

Improving Water Management: Recent OECD Experience

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Introduction

Securing safe and reliable water and sanitation services for all is one of the leading challenges facing sustainable development. All but a few OECD countries have connected 100% of their populations to safe water supplies, and the majority are connected to wastewater treatment. Progress has also been made in developing countries, where between 1990 and 2000 access to safe water supply rose from 73% to almost 80% of the population. But there is still a long way to go. Over 1 billion people worldwide still lack access to safe water and 2.6 billion people are without access to adequate sanitation. About 80% of all diseases in developing countries are water-related, leading to an estimated 1.7 million deaths each year.

To tackle these challenges, countries agreed through the Millennium Development Goals (2000) and commitments at the World Summit on Sustainable Development (2002) to halve by 2015 the number of people worldwide without access to safe water and sanitation services. Achieving these goals will not be easy, but it is possible with reliable financing and the proper management of water resources.

Reliable financing is needed to expand water supply and sanitation services to those without access. Financing can come from a range of sources, including public spending, international development assistance, private financing, and charging for the use of water services. Over the longer term, a sustainable financing system should rely primarily on water charges, with provisions for affordable access by the poor.

Proper management of existing water supplies entails sufficient quantities of clean water to support both human needs and essential ecosystem functions. Good governance will require careful consideration of the institutions in place to manage water supply and sanitation systems, including the role that might be played by the private sector. As the largest user of water, policies to encourage sustainable use by agriculture will be particularly important. ■

The water challenge: what does the future hold?

In the coming decades, supplies of fresh, safe water will be subject to significant pressures. Climate change in the form of sea level rise, storm damage and the accentuation of seasonal effects such as winter flooding and summer droughts, will reduce the certainty and increase the vulnerability of water resources. Moreover, rising levels of pollution in many areas as well as threats from physical disruption of supplies and possible terrorist attacks on critical infrastructures will bring greater focus to water security issues in some countries.

By 2025, global water use looks set to rise by up to 30% in developing countries and over 10% in the developed world. The population living in water-stressed areas is set to double over the period 1995-2025, and by 2030 some two-thirds of the world's inhabitants may experience moderate to high water stress. The regions of particular concern are the Middle East, North Africa, Southern Africa, South Asia and parts of China – regions in which many countries are ill-equipped to deal with these pressures. Moreover, many major water resources are shared among countries: there are more than 250 international transboundary basins, covering some 60% of the earth's freshwater volume. Competition for scarce resources, combined with diminishing water quantity and quality, may exert a destabilising influence on a region's development.

For developing countries the requirements are stark: many more millions of people will need to have access to safe water and sanitation. Timely action would allow developing countries to capitalise quickly on the huge socio-economic gains that could be achieved through expansion of provision and basic improvements. It is estimated, for example, that the benefits of halving the proportion of people without access to improved water sources by 2015 would be nine times the costs incurred. Universal access to improved water and sanitation services by 2015 would generate an even higher benefit-cost ratio, in the range of 10.

For OECD countries and transition economies, a main challenge will be to finance the replacement of decaying and leaking infrastructure. Much of the stock of water supply and sanitation infrastructure in OECD countries is coming up for renewal, and in most cases there are no provisions for financing the costly replacement and repairs that will be required. Another challenge will be the development and successful implementation of basin-level water management plans to address problems of over-drawing and degradation of water resources, particularly groundwater sources. ■

How can reliable financing be secured?

Reliable and sustainable financing will be needed to expand and maintain adequate water supply and sanitation services for all. Lessons can be drawn from the experiences of OECD and transition economies in developing systems for financing infrastructure and water services provision and in applying full cost recovery water pricing systems.

Many of the countries of Eastern Europe, Caucasus, and Central Asia (EECCA) face serious financial deficits in the water sector. The extensive water infrastructure left from the communist period is deteriorating, resulting in reduced service quality and increased health and environmental risks. These countries face significant problems in maintaining 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 applying water charges, in combination with other available financing. This work indicates that in many places there is significant scope for increasing household water prices in order to better

cover operation and maintenance costs. Such reforms should go along with measures that ensure that the poor have affordable access to water services.

Public spending on water also often needs to increase, especially in the poorest countries where consumers are unable to afford the full costs of water services. Public spending will not only need to come from local governments, but also from regional and central government sources, since local governments usually lack the means to shoulder the financial burden alone.

