

Improving Water Management: Recent OECD Experience

**Water management –
a serious challenge
for sustainable
development**

**Managing water
resources in OECD
countries**

Lessons learned

**... making wider use
of markets**

**... improving the
coherence of
decision-making**

**... harnessing
science and
technology**

**Meeting global
challenges for water
management**

For further reading

Where to contact us?

Water management – a serious challenge for sustainable development

There is widespread concern that poor water management will be one of the major factors limiting sustainable development during the next few decades. Water shortages are common in many regions, and are exacerbated by the pollution or degradation of many water bodies. There are conflicting demands for available water resources, both between human, economic, and ecosystem needs and between regions sharing a single water basin, in some cases leading to geopolitical security threats. World population roughly doubled over the last 50 years, while water consumption worldwide quadrupled. With urban populations growing faster than rural populations, the financial pressures on urban water utilities are intensifying.

Securing safe, reliable, reasonably priced water and sanitation services for all is one of the leading challenges facing sustainable development. At the beginning of the 21st century, 1.1 billion people still do not have access to safe water and 2.4 billion lack access to basic sanitation. There are internationally agreed targets to halve these numbers by 2015, set as part of the Millennium Development Goals and the Plan of Implementation of the World Summit on Sustainable Development, respectively.

Meeting these basic human needs is only part of the challenge; increasingly, attention is also focusing on the importance of assuring sufficient water flows in the environment to support essential ecosystem services. In the developing world, 90% of all wastewater still goes untreated into local rivers/streams. An estimated 47 countries (with roughly one-third of the world's population) are classified as suffering medium-high or high water stress. Of these, 17 already extract more water annually than is recharged through their natural water cycles. The increasing pollution of some water bodies further restricts available supplies, and degrades water-dependent ecosystems and the services they provide. ■

Managing water resources in OECD countries

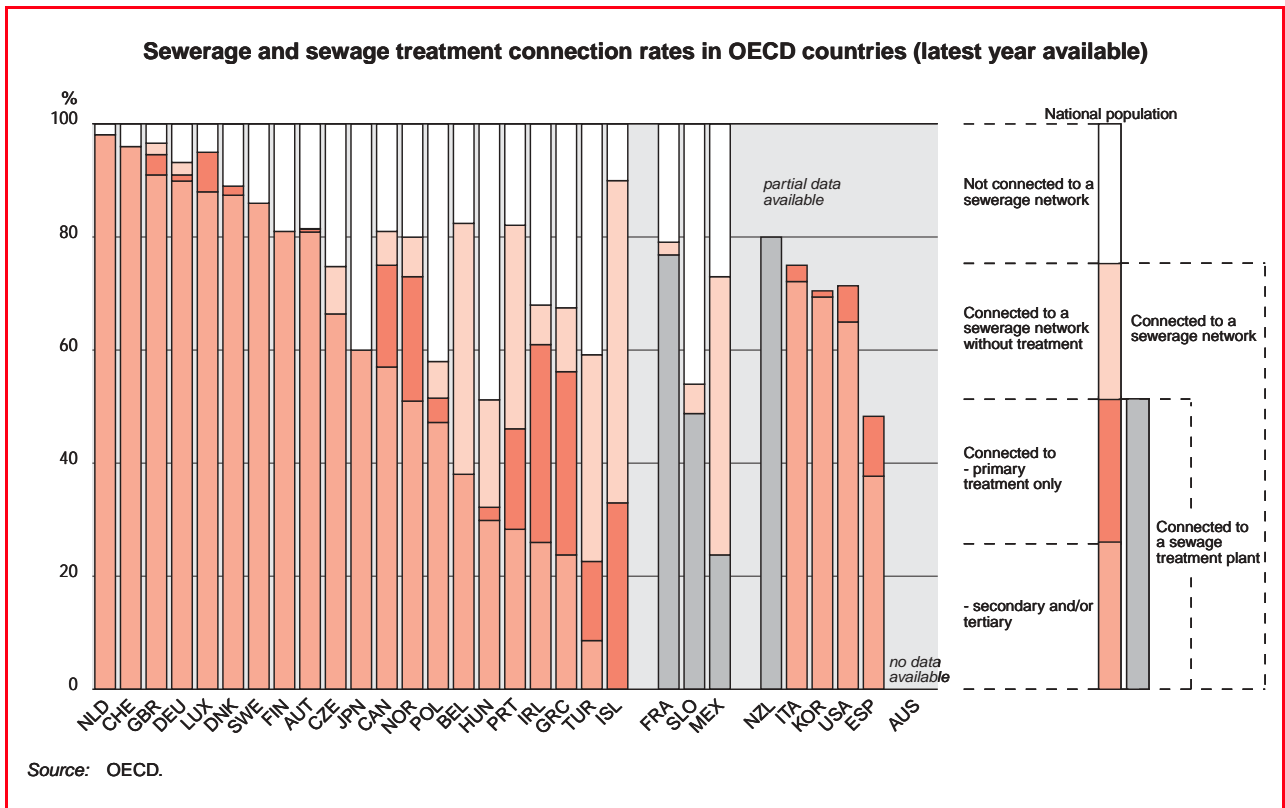
In OECD countries, many surface freshwater bodies still do not meet baseline quality standards, while degradation of groundwater resources appears to be worsening. Pollution of water bodies by farm nutrients and chemicals is an increasing problem, as is contamination by heavy metals and persistent organic pollutants. Subsidies for water use continue to exacerbate problems of over-abstraction and pollution. The lack of adequate financing hampers the maintenance, upgrading, and expansion of water supply and sanitation systems. While access to water services has increased significantly, many OECD countries now face concerns about their affordability.

