

Evaluating the Benefits of Hydrometric Networks

The aim of the project was to improve the evaluation of the benefits of data from hydrometric networks. Methods to assess the benefits of the data are needed firstly to assess whether existing networks should be enlarged or contracted, and secondly to examine the justification for the expense of proposed sites - which in the case of gauging stations can be considerable.

The research used river flow gauging station networks for the analysis, since gauging stations are generally the most expensive of the hydrometric sites to construct and run. The results should be adaptable to any other environmental data collection network.

A literature review and a survey of internal and external users of data from the UK environment agencies formed the basis of the research. A number of economic concepts are identified that allow clearly identifiable user benefits of the use of hydrometric data to be translated into monetary terms. An Approximate Cost Benefit Analysis was developed as a framework for identifying and combining the quantified benefits of data usage for given catchment areas. For each benefit type, base values or typical user benefits, were produced by applying methods derived from the literature. These can then be scaled according to local conditions in order to reflect the actual benefit on the basis of data accuracy, data representativeness and period of record, and then adjusted to represent annual rates of benefit receipt.

Some benefits cannot be quantified and these are represented using a checklist designed to allow a broad overview of the water resources and data use characteristics of a catchment. The methods are designed for looking at catchments or networks of around 10 gauging stations, but for completeness a brief consideration of national monitoring needs is also presented. The checklist is designed to provide a context for the subsequent economic analysis of the benefits: the quantitative and qualitative methods are designed to be complementary.

The report evaluates the methods developed noting their strengths and weaknesses and makes recommendations for future research. Comments are offered on the scope and format of a manual which would allow hydrometric staff to use the methods more easily in reviewing current networks. It is hoped that a manual of this nature will be produced in the future if funds can be found.

The report will be of interest to anyone interested in attempting to assess in an objective manner the benefits of the environmental data that they collect. Application of the methods would at the very least focus on the actual and potential requirements for data, and may result in a network more in line with customer needs. The production of the manual should enable the evaluation of gauging station networks in a reasonably straightforward manner. It will be of great interest to analyse the results of these evaluations. If the results are consistent and useful, the method could be adopted as standard tool in regular network evaluation.

The report will be provided to all Regional Water Resource and Flood Defence Managers and Area Flood Defence and Water Resources Managers.

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This R&D Technical Summary relates to information from Project W6-005 contained in the following outputs:

R&D Technical Report W146: Evaluating the Benefits of Hydrometric Networks

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Copies of the documents are available internally from the Regional Information Centre (R&D Management Support Officer in Regions with no library) and externally from Environment Agency R&D Dissemination Centre, c/o WRc plc, Frankland Road, Blagrove, Swindon, Wiltshire, SN5 8YF (Tel:01793 865012, Fax: 01793 514562).

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