

OECD work on

Water

“Water policies around the world are in urgent need of reform. OECD work identifies the priority areas where governments need to focus their reform efforts.”

Angel Gurría, OECD Secretary-General

OECD work on

Water

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About OECD

The Organisation for Economic Co-operation and Development (OECD) is a multi-disciplinary inter governmental organisation, tracing its roots back to the post-World War II Marshall Plan. Today, it comprises 34 member countries that are committed to democratic government and the market economy and the European Commission, with the major emerging economies increasingly engaged directly in the work. The OECD provides a unique forum and the analytical capacity to assist governments to compare and exchange policy experiences, and to identify and promote good practices through policy decisions and recommendations.

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Overview of OECD work on water

Water is essential for life – for health – for human dignity – and for well-functioning ecosystems. One billion people are currently without clean drinking water and 2.5 billion lack access to basic sanitation. Polluted water and poor sanitation cause 1.5 million preventable child deaths per year and is the biggest source of child mortality along with malaria and malnutrition. According to the World Health Organisation, investing USD 1 in water and sanitation saves USD 4–12 in avoided health care costs alone.


Good water management is a longstanding policy challenge. Many of the building blocks of good water policy are well-known. Many of the technological solutions, policy instruments and institutional insights required to bring about much better results largely exist. Yet, important gaps persist between aspirations to ensure access to enough safe, clean water for all people and the environment, and the actual conditions on the ground.

The OECD is working to help developed and developing countries meet the water challenge. With a multi-disciplinary team drawn from across the organisation, the OECD contributes analysis to improve the information base, identify good practice, and provide a forum for exchanging country experiences. Recent work has addressed issues of financing, governance, policy coherence, private sector participation, and water and agriculture. Ongoing work also covers the issues of water security, water and green growth, climate change adaptation, water allocation and urban water management.

In addition to analytical work, the OECD works with selected countries to facilitate the reform of water policies. This confirms our aspiration to make reform happen. The OECD has recently enhanced its convening power and capacity to structure discussion among stakeholders on water issues, by setting up the Water Governance Initiative.

This brochure provides an overview of OECD work on water.

Key link: www.oecd.org/water



*“We never know
the worth of water
till the well is dry.”*

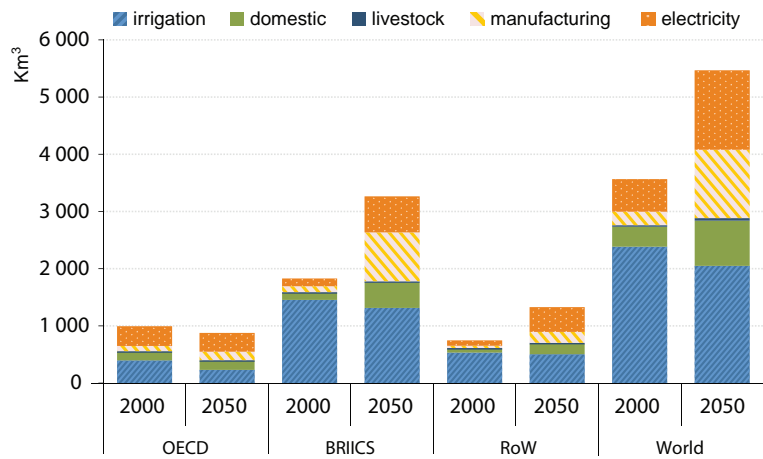
Thomas Fuller

1 OECD Environmental Outlook to 2050: Water

The OECD Environmental Outlook to 2050 provides a snapshot of the global state of water under business-as-usual conditions. It also highlights the policies that could change that picture for the better. The work is based on joint modelling by the OECD and the PBL Netherlands Environmental Assessment Agency. These model-based projections shed light on what demographic and economic trends might mean for water if governments do not introduce new policies to manage freshwater resources with much greater care.

Overall water demand is projected to increase by some 55% by 2050, due to growing demand from manufacturing, energy generation and domestic use. There will be increasing competition for water amongst uses and users, putting ecosystems at risk. Groundwater depletion may become the greatest threat to agriculture and urban water supplies in several regions in the coming decades. Nutrient pollution from point sources (urban wastewater) and diffuse sources (mainly agriculture) is projected to worsen in most regions, intensifying

Global water demand: Baseline, 2000 and 2050



eutrophication and damaging aquatic biodiversity. Despite progress in increasing access to improved water sources and sanitation, significant challenges remain.

Note: This graph only measures blue water demand and does not consider rainfed agriculture.

Source: Environmental Outlook Baseline; output from IMAGE.

Policy options to address these water challenges highlighted in the Outlook include: investing in green infrastructures, creating incentives for water efficiency, improving water quality and ensuring policy coherence.

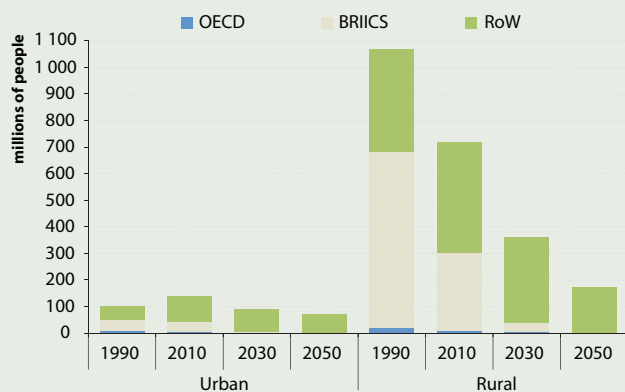
Access to an improved water source and basic sanitation

While the number of people with access to an improved water source is expected to increase, more than 240 million people worldwide (mostly rural residents) are expected to be without such access by 2050. Most regions, except sub-Saharan Africa, are likely to meet the Millennium Development Goal (MDG) of halving by 2015 the 1990 level of the population without access to an “improved” water

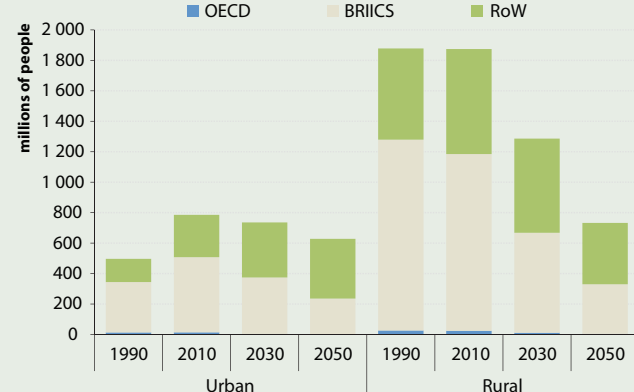
source. However, access to an “improved” water source does not mean access to “safe” water fit for human consumption. It is expected that the MDG for sanitation will not be met by 2015. By 2050, 1.5 billion people are projected to remain without access to basic sanitation, mostly in developing countries, with severe consequences on health and the environment.



