

Executive Summary

Water is a key prerequisite for human and economic development, and for maintaining ecosystems. Poor governance and inadequate investment, however, are resulting in large populations not having access to the water services they need. Failure to manage water resources effectively is also resulting in increased pressure on these resources, mounting competition for their use among different economic activities, and, in some regions, conflict.

Major economic benefits potentially accrue from improved water resource management and water services, especially for agriculture, industry, and water and sanitation. The World Health Organization (WHO) estimates that the health benefit/cost ratio for investment in water supply and sanitation (WSS) alone is between 4 and 12. But these benefits are not adequately quantified, nor communicated in a way that could inform public and political debate. This results in water resources management institutions being unable to carry out their functions, and in insufficient funding for investment and maintenance of water infrastructure. The outcome is that the potentially large benefits of investing in water are not being realised in practice, and the social costs linked to poor water management continue to increase.

In OECD countries, access to safe water supply and sanitation has largely been ensured following substantial investment over many decades. Access to water by agriculture and industrial users is generally ensured. However, significant investments will still be required to rehabilitate existing infrastructure, to bring it into conformity with more stringent environment and health regulations, and to maintain service quality over time.

In non-OECD countries, the challenges are more daunting. Large parts of the population have no access and many others suffer unsatisfactory services. Water services for agriculture and industry are also inadequate. The international community is committed to achieving the Millennium Development Goals (MDGs) that aim, *inter alia*, to halve the proportion of people without access to safe drinking water and basic sanitation by 2015. The costs of not meeting these objectives are very significant, and it is important to recognise that meeting them would still leave millions of people without access to adequate services. Inadequate access to water, sanitation and poor hygiene account for 1.8 million child deaths per year – the second largest cause of child mortality after malnutrition – in addition to having other health impacts.

The challenges of providing access to safe water and basic sanitation are further underlined by increasing demands from other uses of water. The increased demand is linked with a variety of factors: population increase, pressures for food production, rapid urbanisation, degradation of water quality, and increasing uncertainties about water availability and precipitation regimes, in part due to climate change. In 2005, 2.8 billion people lived in areas under severe water stress.¹ By 2030, the *OECD Environmental*

Outlook to 2030 estimates that this number will increase by about 1 billion, to 3.9 billion (47% of the world population), without taking climate change into consideration.

Despite strong calls for action at the international level, and considerable efforts at local, national and international levels, the world is still off track with respect to achieving internationally agreed water-related targets. Few countries have defined water resources management strategies, as called for in the Millennium Declaration. With regard to the water-related MDGs, the 2008 World Health Organization-United Nations Children's Fund (WHO-UNICEF) Joint Monitoring Report states that, while the world globally is on track to achieve the drinking water target, a number of regions will not reach this goal, and the world as a whole is off track with regards to the sanitation target.

Substantial additional finance is required to meet these challenges. A recent WHO report² estimates that USD 18 billion will be needed annually to extend existing infrastructure to achieve the water-related MDGs, roughly doubling current spending. But what is also growing clear is that the cost of maintaining and modernising existing systems will grow steeply and already greatly exceeds the annual costs of extending the networks. WHO estimates that an additional USD 54 billion per year will be needed just to ensure continued services to the currently served population. This does not include the additional needs generated by new infrastructure.

Additional financial resources are a necessary, but not sufficient, condition for achieving internationally agreed, and other, water policy objectives. There is also considerable scope to improve the cost-effectiveness of expenditures on water. These two issues dovetail each other and are linked to the way institutions are established and their policies are implemented. This is particularly challenging in the water sector as it usually cuts across the responsibility of several ministries, and requires the involvement of national, regional and local authorities. In addition, the implementation of effective water policies is often hindered by political and public opposition to increasing the price of water, which impinges on the establishment of effective financing arrangements and efficient system performance.

Thus realising the benefits of improved water policies requires not only more finance, but also improved governance of the sector, as well as effective strategies that can overcome the vested interests and opposition that often block reform. Effective communication of fact-based analysis can contribute to informed policy debates and transparent decision making.

The benefits of strategic financial planning for water supply and sanitation

The water and sanitation sector is seriously under-financed in many countries. In some developing and transition economies, this has led to the deterioration and the eventual collapse of infrastructure.