Despite these negative trends, some progress is being made. For example, OECD countries have significantly reduced industrial and urban discharges to waterways, with the total share of the population connected to public wastewater treat-

ment plants in OECD countries reaching an average of 65% (see figure), and many of the rest using private sewage treatment. OECD countries have also cleaned up a number of the worst polluted freshwater bodies. They have increased their water use efficiency, with several realising overall reductions in water use over the last two decades. Many have started to apply more integrated approaches to water management, following a “whole-basin” or “ecosystem” approach. ■

Lessons learned

Some of the main lessons for improved water management that OECD countries have learned through their experiences include: making wider use of markets; improving the coherence of decision making; harnessing science and technology; and working in partnership with developing countries to address internationally shared objectives (see Box 1 on page 3). ■



Box. 1: Key Elements of Effective Water Management

Making Markets Work

- "Ensure that financial resources are adequate.
- "Levy charges that reflect the real marginal costs of water service provision, and thus provide incentives for efficient water use.
- "Address any negative social impacts of water pricing policies.
- Improving the Coherence of Decision Making
- "Apply integrated "whole-basin" and ecosystem approaches.
- "Work with the private sector.

Harnessing Science and Technology

- "Improve technologies for protecting drinking water quality.
- "Improve the efficiency of water use.
- Working in Partnership with Developing Countries
- "Support international water goals.

... making wider use of markets

Water pricing structures and price levels vary greatly among OECD countries due to differences in availability of water resources, in demand, and in institutional and cultural frameworks. In general, OECD countries are moving towards water pricing schedules that reflect the full marginal costs of providing water services, and systems that better target available support to low-income users. These developments help provide incentives for efficient water use and generate funds for necessary infrastructure development and expansion, while assuring affordable water services for all.

While pricing structures for municipal and industrial water services increasingly reflect the full costs of providing the services, agricultural water use – primarily for irrigation – remains heavily subsidised, which encourages inefficient use of often scarce resources. (See figure on page 4)

