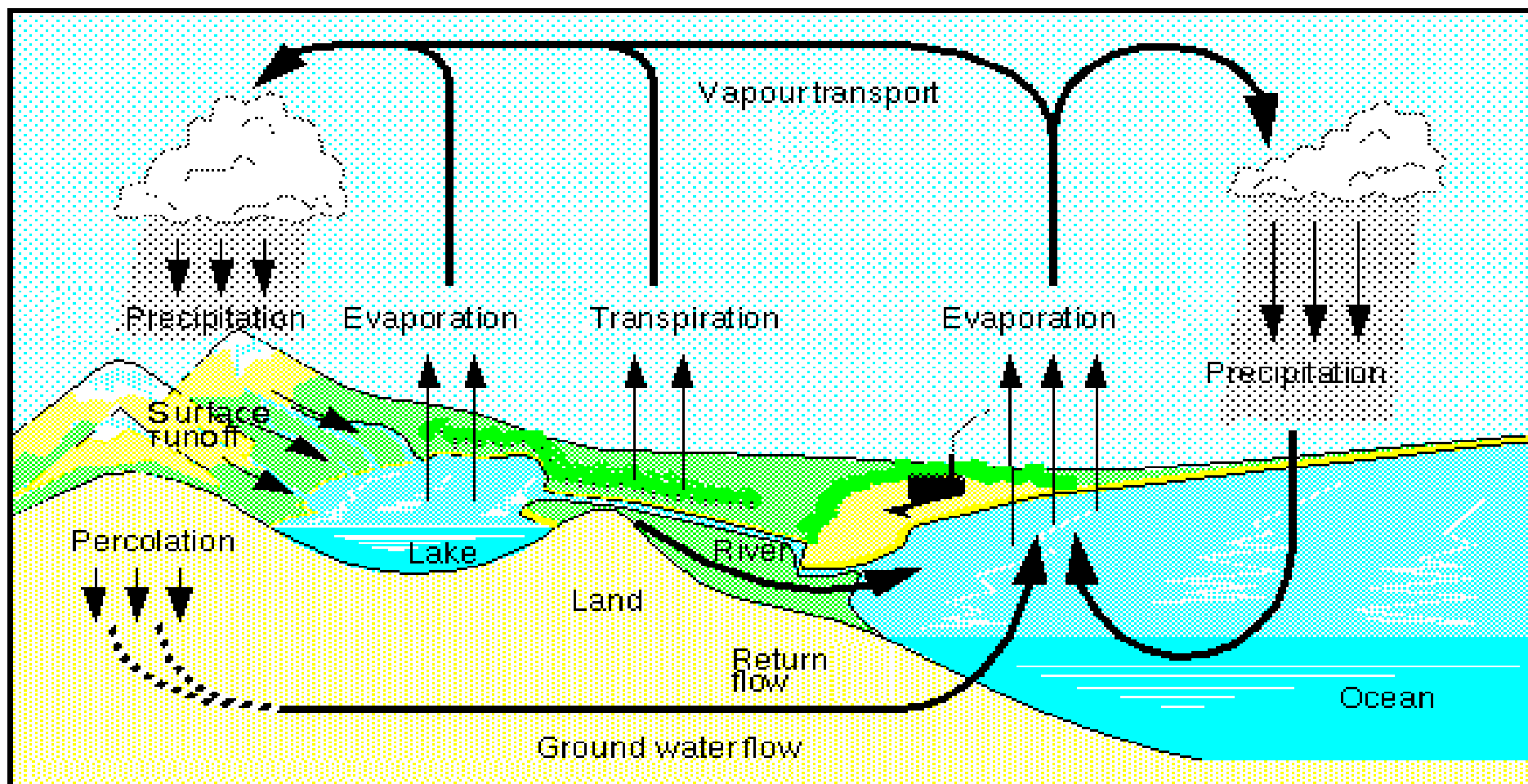


- Sector based approach with focus on chemicals and nutrients
- Patchy legal EU requirements + several national approaches

→ As a result in 2000 the Water Framework Directive (WFD) was introduced

To which waters does WFD apply?

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WFD Overview

- Legal Framework
- River Basin Districts
- All Waters
- Water Management Principles



WFD Objectives

- “Good status” must be achieved by 2015 of all Community waters (inland surface and groundwaters and coastal waters)
- No further deterioration
- Progressive reduction of pollution of priority substances and phase-out of priority hazardous substances in surface waters
- Prevention, limitation and reversal of any significant upward trend of pollutants in groundwaters;
- No overexploitation of groundwaters;
- Use of water resources must be sustainable throughout Europe

The logo for the Visegrad Fund, featuring four blue dots arranged in a square pattern to the left of the text "Visegrad Fund".

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Key Principles

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- Expand scope water protection to include all inland waters and coastal zones
- Achieve “good status” for all EU waters by 2015

Two Elements:

- Good Ecological Status
- Good Chemical Status
- (Quantitative Status for ground waters)



Ecologic Status:

- Biological community
- Hydrological characteristics
- Chemical characteristics

Chemical Status:

- Compliance with all the quality standards established for chemical substances at European level.

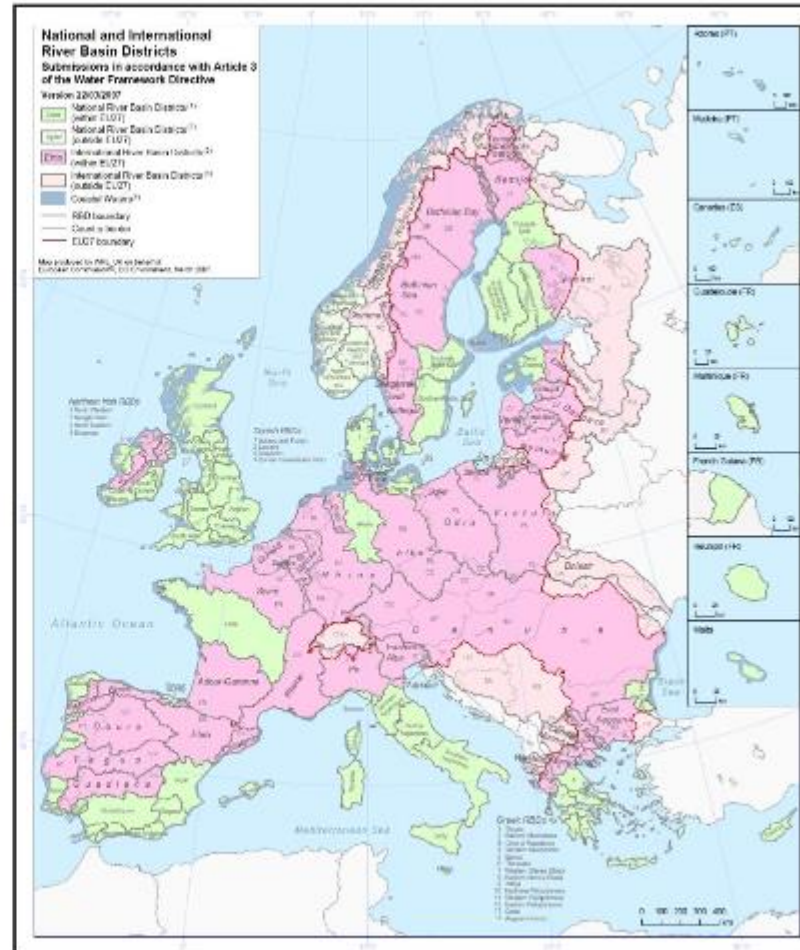
Quantitative Status:

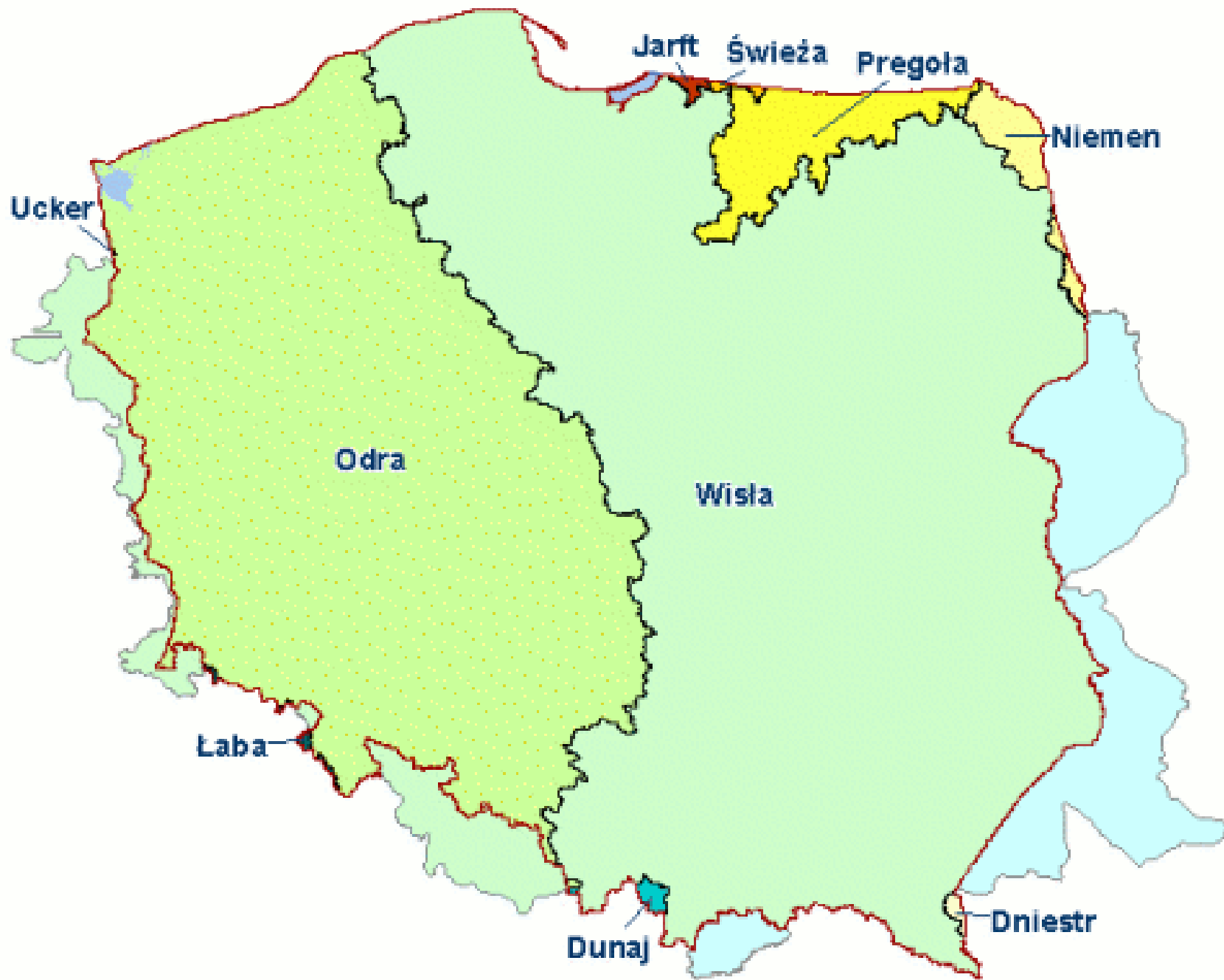
- Maintain environmental flows

River Basin Approach

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- Use the natural geographical and hydrological unit - instead of according to administrative or political boundaries
- River Basin Management Plans (RBMP) for each river basin district
- Co-ordination on transboundary river basins (in EU and outside)





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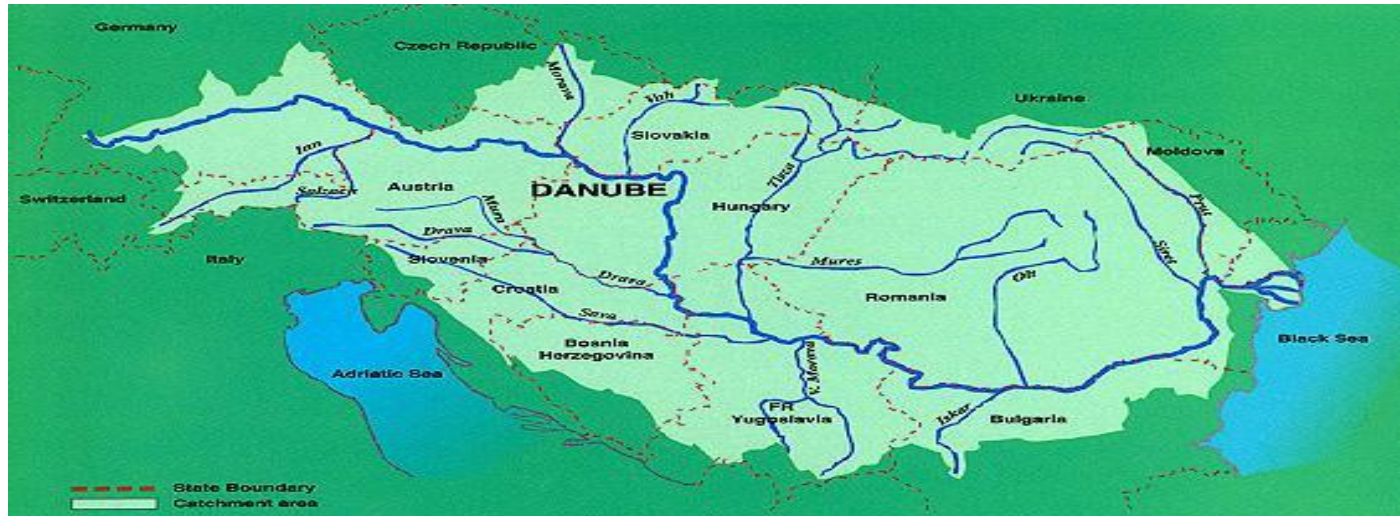
River Basin Districts