Population lacking access to an improved water source: Baseline, 1990–2050



Population lacking access to basic sanitation facilities: Baseline, 1990–2050



Source: Environmental Outlook Baseline; output from IMAGE.



Did you know?

The total economic value generated by wetlands in one particular natural park in Normandy, France ranges between 2 400 and 4 400 € per hectare. This suggests that policies which were considered too costly (such as land acquisition to protect catchments) actually make economic sense. According to the WHO, investments to meet the water and sanitation MDGs could have a benefit cost ratio of 7 to 1.

2 Financing and economics of water

Water supply and sanitation services generate substantial benefits for human health, the economy and the environment. Access to clean drinking water and sanitation reduces health risks and frees up time for education and other productive activities, as well as increasing the productivity of the labour force. Safe wastewater disposal helps to improve the quality of surface waters with benefits for the environment as well as for economic sectors that depend on water as a resource. Such benefits usually far outstrip the costs of service provision and provide a strong basis for investing in the sector. Realising these benefits will require a significant scale-up in funding in both developed and developing countries.

OECD work has addressed how financing for essential water and sanitation services can be mobilised and has developed a set of policy tools that governments can use to support these efforts. Closing the financing gap for water and sanitation infrastructure will require countries to mobilise financing from a variety of sources as well as reducing costs through efficiency gains. The OECD report *Meeting the Challenge of Financing Water and Sanitation* provides a set of tools and approaches for financing water supply and sanitation, including: financial planning tools for national and local governments, as well as for water utilities, benchmarking and performance tools, and a checklist for public action on private sector participation. These tools have been successfully tested and used in a number of OECD and developing countries, (see pages 18-21).

The OECD also reviews the experience of countries in financing water resources management, with a focus on the role of economic instruments in improving incentives for water users and financing water management services. Good water resources management can improve the sustainability of watershed services and enhance the value they add to the community. However, markets do not generally recognise these benefits and the beneficiaries of water-related services do not usually pay the cost of their provision. As a result, government intervention is required to provide the institutional and financial mechanisms to address this market failure.

The experience of countries in financing water resources management is reviewed in the OECD report *A Framework for Financing Water Resources Management*. It focuses on the role of economic instruments to: curb water

demand and the need for additional infrastructures; promote low cost options, including green infrastructures such as wetlands and floodplains; generate revenues for water policies and water-related services; and allocate water where it is most needed.

OECD work is also focused on exploring the broader economics of water policy. Country experience reviewed by the OECD demonstrates that a number of countries have made significant efforts to reform their water financing mechanisms, introducing tariffs, user charges, pollution charges, cost recovery instruments, water markets, among others. The use of market mechanisms to improve the incentive structure facing water users has been increasing over the last ten years. OECD work in Environmental Performance Reviews and analytical studies identifies good practices in the design and implementation of such instruments.

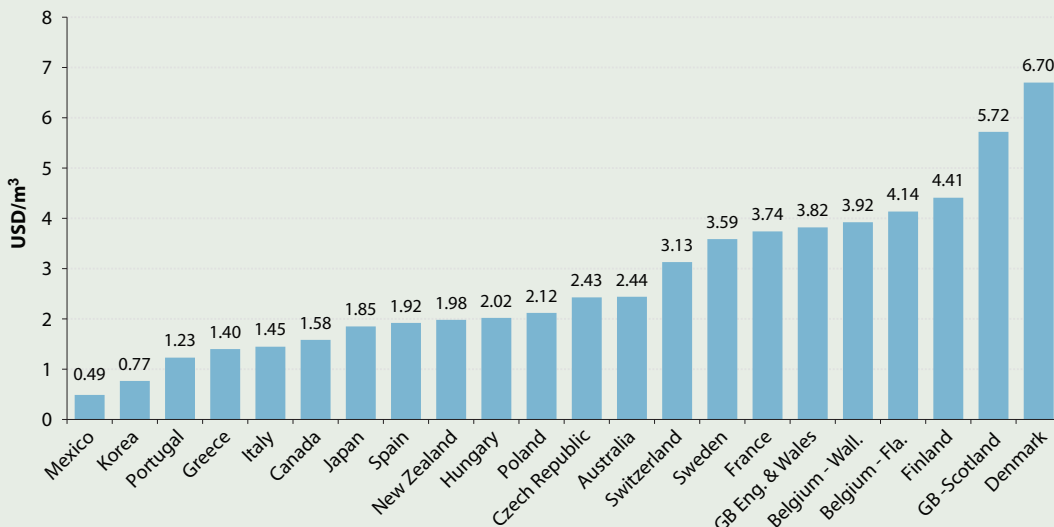


Unit price of water and wastewater services to households in 2007–08, including taxes (USD/m³)

The OECD compiles data on water prices to inform water policy and financing decisions. Data indicate that the operation and maintenance costs of domestic and industrial WSS services are generally covered by tariffs in OECD countries. However, operators typically lack sufficient revenues to make the investments needed to renew and replace ageing infrastructure. Generating enough revenues to cover full

economic or sustainability costs seems to be a remote target only.

Figures confirm that water supply and sanitation bills do not represent a considerable burden on the average disposable household income in OECD countries. However, to ensure affordability for poorer households, many countries have introduced social tariffs or other measures.



Source: OECD estimates based on country replies to the 2007–08 survey or public sources validated by the countries.



Did you know?

Donors allocated on average 6% of their aid programmes to the water sector in developing countries in 2010-11. This share has been regularly increasing over the last 30 years. The share allocated to education reaches 11% and 14% for health.

Aid flows for water

The OECD collects and regularly updates statistics on aid for water supply and sanitation. The data collection is based on a standard methodology and agreed definitions which ensures that data can be used to analyse trends and compare the efforts of donors.