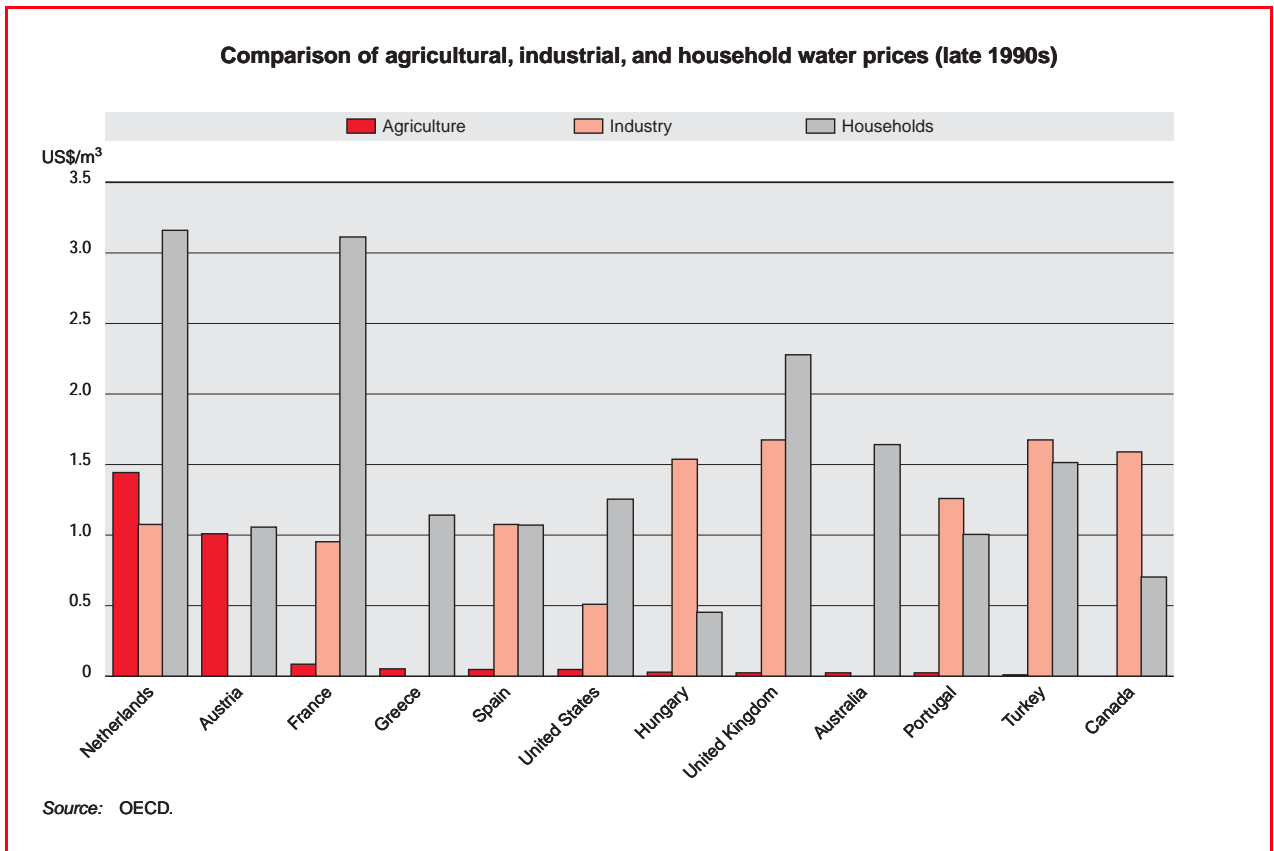
Concern about the affordability of household water services for vulnerable groups (e.g. low-income households and retired people) has led to the development of policy measures aimed at resolving affordability problems while still meeting economic

and environmental goals. In general, policies that target specific vulnerable groups – such as through income-related support – have been found to be more efficient at achieving all three objectives than across-the-board subsidies. ■

... improving the coherence of decision-making

Many OECD countries have significantly changed the institutional and management structures through which their water services are provided. These changes have included a move towards more integrated approaches to water management, including managing resources across the full river basin (i.e. using a "whole-basin" or "ecosystem" approach). For most of these countries, comprehensive frameworks of water management laws, policies, programmes, and institutions have been established, and enforcement of water regulations has been strengthened.