WFD is based on river basin district plans

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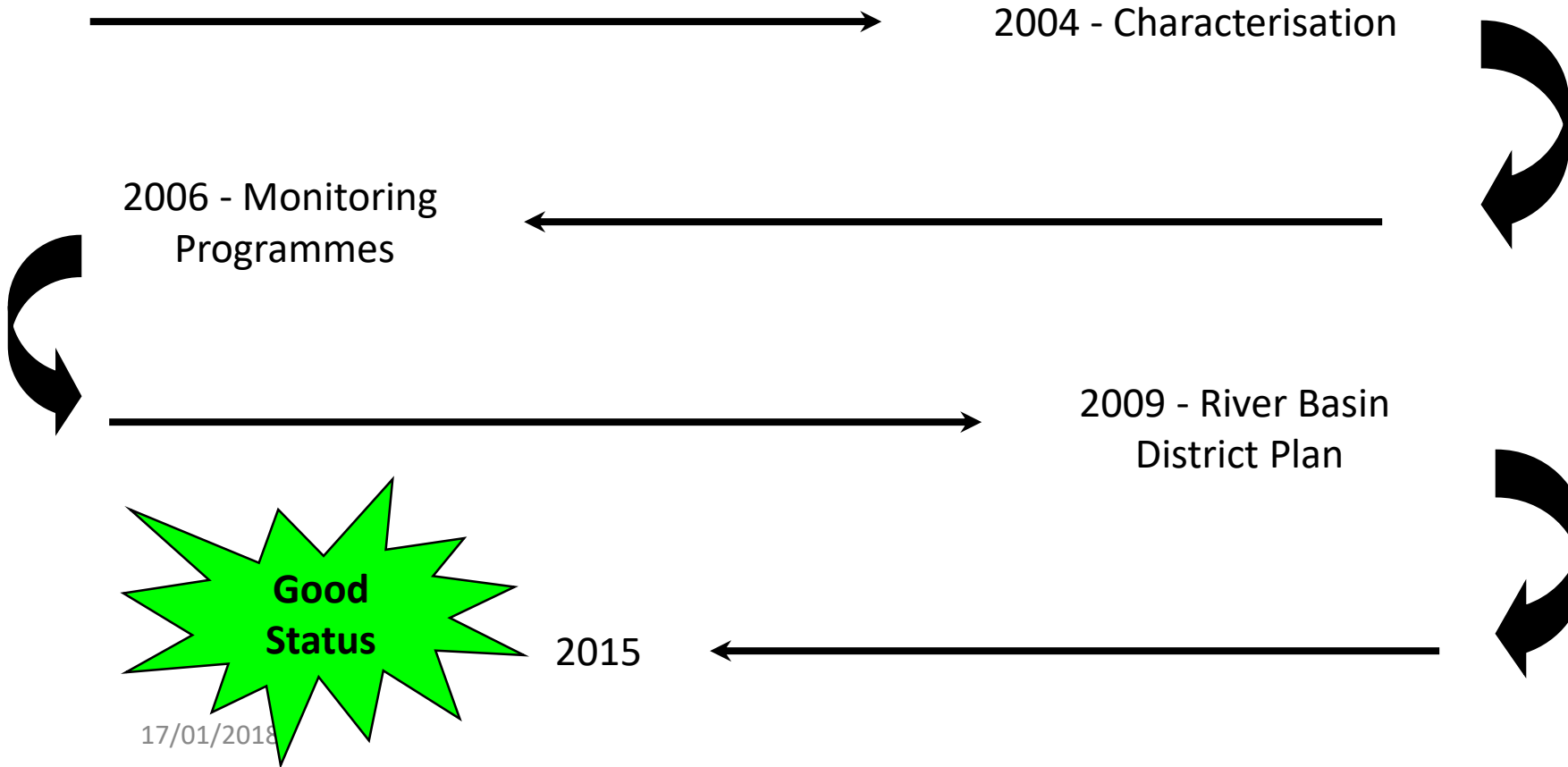