Data cover flows from members of the OECD Development Assistance Committee (DAC), non-DAC providers of development assistance, and multilateral agencies including the World Bank, regional development banks, UN agencies and other agencies such as the Arab institutions or Global Environment Facility. The coverage improves from year to year.

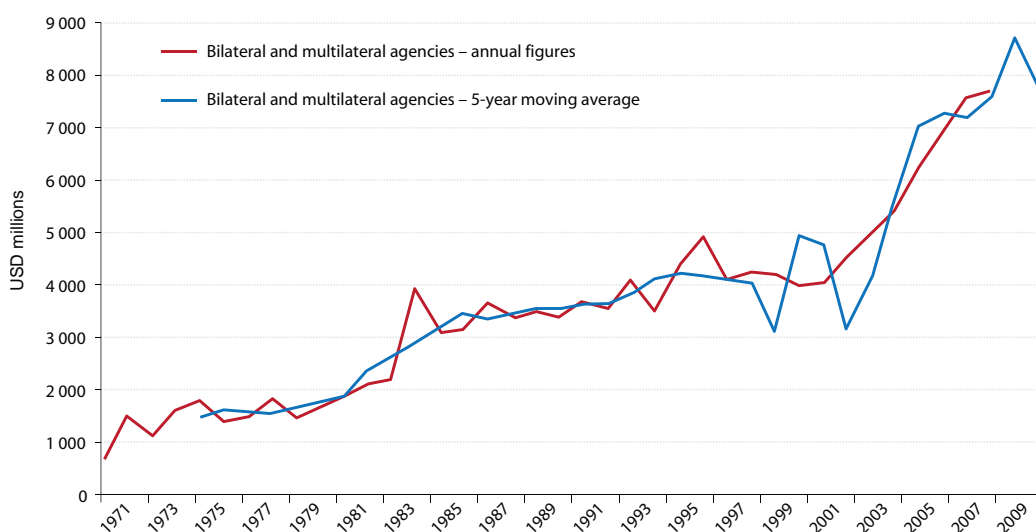
In addition to aid flows, non-concessional developmental flows for water extended by bilateral development finance institutions and multilateral agencies are collected through the Creditor Reporting System (CRS). Data collection has also started from private charitable foundations.

OECD analysis provides insight on how and where aid for water is spent. Regular statistical briefs cover the following aspects:

- Monitoring trends
- Commitments versus disbursements
- Geographical allocation of resources
- Nature of projects financed
- Water and climate change
- Water and gender equality

Trends in aid to water and sanitation

Commitments, annual figures and 5-year moving averages, constant 2009 prices, USD millions



Source: <http://webnet.oecd.org/dodgraphs/water/>

Recent improvements in statistics on aid flows for water:

Key link: All information related to aid flows for water, including statistical briefs, standard statistics and user-friendly access to the on-line database is available at: www.oecd.org/dac/stats/water.

● **Sanitation versus water supply:** A new feature in the data, starting with 2010 flows, is the possibility to identify aid for sanitation separately from water supply. This amendment to the sector classification was realised at the request of water experts, including UN Water and the EUWI.

● **New classification for aid modalities:** Also starting with 2010 flows donors have started to report on aid modalities (budget support, pooled contributions, projects, technical assistance) which will facilitate studying donors' preferred aid modalities in the water sector.

3 Water governance

Managing water for all is not only a question of resource availability and money, but also a matter of good governance. Water involves a wide range of stakeholders at basin, municipal, regional, national and international levels. In the absence of effective public governance to manage interdependencies across policy areas and between levels of government, policymakers inevitably face obstacles to effectively designing and implementing water reforms.

In addition, good governance and financial sustainability are inextricably linked. Ensuring that the water sector has a sound regulatory and institutional basis can help to increase the attractiveness of the sector for private sources of funding, as well as improve the financial sustainability of public water utilities.

Key governance challenges include institutional and territorial fragmentation and poorly managed multi-level governance. Limited capacity at the local level, unclear allocation of roles and responsibilities and questionable resource allocation are also problematic. This is often reflected in patchy financial management and the lack of long-term strategic planning, together with weak economic regulation and poorly drafted legislation. Insufficient means for measuring performance have contributed to low accountability and transparency. These obstacles are often rooted in misaligned objectives and poor management of interactions between stakeholders.

Often the technical and institutional solutions to the water crisis do exist and are well-known. The real challenge lies in implementing these solutions, tailoring them to local contexts, overcoming obstacles to reform, and bringing together the main actors from different sectors to join forces and share the risks and tasks. OECD work on water governance diagnoses key co-ordination gaps in water policy in order to provide adequate policy responses. The OECD report *Water Governance in OECD Countries: A Multi level Approach* explores the co-ordination “gaps” in water policy for 17 OECD countries. A similar effort was undertaken at regional level for Latin America.

OECD work on water governance was influential to structure the discussion on that stream at the World Water Forum in Marseille in 2012. Participants defined and agreed upon six good governance targets to be achieved in the next decade, regarding stakeholders’ engagement, service performance, improved integrated water resources management, groundwater governance, corruption alleviation and transparent budgetary processes.

Did you know?

In OECD countries, the funding and capacity “gaps” are the most important challenges for multi-level governance in water policy making.

Good Governance Targets defined for the 6th World Water Forum, Marseille, March 2012

EFFECTIVE PUBLIC GOVERNANCE	TARGET 1	By 2015, 50% of countries will have adopted consultation, participation and co-ordination mechanisms allowing stakeholders at local, regional, national and international levels to effectively contribute to decision-making in a coherent, holistic and integrated way. By 2012, 100% will have done so.
	TARGET 2	By 2015, 50% of countries will have strengthened regulatory frameworks and adopted performance indicators (service delivery) to monitor and evaluate water policies; and all countries will have put in place capacity-building processes at national and local level to foster good governance in service delivery. By 2018, all countries will have done so.
INTEGRATED WATER RESOURCES MANAGEMENT	TARGET 3	By 2021, increase by 30% the number of river basin management plans (analysis of initial status and main issues).
	TARGET 4	By 2015, increase the number of countries with water security diagnoses and governance tools, based on existing (local, national and international) regulatory and legislative frameworks and integrated water resources management mechanisms.
BETTER INTEGRITY AND TRANSPARENCY	TARGET 5	By 2018, 30 countries will have committed to promote integrity in the water sector, diagnose/map existing or potential corruption risks, and ensure that anti-corruption policies are well implemented and effective.
	TARGET 6	By 2018, 30 countries will be implementing: transparent water budget processes, including information about water infrastructure investment planning and implementation (financial, technical and socioeconomic impacts); methods and tools for improving transparency and accountability within the water sector.

