

Annex II: Freshwater Ecosystems and Water Quality

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Annex II

Freshwater Ecosystems and Water Quality: Report of Working Group 2

I. Introduction

59. The report provides a brief consideration of the role of freshwater ecosystems and water quality in integrated water resources management and sets out a range of specific actions which can be taken up by national

Governments, as appropriate, to accelerate the implementation of chapter 18 and other water related chapters of Agenda 21. These actions are guided by policy choices (the stated objectives of governments) and strategic management options (how to put the policy into place within national social and economic frameworks). Finally, suggested objectives are recommended for the Commission on Sustainable Development.

II. The Role of Freshwater Ecosystems and Protection of Water Quality in Integrated Water Resources Management

60. Chapter 18 of Agenda 21 states that one of the objectives of integrated water resources management is the "maintenance of ecosystem integrity, according to a management principle of preserving aquatic ecosystems, including living resources, and of effectively protecting them from any form of degradation on a drainage basin basis". It also recommends the adoption of an integrated approach to environmentally sustainable management of water resources, including the protection of aquatic ecosystems and freshwater living resources, and the integration of water quality elements into water resources management.

61. However, current integrated water resources management practices often consider ecosystems primarily as water users, with little attention given to their vital role as providers and regulators of water resources. Little consideration has been given to the other services and goods that ecosystems provide, such as flood regulation, Biodiversity conservation, fish and firewood. It is of fundamental importance to the long term availability and sustainable management of water resources that the maintenance of ecosystems and the strengthening of their role as providers of services and goods be recognized.

62. Similarly, in spite of high-level of commitments to action made at both the International Conference on Water and the Environment and the Earth Summit, water quality has invariably been subordinated to water quantity and sanitation has been neglected. The result of that neglect is an emerging crisis of water quality, damaging public health and restricting economic development. In order to deal effectively with this neglect of both freshwater ecosystems and water quality protection, and thus accelerate

the implementation of the activities in the area of freshwater ecosystems and water quality proposed in Chapter 18 of Agenda 21, a number of specific actions in both areas are recommended primarily to national governments.

A. Proposed actions in the area of freshwater ecosystem management

63. The proposed actions in the area of freshwater ecosystems are aimed to achieve three major goals:

- a. Ensure the integration of the ecosystem approach into integrated water resources management, recognizing the role of ecosystems as users, providers and regulators of freshwater and freshwater-based resources (including fisheries);
- b. Ensure the effectiveness of local or national systems for controlling interactions between human activities and functioning of ecosystems;
- c. Ensure participatory approaches to ecosystem management based on recognition of the economic and social value of freshwater ecosystems.

The overall goal is to maintain the functioning of ecosystems and to protect water quality as a base for sustainable development. Most of the above-mentioned actions are for national or local levels but many will require appropriate international action and support.

1. Ensure the integration of the ecosystem approach into integrated water resources management, recognizing the role of ecosystems as users, providers and regulators of freshwater and freshwater-based resources (including fisheries)

64. The following specific actions were identified to address these goals:

- a. Strengthen national programs for gathering, analyzing, monitoring and disseminating physical, economic and social data necessary for ecosystem management, build institutional capacity to understand and assess ecosystem functions and values, and incorporate them into the decision-making process;
- b. Carry out comprehensive assessments of functions and values of ecosystems in terms of their social, economic and environmental benefits and costs, in order to manage change;
- c. Promote research at both national and international levels to determine

the economic value (in monetary terms) of both the benefits provided by ecosystems and the costs of their degradation;

d. Raise awareness of ecosystem functions and values at all levels, from school children (local) to national policy-makers through both national and international campaigns.

2. Ensure effective local or national systems to control interaction between human activities and functioning of ecosystems

65. The following specific actions were identified to address this goal:

a. Use environmental impact assessments to measure and monitor impact of human activities on ecosystems;

b. Launch coordinated international programs to identify and control plant and animal pest species, such as water hyacinths, that threaten ecosystem integrity;

c. Establish a legal framework for allocating adequate amounts of water to ecosystems, including for the restoration of degraded ecosystems;

d. Incorporate protection of human health dimension in the management of freshwater ecosystems;

e. Ensure coverage of the major human impacts on freshwater ecosystems, such as in river structure management, impoundment, abstraction, point discharges, diffuse inputs and fisheries/aquaculture;

f. Encourage countries to reduce or eliminate subsidies to activities that damage ecosystems;

g. Apply basin-wide approaches to freshwater ecosystem management for both surface and ground water;

h. Establish measurements and research programs for understanding the quantity and quality of the resource base and its variability in time and space.

3. Ensure participatory approaches to ecosystem management based on realization of the economic and social value of freshwater ecosystems

66. The following specific actions were identified to address this goal:

a. Promote and disseminate best practices and traditional knowledge in ecosystem management;

b. Introduce measures to decentralize decision-making and empower local

communities to participate in efforts to protect freshwater ecosystems;

- c. Launch information campaigns and information networks at both national and local levels to raise public awareness and foster social mobilization to the need for protecting freshwater ecosystems;
- d. Improve local institutional capacity and promote human resources development to strengthen community participation, taking into particular account the role of women in rural communities as protectors of the environment.