The Danube River Basin

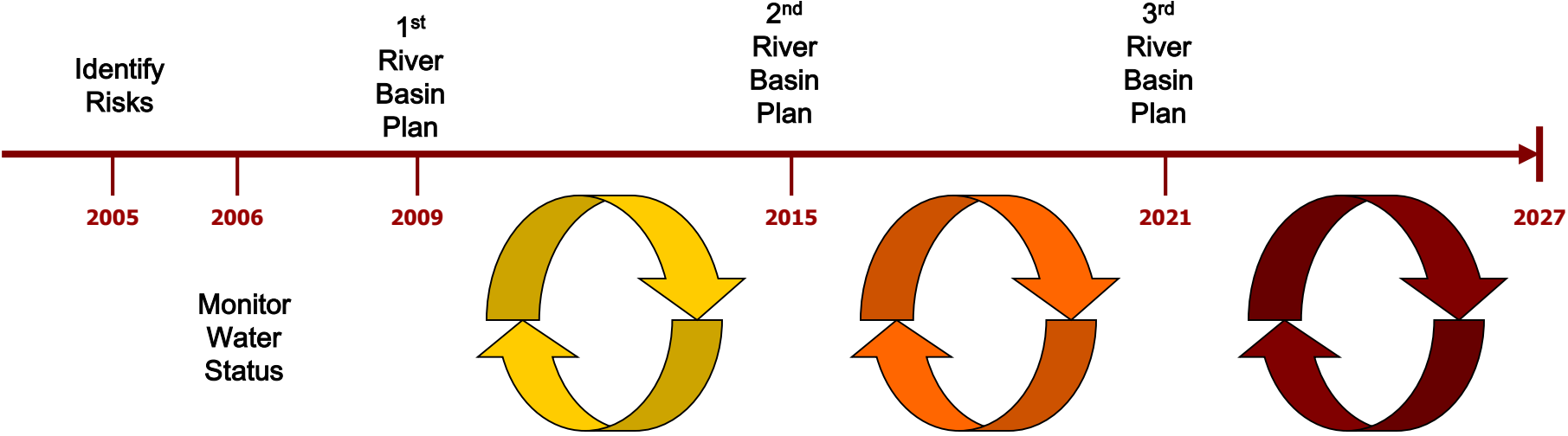


- Is the EU's largest international river basin district stretching across 10 Member States and nine neighboring countries
- Implemented according to a single-wide coordinated IRDB Management Plan
- Varied challenges such as mountain streams, major rivers, ground water bodies Danube Delta and Black Sea coastal waters
- Cooperation commenced in 1856 and in 1994, 14 countries signed a convention for protection and sustainable management of the river basin, working together to reduce pollution with strong support from the EU

TIMESCALE



WFD – Planning Cycles



WFD Implementation

| Year | Issue |
|------|---|
| 2000 | Directive entered into force |
| 2003 | Transposition Identification of River Basin management plan and Managing Authorities |
| 2004 | Characterisations of river basin: Pressures, impacts and economic analysis |
| 2006 | Establishment of monitoring network |
| 2008 | Draft RBMP and start public consultation (at latest) |
| 2009 | Finalize RBMP including programme of measures |
| 2010 | Introduce pricing policies |
| 2012 | Operationalize programme of measures |
| 2015 | Meet environment objectives, 1 st management cycle ends, 2 nd RBMPs |
| 2021 | 2nd management cycle ends |
| 2027 | 3 rd management cycle ends, final deadline form meeting objectives |

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Ecological status - Are biology and chemistry equally weighted?

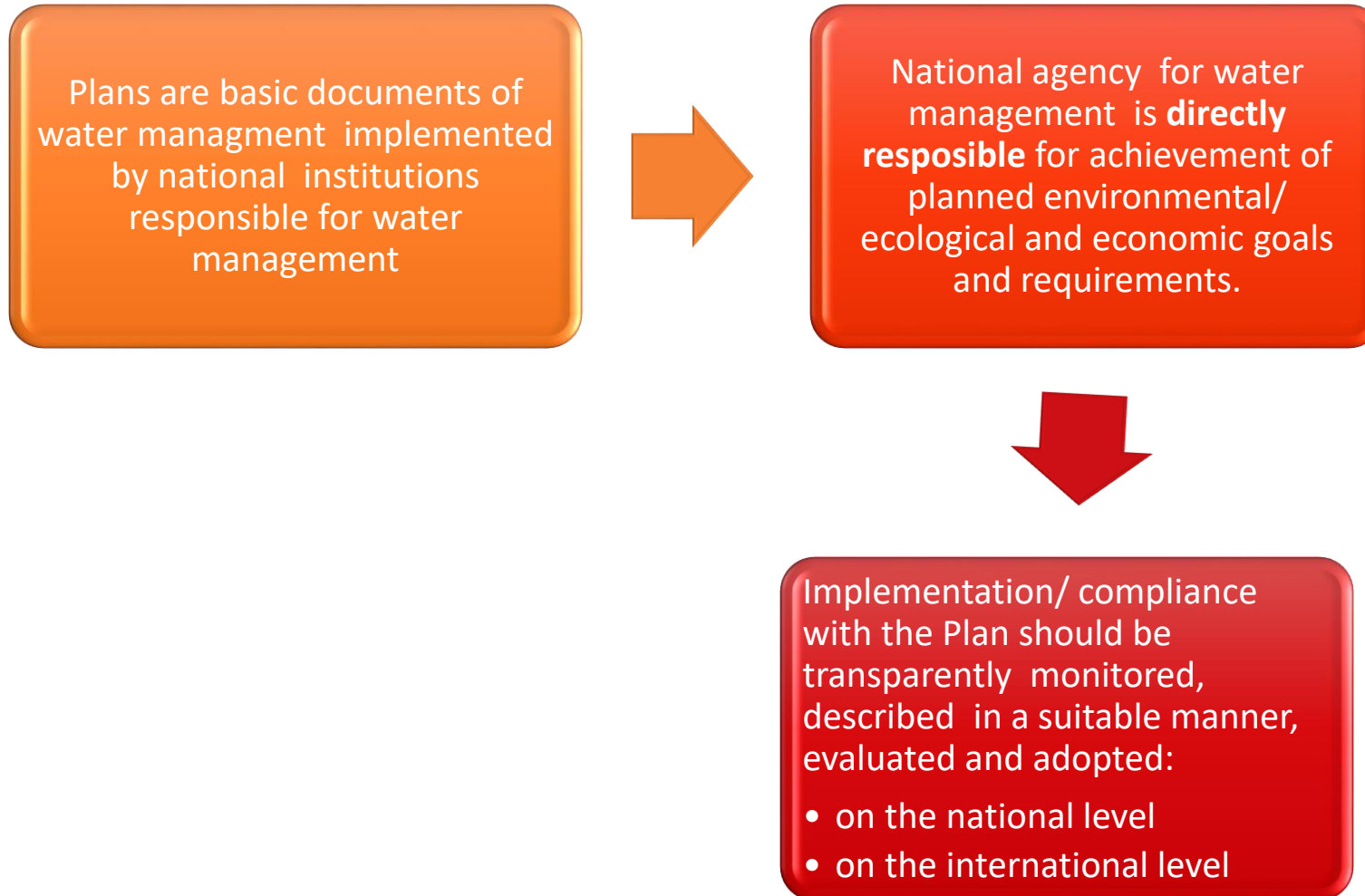


| | | | | | | | |
|-----------------|--|---|--|---|---|---|---|
| | | | | | | | |
| High | Undisturbed, normal. | Undisturbed. No detectable changes | Undisturbed. All sensitive taxa present. | Undisturbed | Undisturbed | Close to zero & at least below the limits of detection | Within the range of background levels |
| Good | Slight change from type specific. No accelerated growth or imbalance. | Slight change from type specific. No accelerated growth or imbalance. | Diversity and abundance slightly outside range. Most sensitive taxa present. | Slight change in abundance of sensitive species. | Allow ecosystem functioning for biological quality elements. | <EQSs | <EQSs |
| Moderate | Composition, abundance, biomass bloom frequency and intensity moderately differ from type specific conditions. | Composition and abundance moderately distorted from type specific conditions. | Diversity and abundance moderately outside range. Taxa indicative of pollution present. Many of sensitive taxa absent. | Moderate proportion of sensitive species absent due to anthropogenic impacts. | Conditions consistent with achievement of values specified for biological quality elements. | Conditions consistent with achievement of values specified for biological quality elements. | Conditions consistent with achievement of values specified for biological quality elements. |
| Poor | Biological communities deviate substantially from undisturbed conditions. | | | | | | |
| Bad | Large portions of biological communities are absent | | | | | | |