The Final Synthesis Report on Good Governance from the 6th World Water Forum can be accessed at www.oecd.org/gov/report_CG_CS1_Good_Governance_EN.pdf

Water governance

During the conclusion of governance discussions in Marseille, institutions agreed to set up a platform that will maintain continuous links and cooperation across stakeholders between World Water Fora. The OECD Water Governance Initiative was set up in 2013 to play this role.

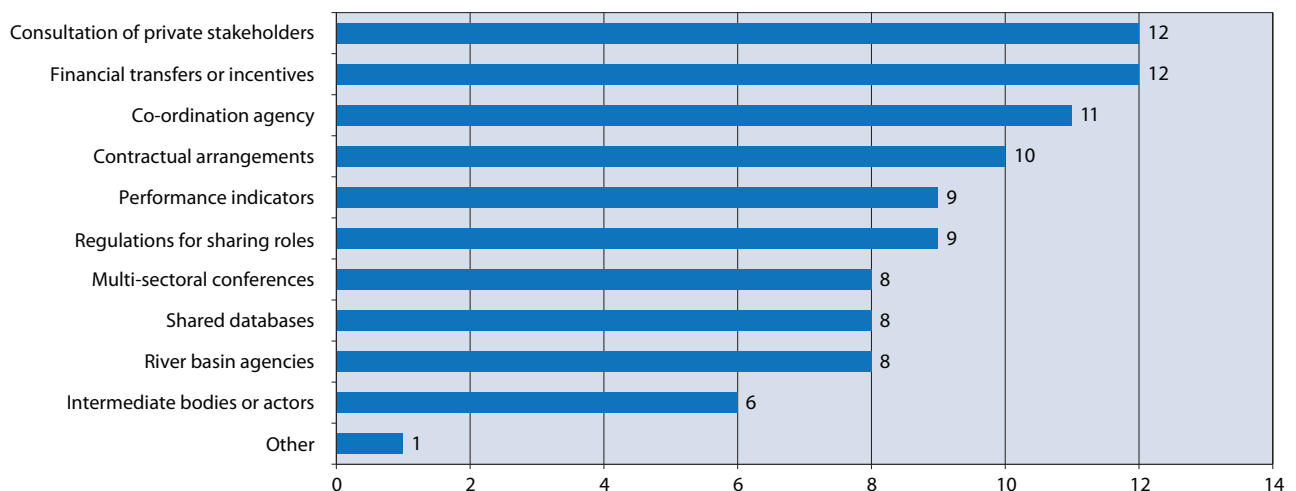
Preliminary guidelines for effective management of multi-level governance

- Diagnose multi-level governance gaps in water policy making
- Involve sub-national governments in designing water policy
- Adopt horizontal governance tools to foster coherence across related policy areas
- Create, update and harmonise water information systems
- Encourage performance measurement
- Respond to the territorial fragmentation of water policy by encouraging co-ordination across sub-national actors
- Foster capacity-building at all levels of government
- Encourage a more open and inclusive approach through public participation
- Assess the adequacy and impact of existing governance instruments



Vertical co-ordination mechanisms across levels of government

(17 OECD countries surveyed)



Source: OECD Water Governance Survey (2010).

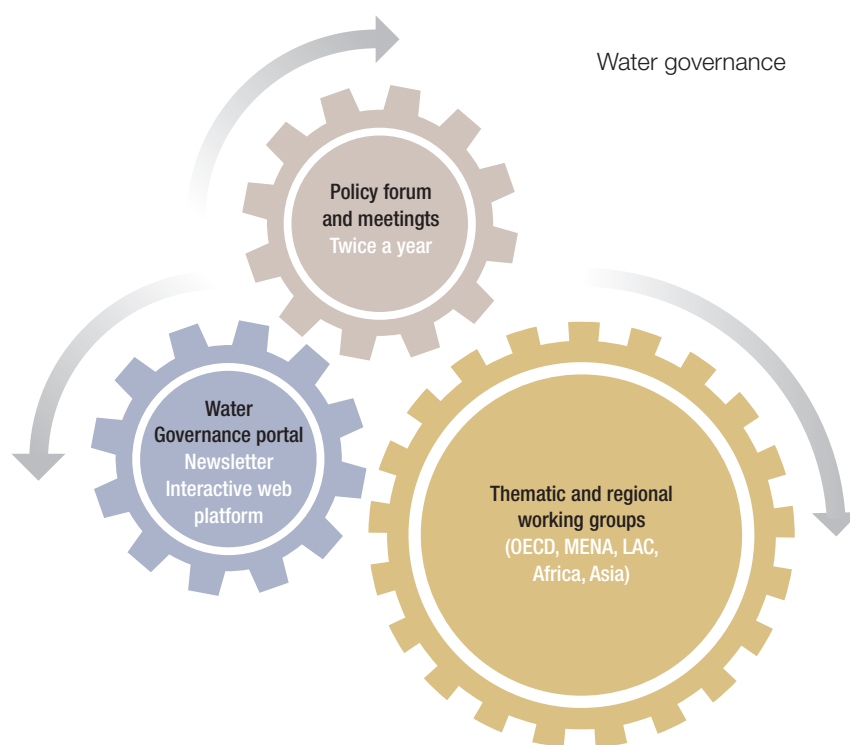
The OECD Water Governance Initiative

The OECD Water Governance Initiative provides for a multi-stakeholder network and policy forum to share on-going reforms, lessons and good practices in support of better governance in the water sector. The initiative builds on the OECD-led Good Governance Core Group of the 6th World Water Forum (Marseille, March 2012) and seeks to bridge the gap between two World Water Fora with a community of practice aiming to:

- contributing to the OECD water governance programme through peer-reviewing, policy dialogue across decision-makers, exchange of experiences, and design of OECD Principles on Water Governance;
- supporting the implementation of the governance targets designed in Marseille up to the 7th WWF in Korea;
- setting an International Observatory on water governance to collect innovative tools and success stories;
- setting up a Web Portal on Water Governance to link existing water governance platforms, tools, methodologies and programmes worldwide;
- providing policy guidance in support of the global water governance agenda such as the International Year on Water Cooperation and the development of sustainable development goals.

