

European Topic Centre on Inland Waters



**EUROPEAN FRESHWATER MONITORING
SUMMARY OF NETWORK DESIGN**

By

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CONTENTS	Page
EXECUTIVE SUMMARY	1
1. INTRODUCTION	5
2. THE NEED FOR INFORMATION ON EUROPE'S ENVIRONMENT	7
2.1 Why is information needed?	7
2.2 Role of the EEA	7
2.3 What are the key water resource problems and related policies ?	8
2.4 What information is required?	13
3. EXISTING SOURCES OF MONITORING INFORMATION	17
3.1 Monitoring required under EC directives	17
3.2 International agreements	22
4. OPTIONS FOR DEVELOPMENT OF A EEA MONITORING NETWORK	25
5. CONCEPT OF THE PROPOSED NETWORKS	27
5.1 Representative assessment of water resources	27
5.2 Overall objective	27
5.3 References conditions and stations	27
5.4 Stratification criteria	28
5.5 Example of stratifying rivers	28
5.6 Statistical implications	29
5.7 What is the benefit to Member States in providing this information?	31
5.8 summary	33
6. THE WAY FORWARD	35

EXECUTIVE SUMMARY

The **European** Topic Centre on **Inland Waters (ETC/IW)** was appointed in December 1994 by the **European** Environment Agency (EEA) to act as a centre of expertise for use by the Agency and to undertake part of the **EEA's** multi-annual work programme. The key Task of the first year's programme was to design a freshwater monitoring network for the EEA **area**. This Task is summarised in this report.

Over the past two **decades** four **European** Community Action Programmes on the environment have given **rise** to **about 200 pieces** of environmental legislation. While a great deal has been achieved, the general state of the environment continues to slowly deteriorate. This assessment was made in The Fifth Environmental Action Programme based on a Report on the State of the Environment. The Action Programme highlighted the need for 'a more far reaching and more effective strategy' which **could** only be assured if the **quantity** and quality of information was good enough. Against **this** background, it was decided to establish a **European** Environment Agency.

The main task of the Agency is to **provide** the **European** Union and the EEA Member States with:

'objective, reliable and comparable information at a European level enabling them to take the requisite measures to protect the environment, to assess the results of such measures and to ensure that the public is properly informed about the state of the environment'.

The EEA has the **duty** to update the **Dobříš** (State of Europe's Environment) report in 1998 and is also required to produce monographs on specific issues **such** as groundwater quality/quantity and eutrophication.

Information is thus required on:

- the status of Europe's water **resources** (status assessments); and,
- how that relates and responds to pressures on the environment (cause-effect relationships).

Member States monitor water **resources** according to their national requirements (e.g. legal and operational) and international obligations (e.g. **European** Commission (EC) directives and International Agreements). The information arising from this monitoring is potentially a major source for the EEA. However, the information required by the **European** Commission from Member States is primarily for assessing implementation of and compliance with directives rather than for the provision of information on the general status or quality of water **resources**. It is this latter type of information, provided in a comparable way from a representative sample of Europe's water **resources**, that is required. Information from directives is not, therefore, likely to be **suitable** for the needs of the EEA.

Information from International Agreements **will** be of use to the EEA. However, to be of use data **will** have to be comparable between the different agreements, and the data **will** represent only those waters covered in the agreements, that is the major water bodies/catchments in Europe.

The proposed network for the EEA to obtain the information it requires is designed to give a **representative** view or assessment of water types within a Member State and also **across** the EEA area. It **will ensure** that similar types of water body are **compared**. The need to compare like-with-like has led to a **stratified design** with the identified and defined strata containing similar water bodies. The use of the **same** criteria for selecting strata and water types **across** Member States **will ensure** that valid status comparisons **will** be obtained.

The EEA network **will**:

1. Be **representative** of the **size/numbers/types** of water bodies in the EEA area (e.g. small rivers), variation in **human** pressures (e.g. population density and land use), and, **will include** a number of **reference** and flux stations.
2. For **rivers**, have **reference, representative, impact** (part of representative network) stations, and flux monitoring stations at discharge into **sea**, or at international boundaries.
3. For **lakes**, have a general surveillance network comprising **reference** and **representative** lakes, and if necessary, (in the light of **experience**) **an impact** network with lakes selected on the basis of population density. In addition the largest and most important lakes (nationally) **will** be included and possibly a specific cause/effect network of lakes.
4. For **groundwater**, have a general surveillance network comprising **representative** stations on **all nationally important aquifers** (groundwater in porous media, karst groundwater and others) ideally at a density of **1 station per 20 to 25 km²** of aquifer. In addition the feasibility of establishing **reference** stations in aquifers not **affected** by **human** activities **will** be assessed.