River Basin Management Plans (Article 13)

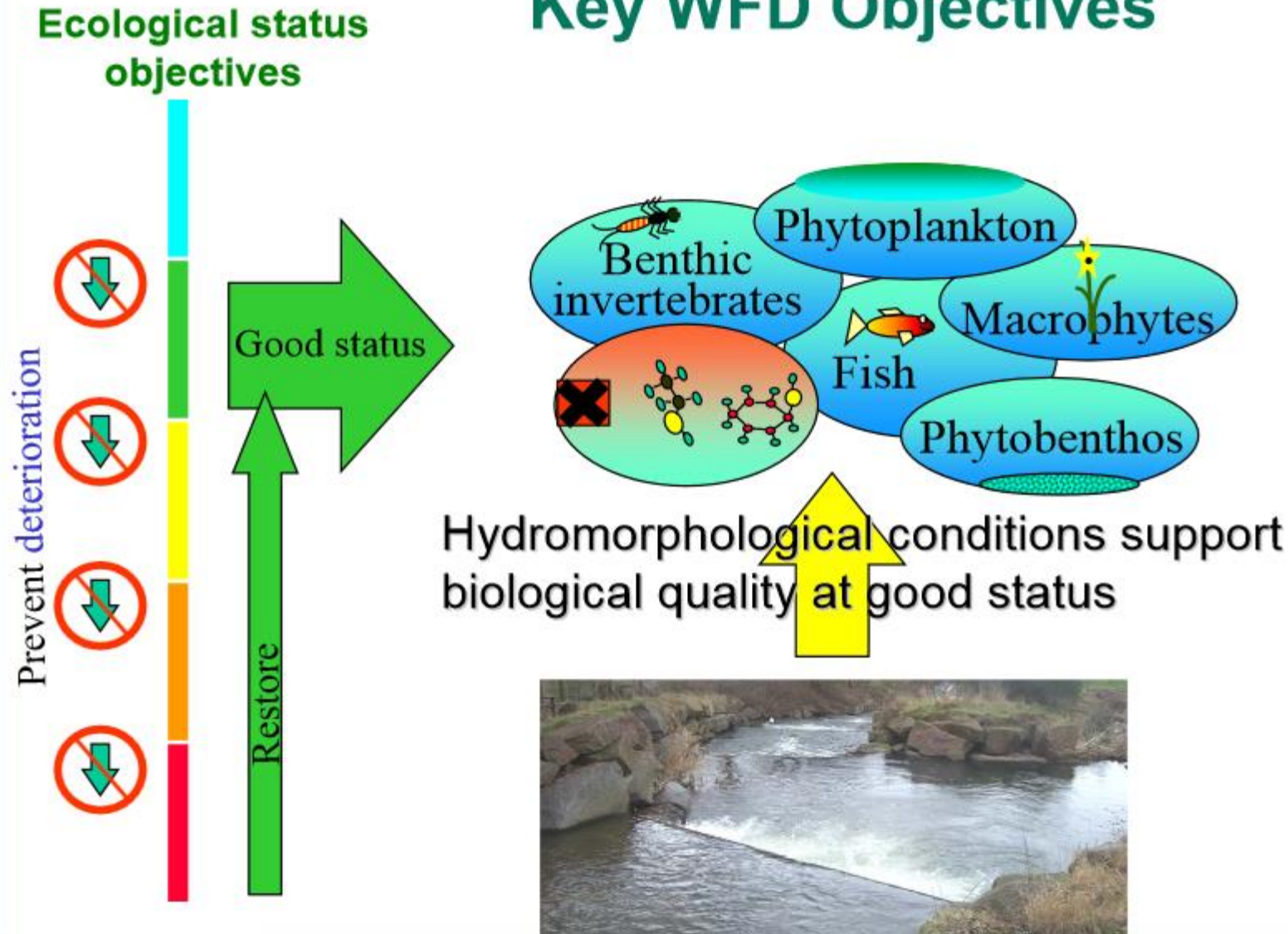
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- Description of the river basin including maps
- Summary of significant pressures and impact of human activity
- Map of monitoring network
- Summary of the economic analysis
- Summary of Programme of Measures
 - Report on steps taken to apply cost recovery
 - Summary of measures to ensure drinking water supply
 - Summary of measures to control water abstraction
 - Summary of controls for point source discharges
 - Identification of cases where direct discharges to groundwater are authorised
 - Summary of basic and supplementary measures
- List of additional programmes and plans that further detail work carried out under the WFD
- Summary of public information and consultation measures
- List of competent authorities and contact points



Key WFD Objectives

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Restoration of sediment transport and financial savings

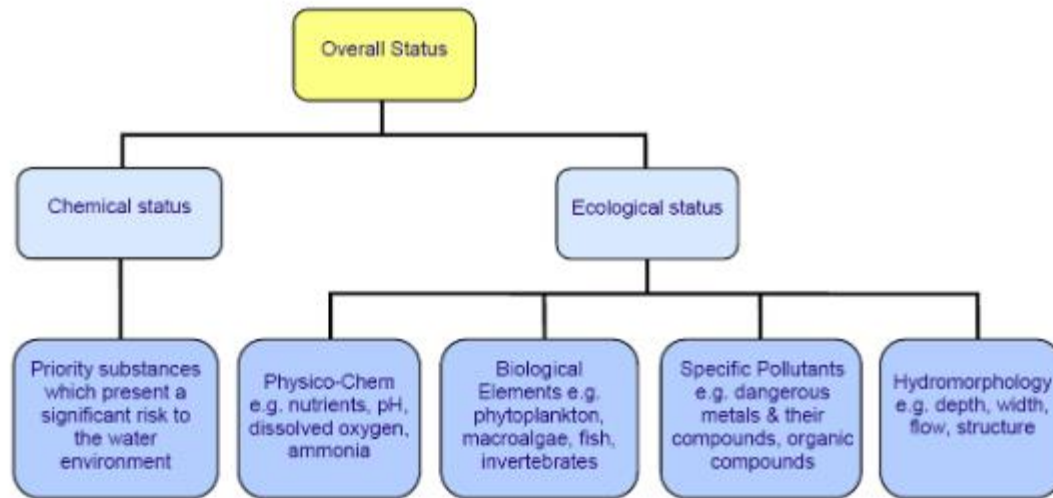
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WFD drivers