One approach to address these challenges is through strategic financial planning for the water sector. Such plans should establish realistic policy objectives regarding access to water and sanitation services that are affordable to public budgets and households. They should consider ways of mobilising more financial resources, reducing excessive demand, and improving the cost-effective use of resources. Strategic financial planning should help to reach consensus on policy choices and how they should be achieved. Ideally such planning processes should be led by ministries of finance, in co-ordination with other ministries, and engage other relevant stakeholders. This must be done in a way

that ensures a more rational use of existing financial resources and access to additional ones.

Effective financial planning for the water sector requires finding the right mix of revenues from the so-called “3Ts”: tariffs, taxes and transfers (including official development assistance [ODA] grants). These are the ultimate sources of revenue for the sector and they need to increase to a level where they allow the recovery of costs. This will help to attract other sources of finance – such as loans (including ODA loans by bilateral donors and international financial institutions), bonds and private investors. These additional sources of finance are important for making the large, upfront investments normally required in the water sector, but they need to be repaid by some combination of the 3Ts. In addition, the water sector will be able to attract these external sources of finance only if revenues (the 3Ts) are sufficient and reliable.

Full cost recovery from tariffs which may theoretically be the ideal solution, in practice remains a distant objective in many countries. However, even very poor countries can reach important cost-recovery targets at the sub-sector level: such as cost recovery for operation and maintenance (O&M) and investments in urban water supply, or cost recovery for O&M expenditures in rural water supply. Increasing revenue from tariffs requires a comprehensive approach, which includes reforming tariff levels and structures and increasing bill collection rates, but also increasing levels of service and putting in place social protection measures.

Where full cost recovery from tariffs cannot be achieved, public budgets and, for poorer developing countries, ODA will need to play an important role in financing sector costs. The water sector should therefore aim to achieve cost recovery from a combination of financial sources, including user charges, public budgets and ODA, rather than from tariffs alone – a concept that has been termed “sustainable cost recovery”.³

The latest statistics on ODA indicate a renewed emphasis on the water sector in donors’ aid programmes. In 2005-06, total aid for water rose to USD 6.2 billion which represented 9% of total sector allocable aid. Over the last five years, aid for water was allocated mostly to Asia (55%) and Africa (32%). However, the share of the region most in need of improved access to water supply and sanitation, Sub-Saharan Africa, declined from 22% over 2001-04 to 17% in 2005-06 for Development Assistance Committee⁴ (DAC) members. ODA transfers to the water sector are in the form of both grants and loans with the latter representing almost 40% of the DAC total.

Although from a global perspective ODA provides a relatively small part of revenues for the water sector, it can help close the financing gap in poorer countries. Donor support for country-owned strategic financing plans can enhance the effectiveness of donor aid for the water sector, in line with the Paris Declaration on Aid Effectiveness and the Accra Agenda for Action.

Effective strategic financial plans for the water sector should also emphasise opportunities to reduce costs. This could include improving the operational efficiency of utilities – though this is largely dependent on local conditions and governance. Improved contractual arrangements, better incentives, and clearer roles for utility operators can help reduce costs. Other important opportunities are linked to policy decisions such as adopting lower cost technologies, accepting lower service levels, extending deadlines for attaining targets, and rationalising construction and environmental standards.

Tariffs: reconciling different policy objectives

Tariffs often provide the major share of financing for the water sector, though this is usually well short of the theoretical goal of “full cost recovery”. A number of obstacles constrain a fuller role for tariffs, including lack of awareness of the broader economic benefits of water supply, and particularly sanitation, and concerns about the impacts on low-income households. These factors are relevant to a greater or lesser extent in both OECD and non-OECD countries.

Tariffs have to meet diverging financial, economic, environmental and social objectives, some of which may be conflicting. A major challenge therefore is designing tariffs in a way that strikes an appropriate balance among competing objectives. This is ultimately a political task and needs to be addressed through a transparent, democratic, participatory process. This requires a debate about the appropriate balance between the various policy objectives, assessing the costs and benefits of different tariff levels, examining the distributional impacts of tariff structures, and developing appropriate compensatory or mitigation measures to avoid affordability problems. Such a debate is likely to be more effective if tariff reforms are considered in combination with issues such as the level of service and the efficiency of service provision.

