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Water Security – institutional perspectives

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1. Introduction

- the challenge of raising standards for all
- the challenge of transboundary waters
- the challenge of climate change
- the challenge of secure and safe water services

2. Brief History of European Water Mgmt



2. Brief History of European Water Mgmt



“If I would drink water, I must quaff the mawkish contents of an open aqueduct exposed to all manner of defilement from the Thames...human excrement is the least offensive part of the concrete, which is composed of all the drugs, minerals, poisons used in mechanics and manufacture, enriched with the putrefying carcasses of beasts and men...this is the agreeable potation extolled by Londoners as the finest water in the universe”.

2. Brief History of European Water Mgmt

Early water and sanitation systems 3000 BC to 1850

Early water purification in Egypt, Greece and Italy

- 97 AD Water Supply Commissioner for City of Rome. Sextus Julius Frontius.
Produced two volumes on the Roman water works system
 - Sewage farms in Germany
 - Sewage farms in UK
 - Legal use of sewers for human waste disposal:
London (1815), Boston (1833), Parris (1880)
 - Cholera epidemic in London
(also 1848-49 and 1854)
 - Sanitary status of Great Britain
Labour Force: Chadwick Report
"The rain to the river and the sewage to the soil"

3000BC 1550 1600 1650 1700 1800 1850

Great sanitary awakening: 1850 to 1950

- Cholera epidemic linked to water pollution control by Snow (London)
 - Typhoid fever prevention theory developed by Budd (UK)
 - Anthrax connection to bacterial otiology demonstrated by Koch (Germany)
 - Microbial pollution of water demonstrated by Pasteur (France)
 - Sodium hypochlorite disinfection in UK by Down to render the water "pure and wholesome"
 - Chlorination of Jersey City, NJ water supply (USA)
 - Disinfection kinetics elucidated by Chick (USA)
 - Activated sludge process demonstrated by Ardern and Lockett in UK
 - First regulations for use of sewage for irrigation purposes in California

1850 1870 1890 1700 1910 1930 1950



3. European Water Management from 1973

Directive	Purpose/Function
The Surface Water Directive (75/440/EEC)	The first Directive designed to provide for a common surface water assessment framework. To a large extent superceded by subsequent directives.
The Bathing Water Directive (76/160/EEC)	To safeguard the health of bathers at member states' beaches (both marine and freshwater). Has been quite impactful and, indeed, popular.
The Dangerous Substances Directive (76/464/EEC)	Requires the regulation of a specified list of “dangerous substances” discharge into watercourses. Largely superceded by the <i>Integrated Pollution Prevention and Control Directive</i> (1996) and the WFD.
The Information Exchange Decision (77/795/EEC)	Marks the first attempt to create a European-level environmental database, establishing a network of monitoring points for almost two dozen different parameters. Established the groundwork for the European Environment Agency.
The Freshwater Fish Water Directive (78/659/EEC)	Requires waters designated as “fishing waters” to be kept in a state capable of maintaining fish stocks. The WFD (2000) superceded it, essentially re-creating it as a “daughter directive”.



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The Shellfish Water Directive (79/923/EEC)	Like the above, but for shellfish-supporting waters.
The Groundwater Directive (80/68/EEC)(36)	Requires member states to control the direct and indirect discharge of listed substances through a system of monitoring and discharge consents.
The Drinking Water Directive (80/778/EEC)	Establishes EU standards for drinking water quality. Will stand alongside the WFD (2000) as a “sister directive”.
The Urban Waste Water Treatment Directive (91/271/EEC)	Requires member states to reduce nutrient (primarily nitrate and phosphate) pollution in treated wastewaters.
The Nitrates Directive (91/676/EEC)	A classic “daughter directive”, it requires member states to reduce environmental pollution from nitrates to specified levels and to identify and monitor “Nitrate Sensitive Areas”.

Key features of the WFD are:

- The concept of river basin management is introduced to all Member States through the establishment of “river basin districts” as the basic management units. For international rivers these river basin districts (RBDs) will transcend national boundaries (Article 3).
- For each river basin district a “river basin management plan” must be developed, including a “programme of measures”, and these will form the basis for the achievement of water quality protection and improvement (Articles 11 and 13).
- Although its prime aims are environmental, the WFD embraces all three principles of sustainable development: environmental, economic and social needs must all be taken into account when river basin management plans are being developed (Article 9).

Key features of the WFD are:

- The river basin management plans will not allow further deterioration to existing water quality. With certain defined exceptions, the aim is to achieve at least “good” status for all water bodies in each river basin district. Geographical factors are allowed for when good status is defined and the principle of “subsidiarity” allows Member States some freedom within the overall requirements of the WFD (Article 4).
- The two previously competing concepts of water quality management, the use of environmental quality standards and the use of emission limit values are brought together by the WFD in a new dual approach (Article 10).
- To overcome the previously piecemeal nature of water environment regulation, a number of existing directives will be replaced when new local standards are developed to meet WFD requirements. These local standards must be at least as stringent as those being replaced. Daughter directives will be introduced to deal with groundwater quality and for priority (dangerous) substances (Article 16).

Key features of the WFD are:

- Measures to conserve water quantity are introduced as an essential component of environmental protection. Unless minimal, all abstractions must be authorised and, for groundwater, a balance struck between abstraction and the recharge of aquifers (Article 11).
- The polluter pays principle is incorporated through a review of measures for charging for water use, including full environmental cost recovery (Article 9).
- Public participation and the involvement of stakeholders is a key requirement of the river basin management planning process, thus satisfying this aspect of Agenda 215 (Article 14).

4. National Systems: England & Wales

- DEFRA
- Privatised Water Companies
- OFWAT
- Environment Agency
- Drinking Water Inspectorate
- Consumer Council for Water

5. Danube Basin Initiative



The Danube-River-Basin





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