



Nature for water

Protecting water-related ecosystems for sustainable development

To ensure a sustainable water supply of good quality, we should protect and use in a sustainable manner the ecosystems that naturally capture, filter, store, and release water, such as rivers, wetlands, forests, and soils.

**Ministerial Declaration
of the
3rd World Water Forum**

**United Nations Economic Commission for Europe
Convention on the Protection and Use of Transboundary Watercourses and
International Lakes**



UNITED NATIONS

The management of water and land resources requires a comprehensive understanding and careful consideration of ecosystem functions and interactions with the water cycle. This booklet is addressed to water managers, land-use planners, forest managers, conservation experts and other stakeholders. It aims to raise awareness about these interactions, highlight gaps and propose solutions for future action.

The best practices and recommendations presented here are based on the conclusions of the Seminar on the role of ecosystems as water suppliers organized in December 2004 by the secretariat of the UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and the Swiss Agency for the Environment, Forests and Landscape, in close cooperation with the secretariat of the 1971 Ramsar Convention on Wetlands, the UNECE Timber Committee and the Food and Agriculture Organization of the United Nations (FAO). The Seminar enabled governmental officials, experts from international organizations, non-governmental organizations and the private sector to share their knowledge about the protection and restoration of water-related ecosystems and set future priorities.

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Photo credit:

UNECE Information Service and Ramsar Convention secretariat (Mr. Tobias Salathé).

A paradigm shift: protect nature to improve water

Water management usually focuses on the protection, restoration and use of aquatic ecosystems, such as rivers and lakes, and their surrounding environment. But in the recent years policies, strategies and actions have increasingly recognized the role of forests, wetlands and other water-related ecosystems to ensure sustainable water management.

- 💧 **Wetlands and forests improve water quality, withhold sediments and reduce erosion.**
- 💧 **Wetlands and forests regulate water flows and water supply, encourage water infiltration in the soil, help to recharge groundwater sources and store water.**
- 💧 **Wetlands and forests prevent and reduce the risk of water-related disasters, mitigate floods, store water in areas of flood formation and maintain water supplies through dry seasons and droughts.**

A sustainable solution for water-related management problems

Population growth and economic expansion are putting a huge pressure on freshwaters. Water withdrawals, for instance, have increased six-fold since 1900, which is twice the rate of population growth. In addition, the quality of many water bodies is declining due to increased pollution from agriculture, industry, urban run-off and domestic sewage.

Governments have invested and continue to invest large amounts of money in water-related infrastructure. But flood control, water supply for irrigation, drinking and recreation cannot rely solely on infrastructure. Considering the environmental services that water-related ecosystems can provide, using them wisely is a cost-effective alternative to infrastructure development.

Cleaner water and better sanitation could prevent over 30 million cases of water-related diseases each year in the UNECE region. Ecosystem protection can contribute to securing safe drinking water. Furthermore, in many cases, preferring ecosystem protection to building a water-treatment plant lowers health risks due

to the malfunction of sewage and water-treatment plants and disinfectant-resistant pathogens.

Moreover, ecosystem protection and restoration can contribute to mitigating the effects of climate change, such as the increased magnitude and frequency of floods, erosion and evaporation.

**The protection and sustainable management
of water-related ecosystems are key to
meeting the millennium development goals
and therefore reducing poverty**



In the Morava-Dyje floodplain wetlands of Austria, the Czech Republic and Slovakia, the maintenance of traditional land use supports flood control. This practice also has many other advantages such as biodiversity conservation, high-quality timber production, and income generation through sustainable, regulated hunting and tourism.

Half the world's wetlands have been destroyed in the past 100 years due to unsustainable agricultural practices, mining and quarrying, manufacturing and construction. Armenia alone lost an estimated 60% of its wetlands between 1930 and 1960. Wetlands have also been regarded as unproductive land and a source of diseases and therefore eliminated; this negative image of wetlands is a great obstacle to reversing trends and implementing a more sustainable management.

Good practices

Over the past decades, the ecosystem approach has been developed into a strategy which is now part and parcel of integrated water resources management. Many examples prove that it is often more cost-effective to maintain, or even restore or create, water-related ecosystems than to try to provide the same services through expensive engineering structures such as dams, embankments or water-treatment facilities.

💧 **The city of Basel (Switzerland) meets its water needs by treating water from the Rhine. Water is allowed to run into small channels through a forest, where it seeps into the subsoil and is thus purified. In the whole of Switzerland 38% of water supplied is untreated. Since treatment costs can average around SW F 0.20/m³, the use of groundwater mostly from forested watersheds, which needs no treatment, saves the Swiss consumers SW F 80 million (some US\$ 64 million) a year.**

Lack of implementation

Although the importance of ecosystems for water management is now broadly accepted and the ecosystem approach is the subject of regional and global targets and policy initiatives, it is rarely fully put into practice. The protection of forests and wetlands and their sustainable use have not always been a priority of State policy and budget allocations. A lack of awareness or short-sighted economic and technical choices of development have often caused the destruction of water-related ecosystems with negative consequences for the water resources.