Today, the average range, level, and quality of water services provided in most OECD countries is quite impressive. While most water and wastewater systems remain publicly owned, there is a growing



industry of private service providers that compete for the right to finance, build, manage, and operate facilities. Another trend is towards management autonomy by water utilities, reflecting a shift in the role of governments away from being the “provider” of water services and towards being the “regulator”. While this trend has generally been accompanied by an increased role for the private sector, ownership responsibility most often remains in public hands. The most widely used system has been the “concession” model, under which private companies with access to finances and technical know-how operate and manage publicly owned water utilities. ■

... harnessing science and technology

Many new scientific and technological developments have been helping to increase the efficiency of use of available water resources, to reduce emissions of pollutants to water bodies, and to improve treatment of drinking water. The OECD has worked

extensively on the development of policies to support technological advances in this last area. Inadequate drinking water supply and poor water quality and sanitation are among the main causes of preventable morbidity and mortality in the world. Some 5 million deaths a year are due to polluted drinking water, with infants and children particularly at risk. While the majority of these deaths occur in developing countries, OECD countries are not immune to outbreaks of water-borne disease. Major outbreaks of gastrointestinal illness have occurred in the last decade in some OECD countries. The development and use of reliable drinking water management systems and technologies are essential in assuring the microbiological safety of drinking water supplies. ■

Meeting global challenges for water management

Recent OECD work has examined water pricing policies in the countries of Eastern Europe, the

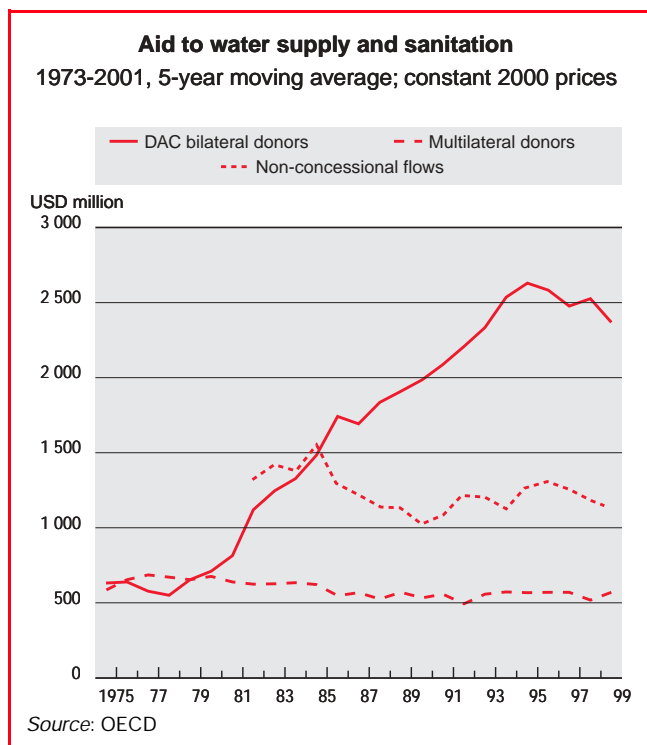
Box 2: Progress and challenges in water management: OECD country performance

The OECD has carried out country environmental performance reviews since 1992. To date this programme has involved 42 reviews, covering all member countries and a few non-OECD countries. These reviews suggest that considerable progress has been achieved in the following broad areas of water management in OECD countries:

- Extending access to drinking water for all.
- Improving water supply and sanitation for low-income groups.
- Making major reductions in point discharges from industry and urban areas.
- Cleaning up the worst polluted waters.
- Establishing a comprehensive framework of water management laws, policies, programmes, and institutions.
- Achieving a good degree of integration of quantity and quality management.
- Making progress towards the whole basin approach.
- Widening the implementation of integrated permitting.
- Improving enforcement of regulations and permit conditions.
- Attaining good capacity for effective implementation of policies and measures.
- Increasing momentum in the reform of water pricing regimes.