B. Proposed actions to protect water quality and human health

67. The proposed actions in the area of water quality are aimed to achieve four major goals:

- a. Establish objectives necessary to safeguard water quality as regards human health, productive uses of water and the protection of freshwater
- b. Implement measures in support of the objectives for safeguard water quality
- c. Establish effective data collection programs to provide a sound basis for establishing goals and monitoring progress towards them
- d. Significantly accelerate access to environmental sanitation (including solid and liquid waste management) in order to reduce the threats to human health and freshwater ecosystems.

Most of these actions are for national or local levels but many will require appropriate international action and support. It should be recognized that poor environmental sanitation results in serious degradation of ecosystems and is the leading cause of human diseases.

1. Establish objectives necessary to safeguard water quality as regards human health, productive uses of water and the protection of freshwater ecosystems

68. The following specific actions were identified to address these goals:

- a. Set requirements for drinking-water quality;
- b. Set targets for ambient water quality in relation to intended uses and the protection of the freshwater ecosystem;
- c. Set requirements for effluent discharges and the control of pollution from non-point sources.

2. Implement measures in support of the objectives for safeguarding water quality

69. The following specific actions were identified to address this goal:

- a. Raise political awareness of the cost of pollution and build up support for relevant reform, for example, through studies of the economic and health costs of water pollution;
- b. Document or initiate successful examples of complex programs to remedy water quality problems as a basis for sharing know-how;
- c. Strengthen capacities to plan and implement programs for capital investment, delivery of services, maintenance of systems, and for monitoring and regulating water quality requirements;
- d. At national and international levels, prioritize key knowledge gaps that inhibit effective water quality management and develop research programs to fill the gaps.

3. Establish effective data collection programs to provide a sound basis for establishing goals and monitoring progress towards them

70. The following specific actions were identified to address this goal:

- a. Establish standards for water quality data, which ensure their reliability and consistency;
- b. Evaluate and modernize, as appropriate, data programs so that they are cost-effective and focused on data needs for water policy and management decision-making;
- c. By 2002, carry out a national water quality inventories for surface and ground waters, and identify gaps in information.

4. Accelerate significantly access to environmental sanitation (including solid and liquid waste management) in order to alleviate poverty, improve human health and protect freshwater ecosystems

71. The following specific actions were identified to address these goals:

- a. Redress the imbalance in the resources devoted to sanitation, including capital investments, untapped community efforts, and innovative financing and credit mechanisms to expand sanitation coverage;
- b. Ensure that new water programs are accompanied by safety disposal measures for the resulting wastewater.

- c. In addition to actions by national and local authorities, introduce measures to empower local communities to participate in efforts to extend access to sanitation, taking into particular account the role of women;
- d. Improve sanitation services through hygiene education, innovative low-cost systems, such as dry- and low-water-use systems, and targeting projects on health objectives;
- e. Support recent national and international initiatives to expand sanitation coverage through information sharing among governments, communities NGOs and the international community.

C. Overall goal for protecting freshwater ecosystems and water quality

72. Maintain the functioning of ecosystems and protect water quality as a base for sustainable development, and establish or strengthen systems to monitor progress on drinking-water supply and sanitation, as well as water quality and management generally, at local, national and international levels, and to identify emerging issues and needs.

D. Support, in financial and operational terms, the integration of ecosystem approaches and water quality into integrated water resources management

73. The following specific actions were identified to address these goals:
- a. Donors should consider ensuring that an adequate share of their ODA is allocated to the protection of freshwater ecosystems;
 - b. International financial organizations and donor Governments need to take steps towards the co-ordination of international financial flows in the form of direct grants and loans in concessional terms to recipient countries for the protection of freshwater ecosystems;
 - c. Establish appropriate budgetary mechanisms specifically designed to finance measures to protect or reverse the degradation of freshwater ecosystems

III. Suggested Objectives for the Commission on Sustainable Development

74. The CSD is invited to recommend that each country adopt a national or local water policy, including measures to protect freshwater ecosystems, or

where this exists, to review and revise as necessary. CSD may consider calling upon countries to report on their policy and the progress in the year 2002. Policies should be developed in an open and transparent process with public and stakeholder participation. It is recommended that such policies should be based on the recognition of water as a national and international heritage - with the protection of freshwater ecosystem as an integral part of this effort -- and should address inter alia:

- a. The principle that water resources allocation decisions should take into account that access to safe drinking water and sanitation is essential for satisfying basic human needs and that the allocation to other users must be based on economic efficiency and sustainability criteria;
- b. The need for demand management as a key element of integrated water resources management policy, focusing on water conservation through recycling and re-use, and where appropriate to be driven by pricing policies and by adopting best practices and appropriate technologies;
- c. The need to provide appropriate mechanisms for management of land and water resources on an integrated basis with national hydrological and hydrogeological units and to provide for the necessary interaction with administrative organizations across municipal and district boundaries;
- d. The need to formulate measures for coping with extreme climatic and meteorological events, droughts and floods, through implementation of programs of drought preparedness and flood protection and mitigation including adequate monitoring and warning systems;
- e. The need to protect the aquatic environment, including wetlands, from local and diffuse pollution sources and from threats posed by exotic influences to maintain physical, chemical and biological balances;
- f. The need to develop and support appropriate institutions including cross-sectorial water councils and to recognize the importance of capacity building, public information and education;
- g. The need to take into account actions required to implement the Conventions on Biodiversity, Desertification, Climate Change, Wetlands (Ramsar) and International Trade in Endangered Species (CITES) as well as close linkages with the implementation of the Global Program of Action for the Protection for the Marine Environment from Land-Based Sources of Pollution.