The Initiative is composed of 85 delegates from different geographic and institutional background in OECD and non OECD countries: senior representatives from national governments, local and regional authorities, service providers and their networks, economic and environmental regulators, non-for-profit organisations, river basin organisations and their networks, donors and international financial institutions, international organisations, think tanks and independent experts. Delegates meet twice a year to implement the Initiative's programme of work, and several thematic and regional working groups.

Key link: *OECD Water Governance Initiative*



Organisation of the OECD Initiative on Water Governance



Focus on the private sector

Providing an adequate framework for private sector participation in the financing, development and management of water and sanitation infrastructure is a key governance challenge. The OECD, working with non-OECD countries and stakeholders, developed a *Checklist for Public Action*, building on the *OECD Principles for Private Sector Participation in Infrastructure*. The *Checklist* helps governments to properly assess and manage the implications of private sector participation in the water sector. Experience drawn from

applying the *Checklist* in a range of countries has pointed to the need for countries to assess their frameworks for private sector participation. There is also a strong demand to share tools and access good practice. Focussing on framework conditions has proven to be of particular relevance. The *Checklist* has demonstrated its usefulness in helping countries identify key areas for reform (see page 20).

Key links:

www.oecd.org/daf/investment/water
www.oecd.org/daf/investment/ppp

The *OECD Checklist for Public Action* has been used to carry out assessments of private sector participation in the water sector in Egypt, Lebanon, Mexico and Russia. Assessment in Tunisia is underway.

The *Checklist* highlights a set of principles across five key policy areas:

- Deciding on the nature and modalities of private sector participation.
- Providing a sound institutional and regulatory environment for infrastructure investment.
- Ensuring public and institutional support for the project and choice of financing.
- Making the co-operation between the public and private sectors work in the public interest.
- Encouraging responsible business conduct.





Water and agriculture

There is a large, complex and dynamic set of linkages between agriculture and water. Irrigated agriculture makes a substantial contribution to the growth in agricultural production across many countries. Yet, agriculture can have significant impacts (both positive and negative) on water ecosystems, and both agriculture and water are becoming increasingly vulnerable to climate change.

In most OECD countries, agriculture is the major consumer of water and a significant source of diffuse water pollution. While agriculture often suffers the most from droughts and floods, in the case of floods, it can also help reduce their impact on the rest of the economy.

OECD's examination of these linkages focuses on economic and policy analysis, supported by economic and environmental data. Overall, OECD work is seeking to provide policy advice to governments that could help to move agriculture onto a sustainable path in the overall management of water systems.

Agriculture faces the enormous challenge of producing globally almost 50% more food by 2030 and doubling production by 2050. This will likely need to be achieved with less water, mainly because of growing pressures from urbanisation, industrialisation and climate change. In this context, it will be

important in the future for farmers to receive the right signals to increase water use efficiency and improve agricultural water management, while preserving aquatic ecosystems.

In the OECD report *Sustainable Management of Water Resources in Agriculture*, the OECD analyses the challenges of moving towards more efficient management of water resources in agriculture and responding to growing food demands and the impacts of climate change.

The impact of OECD agriculture on water quality (mainly from nutrients, soil sediments and pesticides) over the past decade has been either stable or deteriorating, with only a few cases where significant improvements are reported. Policy responses to address agricultural water pollution have cost OECD taxpayers billions of dollars annually and yet, efforts have still fallen short.

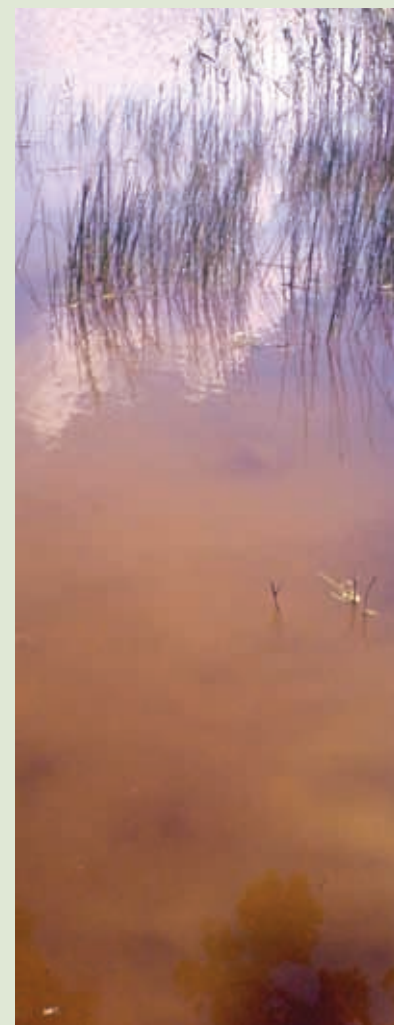
Bioenergy production from agricultural feed stocks, especially cereals and oilseeds, can have significant impacts on water quality and availability, but this can vary according to the location and practices adopted. Removal of this form of support may contribute to more sustainable water management in agriculture.

Key links:

www.oecd.org/agriculture/water
www.oecd.org/tad/env/indicators

Did you know?

The overall economic, environmental and social costs of agricultural water pollution across OECD countries are likely to exceed billions of dollars annually.



The OECD report *Water Quality and Agriculture: Meeting the Policy Challenge* identifies the following recommendations to encourage the sustainable management of water quality in agriculture:

- Use a mix of policy instruments to address water pollution.
- Enforce compliance with existing water quality regulations and standards.
- Remove perverse support in agriculture to lower pressure on water systems.
- Take into account the polluter-pays-principle to reduce agricultural water pollution.
- Set realistic water quality targets and standards for agriculture.
- Improve the spatial targeting of policies to areas where water pollution is most acute.
- Assess the cost effectiveness of different policy options to address water quality in agriculture.
- Take a holistic approach to agricultural pollution policies.
- Establish information systems to support farmers, water managers and policy makers.



The OECD workshop (Bogor, West Java, Indonesia, December 2011) on *Sustainable water management for food security: an international policy dialogue on progressing water policy reform in agriculture with focus on Indonesia* brought together a range of experiences that might help Indonesia and other countries in the region to progress their water policy reforms with respect to agriculture.