It is especially important that two objectives are met simultaneously: the financial sustainability of the service provider and the affordability of the service for low-income households. Two questions need to be addressed. The first concerns the portion of the costs that should be covered by revenues; and the second, the share that should be covered by different income groups, family types, or different geographical units. The way in which costs are allocated provides the basis for considering cross-subsidisation across regions’ user groups.

Affordability limits are better assessed at the local level, and need to take into consideration local knowledge on low-income households’ current spending on services, ability and willingness to pay (WTP) for improved services, although caution should be used in interpreting WTP estimates. In the absence of this information, the risk is that decisions about tariff levels and structures will be based on exaggerated assessments of affordability constraints that underestimate willingness to pay.

In such cases, the result is a vicious circle of underfinanced services, lower than needed investment and maintenance, and lack of access to water services. This hurts the poor most, as they are the first to suffer from low quality services. Moreover, keeping tariffs artificially low prevents the extension of services to the currently unserved and is not an effective measure to help the poor.

A review of tariff policies for water supply and sanitation in OECD countries reveals a number of trends:

- continued real price increases – at times, substantial – for household service over recent years, both in OECD and non-OECD countries, which may signal an increased role of tariffs in cost recovery;
- a continued decline in the use of decreasing block tariffs and flat fee systems for household tariffs, in favour of two-part fixed charge + variable fees with a uniform or increasing block volumetric component;
- the limited application of decreasing block tariffs for industrial uses (or for the larger amongst them) in only a few OECD countries;

- the increased application of taxes on water bills;
- increasing separation of wastewater from drinking water charges, and charging for wastewater on the basis of actual costs thus raising charges, with consequent substantial increases in the price of wastewater management services;
- evidence that the response of domestic consumers to marginal price changes may be limited, while more significant – but possibly temporary – impacts on demand may follow changes in tariff structure, and especially a shift from flat to volumetric rates;
- continued attention to social concerns, addressed through innovative tariff structures or parallel income-support mechanisms.

How to best harness the capabilities of public and private actors for water supply and sanitation services

Many countries have engaged the private sector in operating, modernising and/or expanding their water and sanitation infrastructures. Experience has been mixed. There are many examples of well-run public and privately operated utilities. The bad experiences can be largely attributed, among other factors, to a misunderstanding of the risks involved and unclear allocation of responsibilities among stakeholders. Debate has now moved on from public vs. private ownership, to consider ways in which water services can be provided not only safely but also most efficiently, effectively and sustainably, regardless of ownership.

Private actors in the water sector today are more diverse than 10-15 years ago: in addition to international companies, they include local and regional actors, small-scale water operators, private sector whose core activity is not water (financiers, big users), joint ventures between public and private companies as well as public companies operating abroad (effectively as private entities). Mimicking this diversity, contractual arrangements are also becoming increasingly diverse and context-specific, covering the spectrum from divestiture of assets to non-financial forms of participation.

Governments have taken various measures to improve the stability and predictability of their regulatory frameworks for water. However, managing the flexibility required to sustain long-term commitments in a constantly changing environment remains a major challenge. Most developing countries find it difficult to make the long-term policy decisions necessary to harness private sector capabilities. The choice of whether or not to engage the private sector should be based on an analysis of costs and benefits and involve careful definition of contractual arrangements – typically output-based, providing realistic incentives to improve coverage and efficiency and including dispute resolution mechanisms.

Private sector participation does not relieve governments of their responsibility to ensure safe and efficient water services and to prevent the abuse of monopoly position. OECD has developed a Checklist for Public Action⁵ that can help governments to make the best use of the capabilities of both public and private actors in the development, maintenance and operation of water supply and sanitation services. It provides a coherent set of policy directions, including the allocation of roles, risks and responsibilities, as well as the framework conditions necessary to make the best of private sector participation.