Nevertheless, water management efforts of recent decades have not been enough to safeguard and restore all receiving waters and aquatic ecosystems to adequate quality levels. Much progress remains to be made in many areas, including:

- Achievement of ambient water quality objectives.
- Better protection of aquatic ecosystems.
- Improved cost-effectiveness of water management policies and activities.
- Reduction of subsidies that exacerbate problems such as over-abstraction and pollution.
- More consistent application of the polluter pays and user pays principles.
- Implementation of existing laws, regulations, and policies.
- Renewed attention to human health aspects of water management.
- Control of diffuse sources and depositions of nutrients, heavy metals, and persistent organic pollutants.
- Prevention of aquifer contamination by nitrates, pesticides, and other persistent chemicals.
- Completion, restoration, and upgrading of wastewater treatment infrastructure.
- Better integration of water management into sectoral and land use policies.
- Protection against floods and droughts.
- Greater public participation in the formulation of water management policies and programmes.
- More effective measures to ensure that water is affordable to all.



Caucasus, and Central Asia (EECCA), and in China. Unlike most OECD countries, many of these countries face serious financial deficits in the water sector. This results in under-funding of necessary maintenance and expansion of water and wastewater treatment infrastructure. In the EECCA countries the extensive water infrastructure left from the communist period is deteriorating significantly, resulting in reduced service quality and increased health and environmental risks. These countries face significant problems maintaining the existing infrastructure, let alone expanding it. OECD work with EECCA countries and China is currently focusing on developing realistic plans to finance infrastructure maintenance and expansion through application of water charges, in combination with other available financing.

Meeting the huge financing needs for the maintenance and expansion of basic water services is a key priority recognised in the Millennium Development Goals and at the World Summit on Sustainable Development. An estimated USD 75 billion per year is needed to expand water service infrastructure, beyond the costs of maintaining existing systems. Current investment levels are in the order of

USD 30 billion, so there is clearly a large financing gap. Closing this gap will require making full use of available technical and institutional options for minimising the cost of provision. These include public-private partnerships, partial self-provision by communities, and many others.

The OECD is undertaking a number of activities to enhance water management policies in OECD and non-OECD countries alike, basing this work on recent experiences. Much of this work supports internationally agreed water goals, including those on access to drinking water and sanitation. Current projects involve:

- Comparing performances of OECD country water management systems, using the results of OECD Environmental Performance Reviews, as well as peer reviews of country regulatory reforms and economic development.
- Addressing social issues related to water pricing policies, including the need to alleviate negative distributive effects.
- Assessing the utility of transferable permits in managing water use and pollution.
- Strengthening management and technical systems to assure microbiological drinking water quality.
- Measuring and managing water use and water pollution in agriculture.
- Supporting policy and institutional reform of the urban water sector, including the development of stable financing plans for water and wastewater infrastructure expansion and maintenance in selected non-OECD countries.
- Assessing levels and effectiveness of aid for the water sector in non-OECD countries. ■

Box 3: OECD Environmental Strategy for the First Decade of the 21st Century

The OECD Environmental Strategy for the First Decade of the 21st Century, adopted by OECD Environment Ministers and endorsed by Ministers of Economics and Finance in 2001, highlights freshwater as a priority for policy action. It articulates two key challenges facing OECD Member countries in assuring sustainable management of water resources, and outlines 9 national actions that OECD countries agree to take by 2010 to address these challenges:

Challenges:

- Manage the use of freshwater resources and associated watersheds so as to maintain adequate supply of freshwater of suitable quality for human use and to support aquatic and other ecosystems.
- Protect, restore and prevent deterioration of all bodies of surface water and groundwater to ensure the achievement of water quality objectives in OECD countries.

National action by OECD countries:

- Ensure access for all to safe drinking water and adequate sanitation.
- Achieve agreed water quality targets and adopt additional targets necessary to ensure the ecological value of in-situ water resources and the ecological functions they provide.
- Apply the ecosystem approach to the management of freshwater resources and associated watersheds, based on integrated river basin management.
- Develop and apply legal frameworks supported by appropriate policy instruments to ensure the sustainable use of freshwater resources, including measures to enhance their efficient use.
- Establish policies aimed at recovering the full costs of water services provision and the external costs associated with water use, and provide incentives to use water resources efficiently (demand side management), taking the social impacts of such policies into account.
- Significantly reduce water network leakage.
- Develop appropriate strategies to manage watersheds ecologically to prevent extreme flood and drought risk.
- Ensure co-operation for the environmentally sound management and efficient use of transboundary water resources to reduce flood risks and to minimise potential conflicts from the use or pollution of transboundary water resources.