5

Managing water for future cities

More than half of the world's population resides in cities and urbanisation is projected to continue increasing to 2050 and beyond. Countries are confronted with significant challenges to securing financially sustainable water and sanitation services in their cities. This cannot be achieved in a vacuum, and requires a concerted effort, putting water supply and sanitation policies in the wider context of institutional arrangements and water resources management, and strengthening the interface between cities and the surrounding rural environment. The significant urban water investments being made, or which need to be made, require both OECD and partner countries to think carefully about how to manage urban water cost-effectively and to learn from the experience of others in addressing the demand and supply sides of the urban water management challenge.

This has important implications for household access to water and sanitation services. It also has an impact on water resources management in a number of ways:

- City-dwellers are increasingly competing with other water users for access to water resources;
- Cities are increasingly at risk of floods and droughts, with economic consequences for the management of urban areas;
- Increasingly inadequate water quality resulting from insufficient, ineffective or poorly maintained wastewater treatment infrastructure; and
- Cities can contribute to good water resources management, through their design and the infrastructures they rely upon (smart water systems, green roofs, more permeable surfaces, etc.).

As a result, the way in which water is managed in cities has consequences both for city dwellers and for the wider community. It dictates water availability (in both quantity and quality) up-stream and downstream for other users. It influences the environmental, economic and social development of territories and countries.

The OECD is contributing to improving urban water management, focusing on three interrelated topics:

- **Financing urban water.** The OECD is developing policy guidance on how governments can effectively meet the financial needs to maintain, renew and expand urban water infrastructure. Meeting such needs will require major reforms to improve the economic and institutional framework for water utilities and to enhance the enabling environment for investment.
- **Eco-innovation and urban water.** This issue focuses on the role of government policy in increasing eco-innovation in urban water delivery that is critical to the improved management of urban water. The work addresses policy blockages to the uptake of innovations, and identifies economic and regulatory policies that can encourage water innovations in cities.
- **Urban-rural water interface.** The work addresses the critical issue of the linkages between cities and the broader river basin within which they are located, in terms of the linkages with agriculture, green infrastructure in the watershed, institutional arrangements for watersheds and cities, impacts on biodiversity, and economic instruments for managing water allocations.

The World Water Forum in Korea is envisaged as the key target for dissemination of the work.



6 Cross-cutting issues

Water security

Recent floods and droughts across the world highlight the threats that water (or lack thereof) can cause to society. In 2012, drought in the US nearly halved the contribution of the agricultural sector to US GDP over the 3rd Quarter. And the 2011 floods in Thailand slashed the 4th Quarter GDP growth by a staggering 12%.

Water security is primarily about risk management. The OECD identifies four water-related risks: the risks of shortage, of excess water, of inadequate water quality, and of disruption of freshwater systems such as rivers, lakes and aquifers. These risks have to be addressed in a coordinated manner, as they are interrelated: interventions to reduce one risk can increase others.

Managing these risks comes at a cost, including economic, environmental and social costs, as well as the opportunity cost arising from foregone development opportunities. The issue is how to improve water security at least cost to society.

The OECD report *Water Security for Better Lives* explains why governments must promote a risk-based approach to water security. It proposes steps to implement the approach.

The first step is to help stakeholders define acceptable levels of water risk. Decisions should rely on evidence (the likelihood of risks and their consequences), take account of societal values and consider the cost of security improvement. Sufficient flexibility should be allowed so that levels of risk can be adjusted to changing situations. For instance, New York City is reassessing its flood protection level following Hurricane Sandy. Policy objectives other than water security (for example food security, energy security, climate security, protecting nature) and the interrelated nature of water risks should be considered when weighing the benefits and potential costs to society of a given level of water risk.

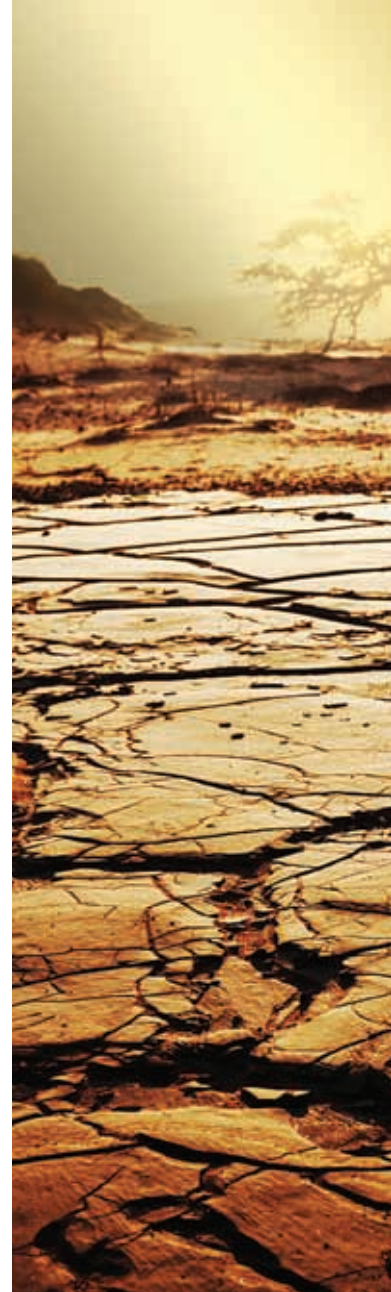
Once appropriate levels have been defined, the options to address risks are either to avoid, reduce, transfer or bear them. For

example, instead of building more infrastructure to reduce their flood risks, cities may prefer to transfer the risks to farmers and pay them for using their land as floodplains. Governments would benefit from considering a policy mix to reduce hazards and limit exposure and vulnerability in order to achieve acceptable levels of risk at the least possible economic cost. Economic instruments can play an important role, as they can fundamentally alter the incentives facing water users, provide explicit signals about the likelihood and potential cost of water risks, and provide financing to support actions to offset risks.

The management of water security is a particularly difficult challenge for governments, as it cuts across a number of difficult policy areas, in and out of the water box. To promote awareness of this complex issue, refine our knowledge of how it can be addressed and engage with a variety of stakeholders, the OECD is happy to join with the Global Water Partnership and set up a high level dialogue on water security that will report to the World Water Forum in 2015.

Did you know?

If scarcity prices had been introduced in Sydney, Australia, the premature construction of a costly desalination plant would have been avoided.





Water and green growth

Sustainable water use is an essential driver of green growth. On the one hand, a lack of a sufficient quantity of adequate quality water can significantly hinder growth. On the other hand, good water management can generate huge benefits for health, and for agricultural and industrial production. It can also preserve ecosystems and the watershed services they provide, thereby avoiding the enormous costs that can be imposed by flooding, drought or the collapse of watershed services.