Economic instruments to promote sustainable water use for agriculture

The issue of water resources management should be addressed in a co-ordinated manner, looking at the interactions between competing water uses (including pollution and ecosystem requirements). Integrated water resources management is a holistic approach that aims to reconcile competing requirements through a negotiated process that will inevitably require trade-offs between economic sector users, and between these users and social and environmental concerns. This analysis lies beyond the scope of this report, which focuses primarily on advancing understanding of the role of pricing and financing issues in different parts of the water sector. By treating them in the same report, however, common principles can be identified. Future work by OECD will address integrated water resources management issues, particularly their financing and pricing aspects.

To improve water resources management, it is critical to manage the way water is used in agriculture. Agriculture is by far the largest water user and also contributes to pollution of surface waters and groundwater. Improving agricultural water management is a key aspect of achieving more sustainable water resources management. Agricultural water use needs to be part of an integrated approach. In particular, the report highlights the importance of providing the agriculture sector with the right signals to increase efficiency in water use or to modify production patterns.

Charges for surface water supplied to farms have been increasing in most OECD countries. But, while the principles of sustainable cost recovery should hold true for agriculture water use as well, often farmers are only covering the operation and maintenance costs for water supplied, with little or no recovery of capital costs for water delivery infrastructure. Water pricing policies rarely take into account social or environmental values. Groundwater policies usually involve licenses and other regulatory instruments. But illegal connections to surface water distribution systems and illegal groundwater pumping is difficult to observe or control and remains a major challenge for the sustainability of farming. Where countries have increased water charges to farmers, the available evidence indicates that it has not led to reduced output.

Agricultural policies linked to production encourage less efficient use of water, lead to off-farm pollution and exacerbate flood damage in many OECD countries. There has been some progress in lowering overall agricultural support levels and in decoupling support from production and inputs (including water and energy). This is beginning to encourage more efficient use of water, better adaptation to water scarcity, and lower off-farm pollution. Adoption of improved farm practices can promote the efficient use of water and infrastructure for production, help flood mitigation, and provide other environmental benefits, such as wetland conservation. And well-targeted agricultural support can maintain farming systems in those countries where there is an association between farming and the provision of ecosystems. But isolating and quantifying the overall economic efficiency and environmental effectiveness of agricultural and agri-environmental support on water resources is difficult and further analysis on causation is needed.

Water reforms are addressing an increasingly complex set of policy objectives including: ensuring robust water entitlements (property rights); achieving cost recovery targets; developing water charges reflecting cost of service provision; establishing trading systems (of water use permits) to enable highest value use of water, and refining institutional arrangements to efficiently plan, allocate, manage and regulate water use. These policy reforms need to be underpinned by improved knowledge, research, capacity

building, and monitoring. The basis for determining water supply costs often lacks transparency. Developing markets for water use permits, and planning water allocation between different users and the environment, require detailed monitoring of water extractions and flows and the ecological outcomes that are sought. Improved information on the costs and benefits of agriculture’s use of water (*e.g.* groundwater recharge, wetland conservation, flood mitigation) would better inform policy decision making. Farmers also need more advice on best practices to adopt.

Many OECD countries are reporting the growing incidence, severity and costs of flood and drought events on agriculture linked to climate change. This is leading to the emergence of mitigation and adaptation policy strategies. These include efforts to improve food security and water use efficiency by farmers in areas of water scarcity, to develop new crops or farm practices where climate change alters temperatures and precipitation, and to alter management practices and systems that can contribute to slowing water transport across farmland and reducing flood damage in urban areas. These approaches are more likely to be effective if they are embedded in longer term strategies closely linked with overall agricultural policy reform, risk management policy and market approaches.

Notes

1. Where water withdrawals exceed 40% of available water resources.
2. WHO (2008), “Regional and Global Costs of Attaining the Water Supply and Sanitation Target (Target 10) of the MDGs”, WHO, Geneva.
3. Sustainable cost recovery is about combining user charges and public transfers in a sustainable way, which requires that tariffs are affordable for each category of users and transfers are predictable, enabling the water utility to count on them to finance investment. This concept is acknowledged by the European Union Water Framework Directive.
4. The OECD Development Assistance Committee is made up of 23 members: 22 OECD countries (among them the most important bilateral donors) and the European Commission.
5. OECD (2009), *Private Sector Participation in Water Infrastructure: OECD Checklist for Public Action*, OECD, Paris, www.oecd.org/daf/investment/water.