For further reading

- **Social Issues in the Provision and Pricing of Water Services**, 2003
ISBN: 92-64-09991-3
- **OECD Environmental Performance Reviews – Water: Performance and Challenges in OECD Countries**, 2003
ISBN: 92-64-16078-7, 9 euros, 36p.
- **Assessing Microbial Safety of Drinking Waters: Perspectives for Improved Approaches and Methods**, 2003
ISBN: 92-64-09946-8, 40euros, 296p.
- **Guidelines for Consumer Protection and Public Participation in Urban Water Sector Reform in Eastern Europe, Caucasus and Central Asia**, 2003, *Forthcoming*
- **OECD Environmental Data: Compendium 2002**, 2002
- **OECD Environmental Strategy for the First Decade of the 21st Century**, 2001
Available at www.oecd.org/env
- **Environmental Indicators for Agriculture Volume 3: Methods and Results**, 2001
ISBN: 92-64-18614-X, 73euros, 416p.
- **Water Management and Investment in the New Independent States**, 2001
ISBN: 92-64-18701-4, 37euros, 144p.
- **OECD Environmental Outlook**, 2001
ISBN: 92-64-18856-8, 60euros, 368p.
- **Global Trends in Urban Water Supply and Waste Water Financing and Management: Changing Roles for Public and Private Sectors**, 2000
- **The Price of Water: Trends in OECD Countries**, 1999
ISBN 92-64-17079-0, 28euros, 176p.
- **Sustainable Management of Water in Agriculture: Issues and Policies**, 1998
ISBN: 92-64-16064-7, 25euros, 208p.
- **Water Consumption and Sustainable Management of Water Resources**, 1998
ISBN: 92-64-16082-5, 19euros, 64p.
- **OECD Environmental Data: Compendium 1999 edition**
ISBN: 92-64-05879-6, 60euros, 332p.

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The OECD Policy Briefs are prepared by the Public Affairs Division,
Public Affairs and Communications Directorate.

They are published under the responsibility of the Secretary-General.

Where to contact us?

FRANCE

OECD Headquarters
2, rue André-Pascal
75775 PARIS Cedex 16
Tel.: 33 (0) 1 45 24 81 81
Fax: 33 (0) 1 45 24 19 50
E-mail: sales@oecd.org
Internet: www.oecd.org

GERMANY

OECD BERLIN Centre
Albrechtstrasse 9/10
D-10117 BERLIN
Tel.: (49-30) 2888353
Fax: (49-30) 28883545
E-mail:
berlin.contact@oecd.org
Internet:
www.oecd.org/deutschland

JAPAN

OECD TOKYO Centre
Nippon Press Center Bldg
2-2-1 Uchisaiwaicho,
Chiyoda-ku
TOKYO 100-0011
Tel.: (81-3) 5532 0021
Fax: (81-3) 5532 0036/0035
E-mail: center@oecdtokyo.org
Internet: www.oecdtokyo.org

MEXICO

OECD MEXICO Centre
Av. Presidente Mazaryk 526
Colonia: Polanco
C.P. 11560
MEXICO, D.F.
Tel.: (00.52.55) 5281 3810
Fax: (00.52.55) 5280 0480
E-mail:
mexico.contact@oecd.org
Internet: www.rtn.net.mx/ocde

UNITED STATES

OECD WASHINGTON Center
2001 L Street N.W.,
Suite 650
WASHINGTON D.C. 20036-4922
Tel.: (1-202) 785 6323
Fax: (1-202) 785 0350
E-mail:
washington.contact@oecd.org
Internet: www.oecdwash.org
Toll free: (1-800) 456 6323

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