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- Achieve GES / GEP for ALL water bodies
- Includes Hydromorphology



HYDROMORPHOLOGICAL ASSESSMENT



ASSESSMENT CATEGORIES

CHANNEL

- Channel geometry
- Substrates
- Channel vegetation and organic debris
- Erosion/deposition character
- Flow
- Longitudinal continuity as affected by artificial structures

RIVER BANKS/ RIPARIAN ZONE

- Bank structure and modifications
- Vegetation type/structure on banks and adjacent land

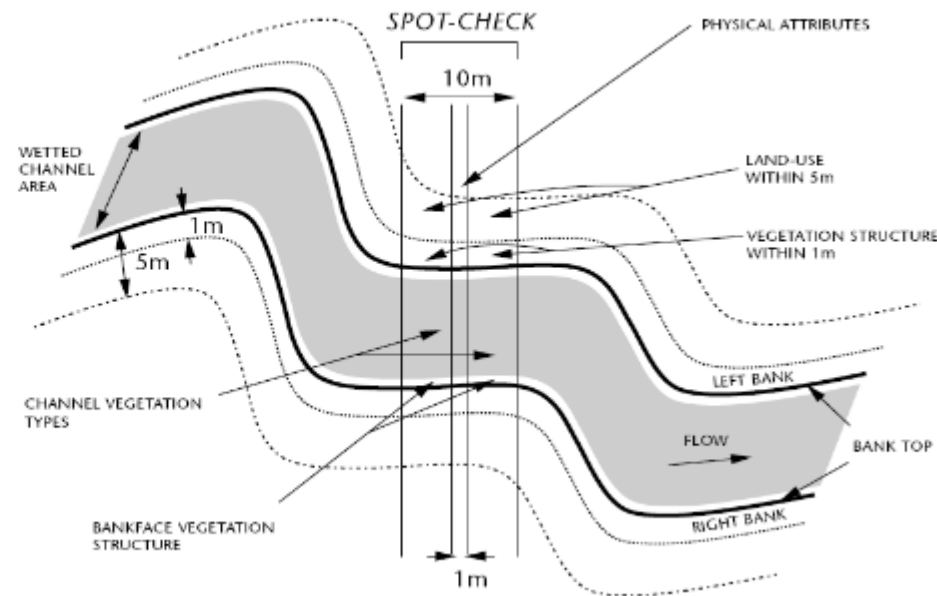
FLOODPLAIN

- Adjacent land-use and associated features
- Degree of (a) lateral connectivity and floodplain; (b) lateral movement of river channel

RHS methodology

- Characterises in broad terms, the physical structure of freshwater streams and rivers.
- Trained recorders
- RHS is carried out along a standard 500m length of river channel. Observations are made at ten equally spaced spot-checks along the channel, whilst information on valley form and land-use in the river corridor provides additional context.

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RHS recorded features

- **WFD**
- Hydrological regime
- Quantity and dynamics of water flow
- Connection to groundwater bodies
- River continuity
- Morphological conditions
- River depth and width variation
- Structure and substrate of the river bed
- Structure of the riparian zone

| Features recorded | At 10 spot-checks | In sweep-up |
|---|-------------------|-------------|
| Predominant valley form | | ✓ |
| Predominant channel substrate | ✓ | |
| Predominant bank material | ✓ | |
| Flow type(s) and associated features | ✓ | ✓ |
| Channel and bank modifications | ✓ | ✓ |
| Bankface and banktop vegetation structure | ✓ | |
| Channel vegetation types | ✓ | ✓ |
| Bank profile (unmodified and modified) | | ✓ |
| Bankside trees and associated features | | ✓ |
| Channel habitat features | ✓ | ✓ |
| Artificial features | ✓ | ✓ |
| Features of special interest | | ✓ |
| Land use | ✓ | ✓ |

HQA

HQA scoring i) flow types, ii) channel substrates, iii) channel features, iv) bank features, v) bank vegetation structure, vi) point bars, vii) in-stream channel vegetation, viii) land use within 50m, ix) trees and associated features and x) special features are considered and their all total sum was taken.

Can be used e.g. to quantify improvement or degradation of habitat quality. This scoring system shows basically the feature of the physical structure of the site (including channel and river corridor).

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| HQA | HQA Description | HQA Score |
|------------|------------------------|--------------------|
| 1 | Excellent | Within top 20% |
| 2 | Good | Between 61 and 80% |
| 3 | Moderate | Between 41 and 60% |
| 4 | Poor | Between 21 and 40% |
| 5 | Extremely poor | Within bottom 20% |

HMS

- HMS gives better information on the artificial modification on physical structure of the river
- scored points are based on the relative impact of the modification on habitat features.

A cumulative HMS score can be used to summarise the significance and the extent of structural alteration of the channel

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| HMC | HMC Description | HMS Score |
|-----|--------------------------|------------|
| 1 | Pristine / semi-natural | 0 – 16 |
| 2 | Predominantly unmodified | 17 – 199 |
| 3 | Obviously modified | 200 – 499 |
| 4 | Significantly modified | 500 – 1399 |
| 5 | Severely modified | 1400 + |