The OECD's Green Growth Strategy provides an actionable policy framework to foster economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. Water efficiency and water demand management are essential ingredients for green growth. The OECD is reviewing the experience of countries on these issues and developing recommendations on facilitating the implementation of a coherent policy framework. The forthcoming report *Managing Water for Green Growth* compiles the main messages in a coherent policy framework.



Key elements of water and green growth

- An explicit green growth strategy, which guides decisions on water allocation and investment. It should cover such issues as land use, biodiversity, energy and agriculture, the social dimension of growth and water-related risks;
- Institutions and regulations (including allocation regimes) that support the development and diffusion of innovative techniques and water uses;
- Incentives to adopt water efficient techniques and practices;
- Promotion of infrastructure design and financing arrangements that support changes in water use and the development of new uses;
- Robust data on hydrology (including the interplay between surface and groundwater) and on water use (including return flows).

A key aspect of green growth is the role of eco-innovation. Tapping alternative water sources (e.g. rain and storm water, used water, and desalinated sea or brackish water) or encouraging successive uses of water can be a low-cost response to alleviating water scarcity. Additional benefits can include saving energy and cutting investment requirements and operation and maintenance costs. However, there are also some risks attached to using these approaches, notably pollution of agricultural land or health risks.

OECD work on eco-innovation for water explores economic and policy issues associated with the use of alternative water resources and innovative technologies, such as smart water systems. Case studies of country experiences with these approaches are also examined.

Key link:

www.oecd.org/greengrowth



Did you know?

Water is the principal medium through which climate change impacts on natural and human systems will be felt.



Water and climate change adaptation

Climate change is reshaping the future for freshwater. More torrential rains, floods and droughts can be expected in many areas. Changing precipitation patterns are shifting rainy seasons and affecting the timing and quantity of melt water from snow pack and glaciers. Impacts on water quality can be expected and freshwater ecosystems are especially vulnerable. Climate change also adds considerable uncertainty to the management of water resources.

Reducing the adverse consequences and costs of climate change and tapping into any opportunities will require adjusting to new circumstances – that is, adaptation. Adaptation is not about maintaining the status quo at all costs – it’s about better managing water risks – the risks of shortage (including drought), excess (including flood), inadequate quality, and disruption to freshwater systems. The OECD report *Water and Climate Change: Policies to Navigate Uncharted Waters* sets out a risk-based approach to improve water security in a changing climate. It provides policy guidance to prioritise action and improve the efficiency, timeliness and equity of adaption decisions.

The OECD recently surveyed experience on water and adaptation across all 34 member countries and the European Commission to take stock of progress and collect examples

of good practice. Individual country profiles are available at: www.oecd.org/env/resources/waterandclimatechange.htm.

The survey reveals nearly all countries project increasing water risks due to climate change. Extreme events (e.g. floods and/or droughts) are cited as a primary concern by 32 countries, while water shortage is a key issue for 23 countries. Water quality is a key concern for 15 countries, while impacts on water supply and sanitation were flagged by 16 countries. For 13 countries, impacts on freshwater ecosystems were highlighted. The survey reveals that OECD countries are making progress on “knowing” the risk, by building the scientific evidence base and disseminating information on projected impacts and possible responses. However, much more could be done to scale up efforts to better “target” water risks by reviewing levels of acceptable risk and to “manage” these risks by considering the full range of strategies and policy options. Only a handful of countries have begun to tackle the issue of financing adaptation for water.

The OECD report also highlights the benefits of adaptive governance and flexible water policy and financing approaches. In particular, there is potential to scale-up the use of well-designed economic instruments – water trading, efficient water pricing, flood insurance schemes in addition to cost-effective ecosystem-based adaptation and green infrastructure approaches. These instruments can provide flexibility and minimise the cost of adjusting to changing conditions.

Policy coherence: water, energy, agriculture and the environment

Water policies intersect with a wide array of sectors, especially energy and agriculture, and are implemented at various geographical scales, from local to international. Thus, policy coherence is essential. However, tensions may arise from real or perceived trade-offs between various policy objectives – for instance, between food security and water productivity. Inefficiencies may result from subsidies that have negative impacts on water, as in the case of energy subsidies for groundwater abstraction by farmers.

Resolving these tensions requires a global perspective. For instance, freer trade in agricultural commodities and the reform of farm support policies in OECD countries can alleviate some of the tensions between food

security and water productivity at domestic level. Policy co-ordination is also required. This is more difficult where responsibility is fragmented among various ministries, and where decision making needs to be co-ordinated at different territorial levels (e.g. national, regional, state, municipal and river basin). The linkages between the policy areas also have to be considered early on in the policy making process. For example, when countries set biofuel production targets, there is a need to factor in potential consequences for future water withdrawals.

OECD work on policy coherence examines the policy challenges at the intersection between water, energy and agriculture. The OECD report *Policy Coherence between Water, Energy and Agriculture* (forthcoming) examines how such challenges can be tackled and identifies options to enhance policy coherence.

Did you know?

According to market insights from *Global Water Intelligence*, half of the world's major industrial companies and one quarter of major cities will consider water reuse in the decade from 2005 to 2015.



7

Making water reform happen

Did you know?

Artificially low water tariffs hurt the poor, as they prevent the development of reliable public services.

Affordability issues are a serious concern in all EECCA countries. They are better addressed through targeted social measures than through cheap water for all.

OECD analyses confirm that water management needs to change in most OECD and non-member countries: fiercer competition to access the resource puts more pressure on allocation regimes; more uncertainty about future availability of water challenges the way water services and infrastructures are designed and operate; new technologies and innovative management practices generate opportunities to deliver better services at least cost for the community. Water governance needs to adapt to better reach out to communities which behaviour affects water demand and availability (farmers, city dwellers, energy suppliers) and to engage stakeholders in complex policy decisions.

Participants at the OECD Global Forum on Environment in October 2011 drew insights on factors that can either drive or block water policy reforms. These include the role of crises in catalysing reform; the importance

of setting priorities; sequencing and political leadership; the role of infrastructures, markets and financing; regulatory oversight; private sector participation.