Five pillars for future action

Implementing the ecosystem approach is a complex exercise that needs to be adapted to local, national and international conditions. There is no universal solution, but the following five pillars should be the basis for any future action.

Establishing partnerships


An ecosystem approach includes people. It recognizes that water has social, economic and environmental values, and should therefore be managed so as to create the most acceptable and sustainable combination of those values. Multidisciplinary teams are needed to develop a shared vision of the desired conditions of water and other related natural resources and their sustainable use. Involving all stakeholders, including women, ensures ownership and the integration of local experience and traditional knowledge. Local consultations and action programmes involving user groups to develop and implement ecosystem protection measures and water management plans are best practices. In the case of transboundary waters, the work of joint bodies, such as international river commissions, should not be restricted to the Parties to transboundary water agreements but should also involve representatives of NGOs and the private sector.

The private sector has an important role to play not only financially but also for its wealth of practical experience that it can share.

Getting better information

For sound decision-making and integrated management of water and related ecosystems a clear knowledge of ecosystems functions and conditions is required. To strengthen this knowledge increased investments in science, research and technology are needed. Enhanced monitoring efforts are required to better assess the status and trends of water-related ecosystems. There is also a need to develop assessment and decision-support systems, including remote-sensing techniques and geographic information systems (GIS). The exchange of data and information among upstream and downstream populations, national institutions and other sectors, also in a transboundary context, is crucial and should be free of charge. Mechanisms such as clearing houses are to be set up to provide local managers with appropriate information on the protection and wise use of water-related ecosystems.





Strengthening capacities

Policies, strategies and action are shaped through an informed exchange among all stakeholders on the ecosystem approach as a development opportunity and the benefits that water-related ecosystems can provide to upstream and downstream populations. To convert the principles of the ecosystem approach into policies, strategies and action, there is a need for capacity-building.

Governments should ensure capacity-building in local and national institutions and joint bodies to apply ecosystem management principles. Training programmes on the conservation and restoration of water-related ecosystems are needed as part of local and national action programmes. The capacity of local decision makers in particular should be strengthened also by means of decision support tools. Moreover, water engineering and water management curricula should be broadened to develop awareness and skills on ecosystem protection and sustainable use.

Decision-making involves public participation. This requires a public that is informed about environmental matters, including the protection and sustainable use of water-related ecosystems. Information should be directed at all levels of society and not merely at those who are already aware of the situation, as is often the case. In particular, efforts should be made to address the younger generation, who are the decision makers of the future.

Best practice in capacity-building for NGOs and user groups includes awareness campaigns, "green schools," thematic competitions and other innovative ways to emphasize the benefit to upstream and downstream populations of wetlands and forests as water suppliers. The role of the media is also fundamental.

Innovative economic tools and financing

Over the past decade, the concept of payment for environmental services in order to increase the financial resources to protect and restore water-related ecosystems has emerged. Different economic instruments are available including taxes and charges on users of the environmental services, subsidies and compensation for the protection of water-related ecosystems, markets and trading schemes for environmental services. Environmental service transactions are site-specific and require accurate economic valuation. At the same time non-monetary criteria such as social, ecological and equity concerns should be considered. Legislation plays an important role to strike this balance and coordinate funding for water management between the different actors involved (e.g. hydropower operators, farmers, foresters).