WFD reference conditions



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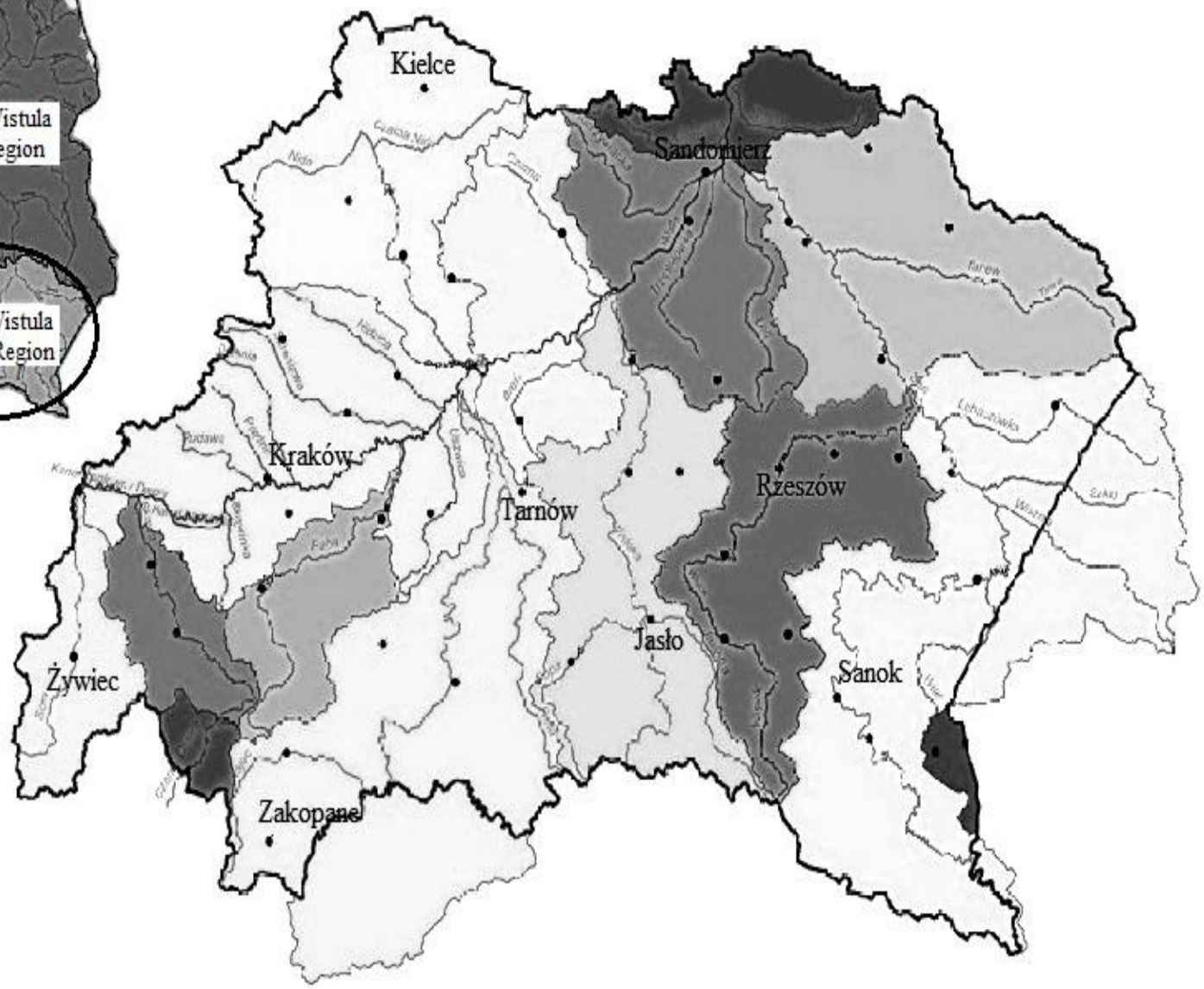
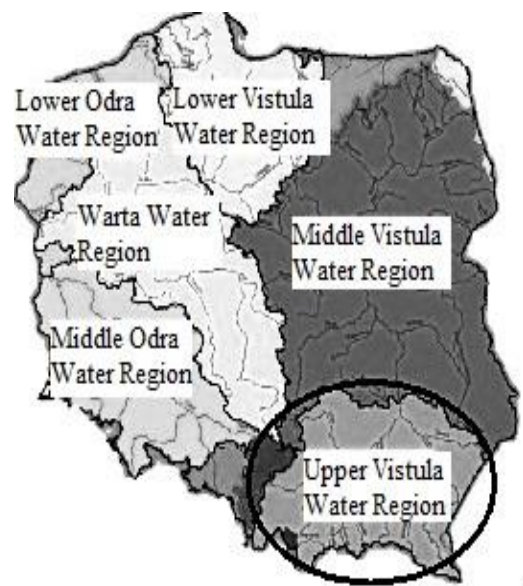
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- reflecting totally, or nearly totally, undisturbed conditions;
- lacking any artificial instream and bank structures that disrupt natural hydromorphological processes, and/or unaffected by any such structures outside the site;
- bed and banks composed of natural materials;
- planform and river profile: not modified by human activities;
- lateral connectivity and freedom of lateral movement: lacking any structural modification that hinders the flow of water between the channel and the floodplain, or prevents the migration of a channel across the floodplain;
- lacking any instream structural works that affect the natural movement of sediment, water and biota;

Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks

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MOUNTAIN RIVER



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Principles of the Floods Directive:

Member States define objectives based on local and regional circumstances;

Member States define measures and their **prioritisation**

Active involvement of all interested parties in the production, review and updating of the flood risk management plans (coordinated with the active involvement under the WFD);

Consider **land use policies, space for the river, natural water retention measures** and **climate change**;

Consider **relevant Directives**;

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Integrated river basin management: Coordinate measures throughout a river basin (coordinate FD and WFD planning);

Focus on **prevention, protection and preparedness** (floods forgotten by public after roughly 7 years)

Ensure **coordination and exchange of information** for international river basins;

Refrain from taking measures which significantly increase the risk of flooding in other Member States