Official Development Assistance (ODA) also has a role to play. While in most cases domestic rather than external resources will be the dominant source of finance, external finance can make an important financial contribution in the poorest countries, and it can play an important catalytic and demonstration role in others. External finance can support financial and governance reforms in the sector, build capacities, and introduce international disciplines and good practices. ■

How much should consumers pay for water?

Full cost recovery water charges can help to generate the necessary funds for infrastructure development, renewal and maintenance, and provide incentives for efficient water use. Most OECD countries have been moving towards water pricing schedules that reflect the full marginal costs of providing water services for households and industry, combined with measures that better target support to low-income users who most need it. Service fees for municipally supplied water services are in place in almost all OECD countries. In about one-third of countries, they now cover the full cost of operating and maintaining water facilities and may include all or part of capital costs. Agricultural water use, however, remains heavily subsidised in OECD countries.

The structure of water pricing tariffs varies considerably amongst OECD countries, but there is a trend away from fixed charges and toward tariffs which reflect the amount of water actually consumed. Partly as a result of these pricing systems, per capita water use has fallen in OECD countries by about 11% since 1980, and almost half of OECD countries have reduced their total water use. In Korea, for example, the establishment of a comprehensive programme to manage household water demand, support installation of water-saving devices, and enforce water pricing tariffs led to a 450 million tonne reduction in municipal water demand in 2002 compared with 1999. A prerequisite for such systems is the existence of water meters to measure the amount of water used per household. About two-thirds of OECD countries apply water metering in most of their single-family houses, but individual water metering is less common in apartment blocks which house the majority of OECD populations.

Most OECD countries have adopted measures to ensure affordable access by all segments of society to water supply and sanitation services. Such measures include tariff-based mechanisms (*e.g.* where the charge increases with each additional unit of water used) or income measures (*e.g.* through direct subsidies to low-income consumers or those with large water requirements, such as for dialysis purposes). Other measures include reducing VAT or waste water taxes, use of progressive social tariffs, avoiding water disconnection, and abolishing annual fixed fees.

Water charges applied to industrial water use and wastewater treatment in OECD countries have also been approaching full cost recovery levels. Most of the water used by industry now comes from direct abstraction in OECD countries, for which about half of all OECD countries levy charges. Pollution charges for discharging effluent to natural waters now exist in more than a dozen OECD countries. These charges are often quite high, and as a result many water-intensive industries have moved towards in-house water recycling or water treatment. ■

How is aid to the water sector evolving?

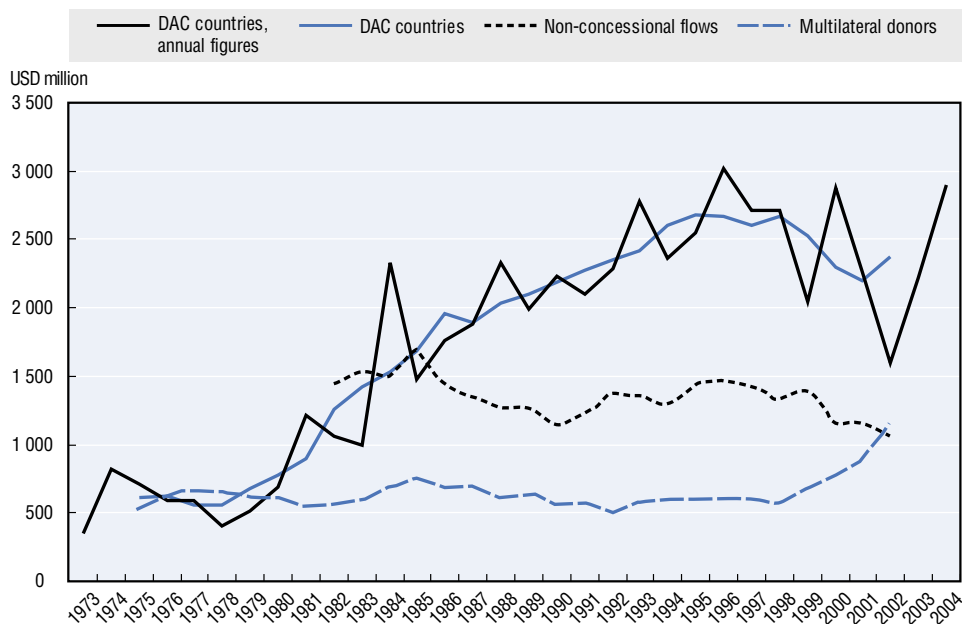
The latest statistics from the Development Assistance Committee (DAC) of the OECD show a sharp increase in ODA for water supply and sanitation in 2004. DAC members' bilateral ODA commitments to the water sector amounted to USD 3 billion that year. Multilateral donors' commitments also increased, amounting to a total of USD 1.8 billion in 2004, reversing the downward trend observed since the mid-1990s (Figure 1).