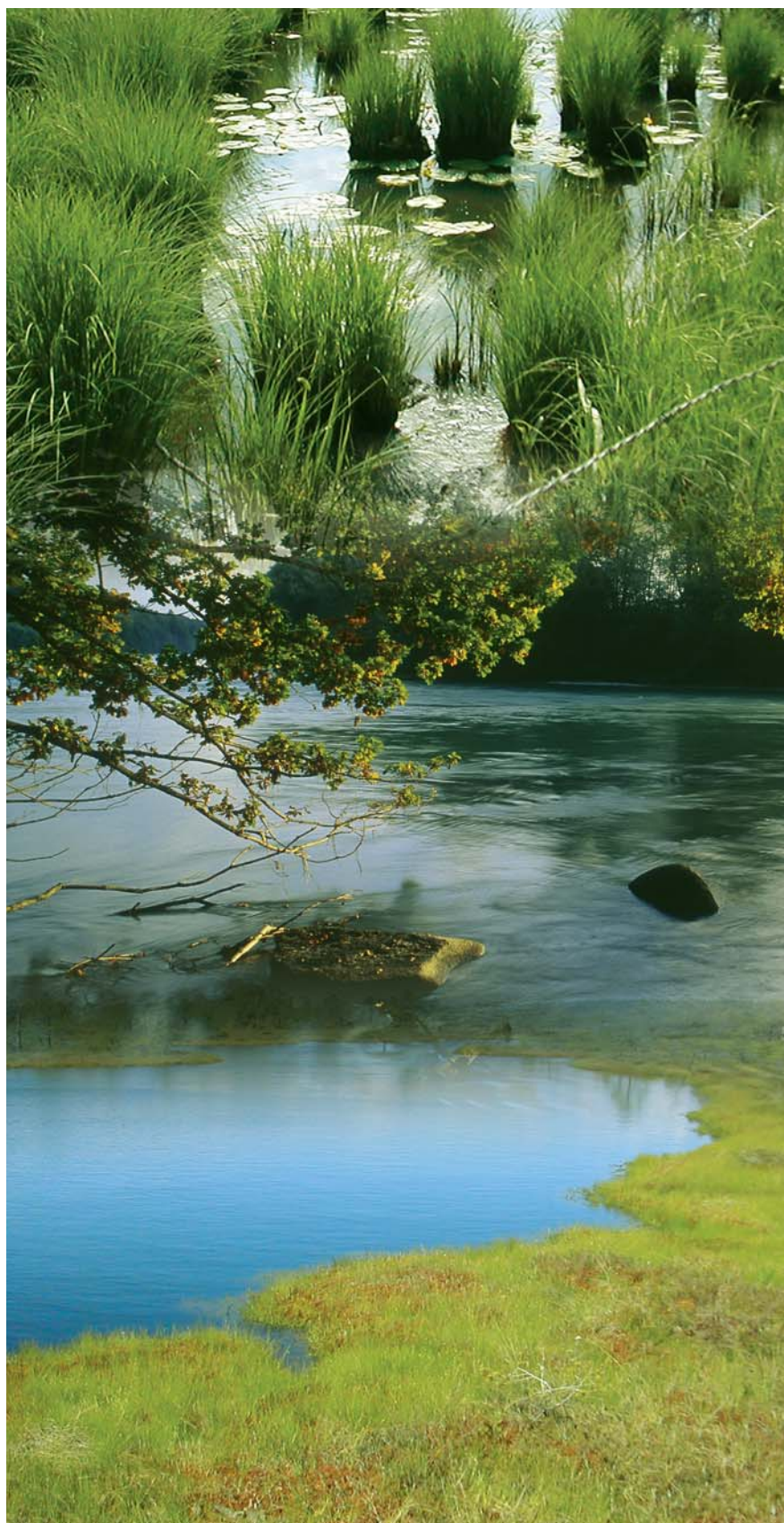
In Belarus, some 6 billion m³ of water (which almost equals the amount of water in all its lakes) was drained from peat bogs to allow peat extraction, with disastrous consequences for the environment. Today, the rehabilitation of formerly drained peat bogs is the responsibility of peat extraction enterprises. Progress in rehabilitation is still very slow as the scientific understanding to deal with complex geomorphological, hydrogeological and hydrological conditions needs to be developed.

National legislation and international agreements

The ongoing development of legal regimes provides an excellent means of incorporating the principles of and approaches to the protection and sustainable use of water-related ecosystems into national laws and regulations as well as multilateral environmental agreements. Such new legislation should recognize the ecosystem approach as a holistic approach to water management and the sustainable management of environment, consider the ecosystem as a legitimate water user as well as water supplier, take advantage of synergies between international water and environmental legal regimes, and incorporate compliance mechanisms.

Law, as a vehicle for orderly change, and the related supporting institutional arrangements are vital for water-related ecosystem protection and use at the local, national, transboundary, regional and international levels. In some countries, national legislation needs to be developed to regulate economic activities that adversely affect water-related ecosystems. Legislation to reduce the fragmentation between governmental institutions responsible for water management, ecosystems protection and sustainable use should also be drawn up and applied.

Much remains to be done to update bilateral and multilateral agreements on transboundary waters to incorporate the ecosystems approach. Not only the impact of human activity on local water-related ecosystem should be regulated; the entire ecosystem of large - often transboundary - river basins has to be considered, too. Thus, when updating existing or drawing up new bilateral and multilateral water agreements, the principles and approaches to the protection and wise use of water-related ecosystems should be incorporated. Multilateral environmental agreements, such as the Ramsar Convention on Wetlands, the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity, the UNECE environmental conventions and the European Union's Water Framework Directive are important tools for sustainable water management. Subregional conventions on the Alps and Carpathians are also examples of integrated legislative frameworks. Benefits from cooperation under these instruments should be maximized and duplication of efforts avoided. There is an urgent need to counteract existing and further fragmentation of the multilateral environmental agreements.





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The outlook: The Meeting of the Parties to the Water Convention and its partners - the Ramsar Convention secretariat and the Food and Agriculture Organization of the United Nations (FAO) - are developing a code of practice on the integrated management of water and related ecosystems to be presented to the Parties to the Water Convention for adoption at their fourth meeting in 2006. Progress in implementation and compliance with the code of practice will be examined by the Parties at their fifth meeting in 2009.

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