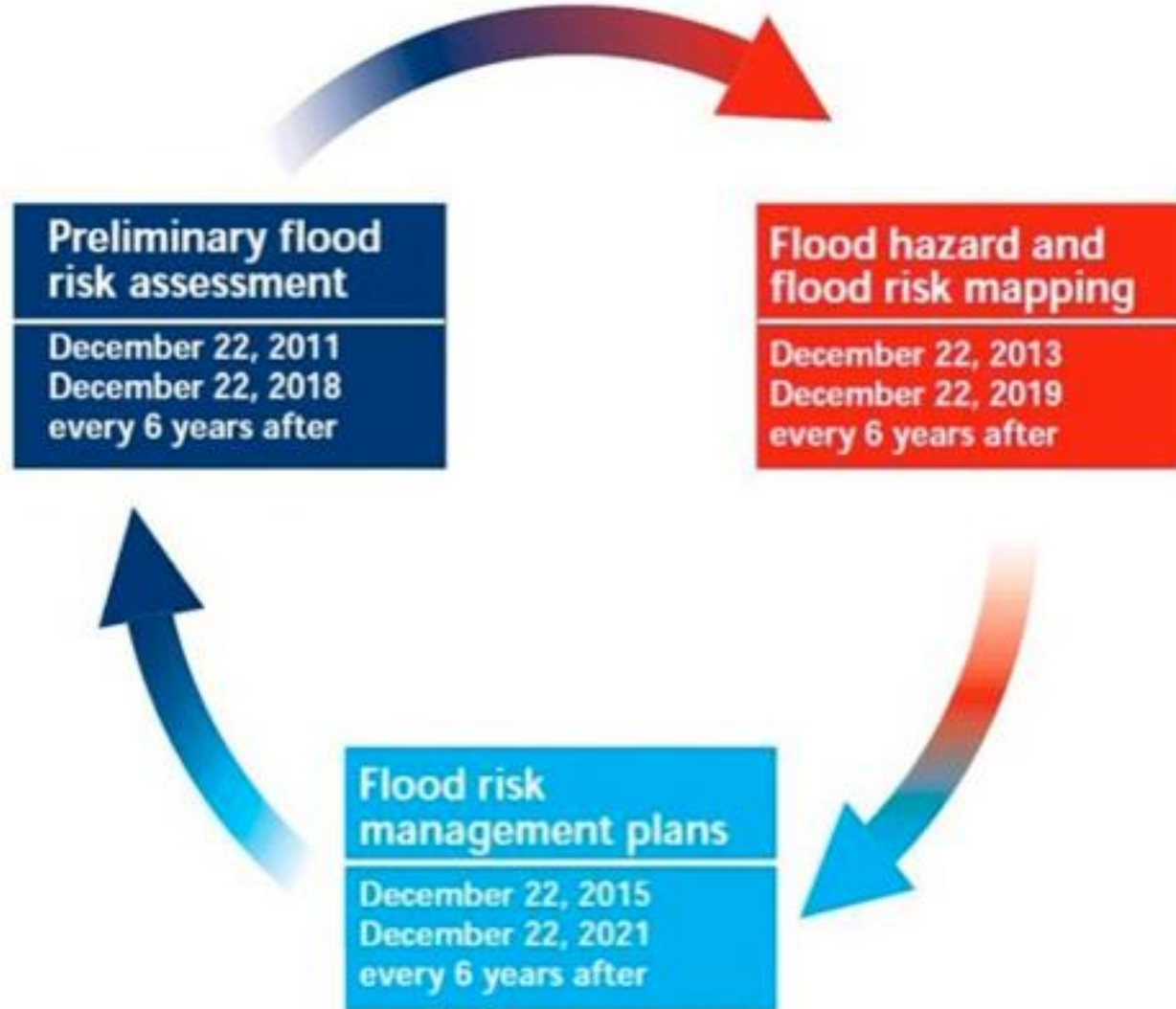
Flood Risk Mang't in three steps:

1. Identify the risk *Preliminary Flood Risk Assessment and identification of Areas of Potentially Significant Flood Risk (by Dec. 2011)*

2. Evaluate the risk *Flood Hazard and Risk Maps (by Dec. 2013)*

3. React to the risk *Flood Risk Management Plans (by Dec. 2015)*

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Source: Floods Directive Action Plan (2010)

Preliminary Flood Risk Assessment Development – this is the first of four planning documents required by **Flood Directive**. Its purpose is to define areas at risk of flooding, or areas where there is a significant risk of flooding, or the occurrence of which is likely to be high-risk. Highlights areas due to present two types of flood hazard: flooding and river flooding from the sea. **In line with the Floods Directive preliminary flood risk assessment has been developed based on readily available information**. Only the designated river sections will be carried out analysis, based on **hydraulic models**, defining the exact boundaries of the areas at risk of flooding. For such designated areas will be assessed with the risk of flooding. The results of these analyzes will be presented on the flood hazard maps and flood risk maps. Only these maps will form the basis for planning for flood protection. A preliminary assessment was made in 2011. By the Institute of Meteorology and Water Management PiB - Flood Modelling Centres.

Preliminary flood risk assessment

- First step – three years
- Objective – to indicate flood risk areas where further steps will be taken
- **„Flood risk is the combination of the probability of a flood event and of the potential adverse consequences to human health, the environment and economic activity associated with a flood” (Flood Directive)**



Development of hazard maps and flood risk - in 2013. For areas at risk of flooding, as indicated in the preliminary assessment of flood risk maps were made for the three probabilities of flooding: **0.2%, 1% and 10% (ie, five hundred years old, century-old and ten years old water) on a scale of 1:10 000.** The flood hazard maps shows the limits of the areas at risk of flooding and flood depth for the three aforementioned probabilities. For provincial cities, counties, and the regions of more than **100 000 inhabitants also provides information about the direction and velocity of water flow.** Moreover designated areas at risk of flooding in the event of failure of the embankment. On flood risk maps provided, inter alia, information on the population at risk of flooding, and information about the objects of particular cultural significance, natural and economic, which can cause flooding losses. Flood hazard maps and flood risk maps correspond to the President of the National Water Management in Poland.

Flood Hazard and Risk Maps

- **Flood Scenarios**
 - Low Priority or Extreme
 - Medium Priority
 - High Priority, if appropriate
- **Hazards**
 - Flood extent
 - Water depth or level
 - Velocity
- **Risks**
 - Number of inhabitants
 - Economic activity
 - Key infrastructure



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How to indicate flood risk areas?

- ⦿ Indicated areas will be further the subject of expensive studies for hazard and then risk maps elaboration
- ⦿ Not indicated areas may implicate consequences of unexpected risk and flood impact to this areas
- ⦿ Analysis shall consider cost and available time of preparation (3 years)
- ⦿ We have to collect as much as possible of existing data and then make a decision where the risk is high, medium and low

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How to evaluate risk?

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- Risk = probability x consequences
- Consequences we can for this preliminary assessment evaluate on the basis of the map of land use

At this stage in the preparation of the methodology to develop flood risk management plans, defined four main objectives that relate to all aspects of risk management: prevention, preparation for flood response and recovery:

1. avoid the increased risk in the area already covered by the flood risk;
2. reducing the risks in the area covered by the flood risk;
3. reducing the adverse effects during the flood;
4. reducing the adverse effects after the flood.

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WATER AND LAND MANAGEMENT

- Water management covers all aspects related to the resources of surface and groundwater such as:
- supply of population, industry and agriculture in water,
 - protect a quality of surface and groundwater,
 - use of surface water for energy and sailing,
 - use of water for recreation, sports and tourism,
 - flood protection and mitigate the effects of drought,
 - protection of water ecosystems and water-dependent.

Water management activities must take place in an integrated way and in accordance with a principle of sustainable development.

Implementation of tasks results from the Water Law and aims to:

- shaping and protection of surface and groundwater resources in order to achieve and maintain good condition of these waters, water ecosystems water-dependent (in accordance with the requirements of the Water Framework Directive),
- creating conditions to satisfy the needs of population and economy, while respecting the principles of sustainable development of water use,
- protection of the people and property from the danger that can occur as a result of extreme events (floods, droughts).

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THANK YOU !