The trend in aid to the water sector is set by the large donors and allocations are concentrated in a relatively few recipient countries. Three-quarters of total bilateral aid to water supply and sanitation in 2000-2004 was extended by Japan, Germany, the United States, France, and the Netherlands (Table 1). More than half of the allocations were directed to Asia. The share of recipients in Sub-Saharan Africa was 15%, representing a modest increase over the last few years.

However, there is no sign of increased prioritisation of the water sector as such. The share of aid to water supply and sanitation in DAC members' total ODA allocable by sector dropped from 9% in 1999-2000 to 6% in 2001-2002 and remained at 6% in 2003-2004. Actual disbursements of DAC members' bilateral ODA to water supply and sanitation amounted to USD 1.9 billion in 2003 and USD 2.2 billion in 2004. Over half of these amounts relate to projects committed before 2000. The main recipients include many of the countries mentioned in Table 1 but also Egypt, Turkey and the Philippines. The large infrastructure projects started in these countries in the second half of the 1990s are still ongoing, whereas they have not received significant new commitments during the last few years.

In the water sector, most aid is used to finance investments in infrastructure. Projects are large and on average take at least 8 years to implement – an important consideration when discussing any strategies and possible reorientation of aid to reach the Millennium Development Goal on access to water supply and sanitation. ■

Figure 1. TRENDS IN ODA TO WATER SUPPLY AND SANITATION, 1973-2004



Note: 5-year moving averages (except where marked annual), constant 2003 prices.

Source: DAC statistics, Creditor Reporting System.

Table 1.

MAIN DONORS AND RECIPIENTS OF BILATERAL ODA TO WATER SUPPLY AND SANITATION, 2000-04

	Japan	Germany	United States	France	Netherlands	Other DAC countries	Total DAC countries
China	222	5	1	6	4	37	275
Iraq	0	1	170	–	0	10	181
Vietnam	52	10	0	17	7	30	117
Palestinian adm. areas	2	23	72	5	1	9	113
India	39	8	2	3	18	32	102
Jordan	6	24	45	–	0	12	87
Malaysia	80	–	–	–	–	1	81
Morocco	24	26	2	16	0	7	75
Peru	55	11	0	–	1	6	74
Tunisia	28	12	–	26	–	1	68
Other recipients	326	254	52	100	93	420	1 245
Total	835	375	344	173	124	567	2 417

Note: Annual average commitments in millions of USD, constant 2003 prices.

Source: Creditor Reporting System.

How can governance of water resources be improved?

Water management involves balancing complex economic, social and environmental objectives. The development of integrated water resources management (IWRM) plans, an objective that all countries agreed to at the World Summit on Sustainable Development, is a key step towards a sustainable governance regime. A whole-of-government approach is also necessary to ensure policy coherence and efficient management. As with many other services, public authorities have tended to assume the double role of owners of the utilities (providing water supply and sanitation services) and of regulators of both public and private providers. A clear distinction of these functions of the State – as a regulator, owner and possible provider of services – can help to disentangle the interplay of public and private interests.

A potentially useful management tool in this respect are performance-based contracts between water utilities and municipalities, which can help to ensure accountability for water services provision. Through these, regulators can provide clear objectives, while agreeing with the water utilities the corresponding resources and capacities needed for implementation.

A coherent approach to water management needs to be applied at the relevant geographical level, such as through a “river basin” approach, with clear agreement on the responsibilities of local and national or federal authorities, and a mechanism for resolution of conflicts at the local level. Contracts and partnerships established between the national level and the local level can help, together with entrusting agencies at the basin level with specific delegated regulatory powers. ■

How can the private sector help?

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 water service facilities. At the same time, there is a trend in many OECD countries 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 increasing role of the private sector, ownership responsibility most often remains in public hands. The most widely used systems have been the “affermage” or “leasing” model, under which private companies manage publicly owned water assets, and the “concession” model whereby private operators also have responsibility for the financing of the infrastructure.