At present there is not enough comparable information to obtain a quantitative assessment of water **resources across** Europe. This **can lead** to unfair or **incomplete** comparisons being made and wrong conclusions drawn. By submitting information within this proposed framework a 'level playing **field**' **will** be obtained so that Member States **will** have confidence in the conclusions being drawn. In addition the information **will** enable **European** environmental **policies** to targeted correctly and cost-effectively.

To minimise **cost** implications, where possible **the monitoring network will be based on existing national and international networks**, use existing sources of monitoring information and **create**, only if necessary, an EEA **database** of aggregated data and information rather than of raw non-processed data.

It should be emphasised that the information provided by the network will not be for the assessment of compliance of Member States with the requirements of European Commission directives.

The proposed network has been piloted and tested in four volunteer countries to date. Up to a further six countries have volunteered to **pilot** the network in the coming year. Results and **experience** from the piloting **will** be used to modify, where necessary, the design and the network **will** be progressively implemented step-by-step **across** the EEA area.

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1. INTRODUCTION

The **European** Topic Centre on **Inland** Waters (**ETC/IW**) was appointed in December 1994 by the **European** Environment Agency (EEA) to act as a centre of expertise for use by the Agency and to undertake part of the EEA's multi-annual work programme. The key Task of the **first** year's programme was to design a freshwater monitoring network for the EEA **area**. This report describes the need and use of **such** a network and explains why existing sources of monitoring information are not adequate to **meet** the EEA's needs. The **benefit** and value to Member States in contributing national **monitoring** information to this network are also described. The **basic** concept of the network is outlined; more detailed technical descriptions and justification of the proposal are given in other reports (**e.g.** Nixon *et al* 1996). The proposal has been peer reviewed by the EEA's National Focal Points and was presented at a workshop in Madrid in June 1996 (Rees.Y *et al* 1996). It was agreed at the workshop that the network should be progressively implemented **across** Europe and the way forward to achieving that goal is also described in the report.

6. THE WAY FORWARD

The proposed network design has been piloted in four volunteer Member States **during** the early part of 1996. The four States were **Austria** (groundwater quality network), Denmark (lakes and **rivers** network), Spain (**rivers** water quantity network) and UK (**rivers** network in **England** and Wales). The results from these initial studies were presented at the Madrid workshop and reported separately. At the workshop most Member States (Germany expressed reservations) endorsed the implementation of the proposed monitoring network **across** the EEA **area** in a step-by-step process.

The plan for the next phase of the **ETC/IW** workprogramme under the 1996 subvention period is to further develop and test the next in the **first** four States and to start the implementation process in other volunteer States. The latter States are Belgium, **Finland**, France, **Ireland**, Norway and Sweden. **During** these initial phases of the implementation the **basic** design of the network **will** be tested using real national monitoring data, and if required, the network design **will** be modified. **During** the first phase emphasis **will** be **placed** on establishing a uniform approach to site **selection** using the proposed stratification design. This **will** serve to highlight additional **differences** and gaps in existing national and international monitoring programmes. At a **later** date issues **such** as determinand comparability and sampling methodology **will** have to be addressed so that comparable information **can** be obtained. For **many** States there **will** be a need to consider developing new monitoring programmes where major gaps exist (e.g. absence of a lake or groundwater monitoring network) **and/or** modifying **current** analytical **procedures** so that comparable data **can** be obtained. The results of these studies **will** be reported to Member States periodically - the next progress report is due in February 1997.

Ultimately the aim is to have the network in place so that it **can** quickly **provide up-to-date** and comparable information on the state of water **resources** in the EEA **area** to be used in future updated reports on the State of Europe's Environment or in key issue monographs **such** as those to be produced by the **ETC/IW** on Groundwater Quality and Quantity, and on Eutrophication **during** 1997.