In transition economies and developing countries, international private sector operators have been much less successful, with many reducing their activities in such markets in recent years. The reasons for this trend lie in the significant exposure of water operators to political and economic risks. Networked water systems have extremely high capital costs, well in excess of other infrastructure services. They are mostly financed with debt, for as long a term as is commercially available. Given the high initial costs, extremely long pay-back periods are necessary, and it is essential that revenue streams are as secure as possible. Urban water services are also a business with relatively low rates of return on investment. As a result, private operators are particularly sensitive to the quality of the investment climate and the level of risk, which has proven to be an important obstacle to Public-Private Partnerships in many regions of the world. However, some experts suggest that domestic private sector operators are now increasingly moving into emerging water markets. For example, in Russia about 11% of the urban population are now being served by such operators. These companies may be in a better position to manage certain risks due to their better knowledge of local conditions.

For the near future, most Public-Private Partnerships for the water sector are likely to focus on OECD and emerging market economies, where the framework conditions for foreign investors are most favourable. When private sector participation occurs outside these low risk regions, it is likely to take place in a form where it involves minimum risk for the private operator, for example under service or management contracts, and where the private operator contributes its know-how rather than finance. Thus, public budgets and ODA will need to continue to play an important role in financing water infrastructure in developing countries for the foreseeable future. ■

How can sustainable water management in agriculture be achieved?

Agriculture is responsible for approximately 70% of water use worldwide. In OECD countries, it accounts for 45% of total water use. Water use by farming has increased more rapidly than other uses in OECD countries over the past decade. Overuse of often scarce water resources in agriculture is an increasing concern, especially in the context of climate change. Moreover, agriculture is a major source of water pollution from nutrient and pesticide run-off. While in many countries regulations limit water pollution, government support to agricultural production and input subsidies – including for the supply of water and maintenance of water infrastructure – misalign farmer incentives and aggravate overuse and pollution of water across most OECD countries. As a result, households and industries in OECD countries pay significantly more for water than farmers. Moreover, property rights to water are often ill-defined in agriculture, and the “polluter pays” principle is often weakly enforced if at all.

A major challenge for governments is to ensure that water resources are not overused by farmers, and that they are best allocated among competing demands to efficiently produce food and fibre, minimise pollution and support ecosystems, while meeting social aspirations.

Policies and actions are beginning to shift toward more sustainable agricultural water management in OECD countries. A mix of market-based, voluntary and regulatory approaches are addressing these issues. But there is widespread recognition of the need for greater use of market-based instruments, such as better pricing structures and tradable permits, accompanied by government regulations, as well as co-operative and local efforts among water providers and users.

Countries are at different stages in reforming their water policies, partly reflecting the varying importance of water-related issues in agriculture across OECD countries and current systems of property rights and management structures. But all countries need to reinforce the monitoring and evaluation of current water policy reform initiatives to ensure that these reforms are moving toward sustainable agricultural water management (Box 1). ■

For further information

For more information about the OECD's work on water management and related issues, please contact:

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Box 1.

OECD WORKSHOP ON AGRICULTURE AND WATER: SUSTAINABILITY, MARKETS AND POLICIES

An OECD Workshop, held in Australia in November, 2005, highlighted a number of issues to be addressed by policy makers, ranging from decision makers at the watershed through to national levels, to ensure sustainable water use in agriculture. These include:

- using an appropriate mix of instruments and tools aimed at addressing agriculture resource management issues to ensure the achievement of coherent agricultural, environmental and water policy goals as well as cost effective implementation (e.g. integrated policy treatment of water and energy input use by agriculture), including coordinated policy responsibilities and structures at different levels from the watershed to national level;
- integrating and expanding current scientific research and data collection capacity to underpin improved policy making, including better water accounts;
- identifying property rights attached to water withdrawals, water discharges and ecosystem provision;
- establishing clear lines of responsibility in the institutional framework to manage water – who does what, who pays for what, who monitors and evaluates – underpinned by a long term commitment from governments to resource the necessary actions, especially with the growing concerns related to climate change and climate variability;
- strengthening water policy reforms to provide a robust regulatory framework to allow, for example, for water pricing and trading, and water service competition or benchmarking performance where competition is limited, and nutrient trading for pollution abatement; and,
- raising the capacity for stakeholders (farmers, industry and community groups) to participate in the design and delivery of policy responses for integrated water management.



For further reading

- OECD (2006, forthcoming), **Agriculture and Water: Sustainability, Markets and Policies**, Proceedings of an OECD Workshop, Adelaide, Australia, 14-18 November, 2005, available at www.oecd.org/agr/env.
- OECD (2006, forthcoming), **Environmental Indicators for Agriculture Volume 4**, to include chapters on OECD trends in agricultural water use and impacts on water quality, available at www.oecd.org/agr/env/indicators.htm.
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- OECD (2001), **OECD Environmental Outlook**, ISBN 92-64-18615-8, € 75.
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