The OECD is committed to supporting governments in their efforts to reform policies that influence the availability and use of water. OECD's analytical work provides the insight and evidence-base to build the case for reform, drawing on international best practice. In addition, the OECD co-operates with a variety of countries on concrete reform projects. This is done in the context of national policy dialogues on water, a process supported with robust analyses, that facilitates the design and implementation of policy reforms. In turn, the pragmatic, hands-on experience gained through these processes informs OECD's analytical work. The OECD has set up and maintains several networks dedicated to support and feed the discussion among stakeholders (see page 22).



National policy dialogues

OECD has worked directly with a number of countries to support National Policy Dialogues, helping to make water reform happen. National Policy Dialogues are a structured process for stakeholder engagement supported by robust and tailored analytical work and lessons learnt from international experience. For such policy dialogues to be effective, expertise is needed to make complex technical and non-technical choices and to undertake comprehensive options assessments (e.g. economic and environmental impact assessments). OECD has accumulated experience with National Policy Dialogues in a range of countries focussing on various elements of water policy reform, including financing and pricing, governance, water security, and private sector participation.

National Policy Dialogues in Eastern Europe, the Caucasus and central Asia (EECCA)

The Task Force for the Implementation of the Environmental Action Programme (EAP Task Force) was established in 1993 by Environment ministers with a view to assist environmental reconstruction in transition economies, in the framework of the Environment for Europe process. The EAP Task Force Secretariat is located at the OECD. This work is part of the EECCA component of the EU Water Initiative, for which the OECD is a strategic partner, together with UNECE. The work is financed by the European Commission and regular contributions by donors (the Czech Republic, Finland, Germany, Norway and Switzerland in particular).

The overall objective of the EAP Task Force's work on water is to support on-going reforms of water policies in EECCA countries. The outcomes of this work include: (i) contribution to achieving the Millennium Development Goals on water and sanitation, so that good quality water and sanitation services are delivered reliably, sustainably and at least cost to the population; and (ii) systematic use by EECCA countries of



economically, financially and environmentally sound practices of water resources management, including adaptation to climate change.

The OECD works with EECCA governments on two areas:

- Strengthening the economic and financial dimensions of water management, including adaptation to climate change. The OECD works with water agencies at both national and river basin levels to enhance the economic efficiency and financial realism of water policies, including water management plans or strategies for water supply and/or sanitation. This leads to recommendations on the reform of economic instruments for water management.
- Strengthening institutions for water supply and sanitation. The policy dialogues focus on selected institutional issues where the EAP Task Force has a comparative advantage: overcoming excessive fragmentation of water supply and sanitation systems, business models for rural sanitation, or private sector participation.

Key link:
www.oecd.org/env/eap

Tools for strategic financial planning that have facilitated reforms in EECCA include:

- Strategic financial planning for water supply and sanitation at national or regional level.
- Financial planning tool for water utilities.
- Multi-year investment planning tool for municipalities.
- Guidelines for the development of performance based contracts for water utilities.
- Toolkit for benchmarking water utility performance.



Did you know?

The Mexican government is expected to invest 51 billion pesos annually over the coming twenty years to meet the water reform challenge.



Assessing private sector participation with the Checklist for Public Action

The OECD Checklist for Public Action has been used to carry out assessments of private sector participation in the water sector in Egypt, Lebanon, Mexico, and Russia. Assessment in Tunisia is underway. These countries have diverse needs and are at various, but generally early, stages of private sector participation. In Lebanon, the legislative framework is not yet in place and current legislation does not allow private sector participation in the water sector. Russia has some experience with private sector participation in the water sector but it has stalled due to legislative obstacles. The legislative framework is now under amendment. In Egypt, a law establishing a framework for private-public partnerships (PPPs) was passed in 2010 and the Government launched a major PPP pilot project – the New Cairo wastewater treatment plant.

A Checklist assessment presents an opportunity to start a dialogue between private companies and the government on investors' needs and risk perception. All Checklist assessments follow a similar structure: an overview of recent developments with private sector participation in the water sector, identification of areas for consideration by government, and suggested ways forward. Assessments draw on answers to a questionnaire, publicly available material, extensive interviews with various stakeholders, and National Policy Dialogues.

Key links:

www.oecd.org/daf/investment/water
www.oecd.org/daf/investment/ppp

Supporting the implementation of Mexico's 2030 Water agenda

Mexico's 2030 Water Agenda, designed by the National Water Commission of Mexico (CONAGUA), advocates for a new paradigm for more efficient management of water resources and services.

The OECD worked with Mexico to provide evidence-based assessment, analytical guidance, and customised policy recommendations in support of its water policy reforms. The process was based on OECD tools, methodologies and frameworks, and involved high-level peer reviewers and experts from Australia, Brazil, Italy, and the United Kingdom.

The process was useful to engage stakeholders, particularly as the Head of State and senior officers at the Mexican Water Commission changed in the course of the project. The report:

- identifies key co-ordination and capacity challenges across multiple stakeholders involved in water policy design, regulation and implementation, and suggests good practices in response to the institutional and territorial fragmentation;
- identifies challenges hindering effective river basin governance, and sheds light on good practices within Mexico (at river basin, aquifer level) and internationally for truly integrated water resources management;
- identifies challenges hindering the economic efficiency and financial sustainability of water policies, and suggests good practices to make the most of economic instruments;



- identifies challenges related to key regulatory functions for service provision, and suggests options for improvement and potential trade-offs based on the experience of countries with similar issues.

The report *Making Water Reform Happen in Mexico* was handed over to the President of Mexico right after his election to serve as a reference for major policy reforms. It is also being used by donors to target their co-operation.

Key links:

Making Water Reform Happen in Mexico

National Water Policy Dialogue in the Netherlands

Two-thirds of the Dutch territory, more than half of the population and two-thirds of the economic activity are at risk of flood. As a result, water management has long been a national security issue for The Netherlands. Due to this unique situation, and centuries of concerted effort and dedicated ingenuity to “keep feet dry” and maintain the land to support lives and livelihoods, the Dutch have become a global leader in water management.

However, in the face of broader administrative reforms, fiscal tightening and increasing water challenges due to climate change, a number of key questions have emerged: how fit is the current system to meet future challenges? Are the current water governance and institutional arrangements effective and resilient? Are the Dutch society willing and able to pay the rising costs of water management? Can the Dutch “polder” approach effectively address

issues related to the quality of the rivers and lakes and cope with increasing risks of both floods and scarcity in the country?

To shed light on these questions, the OECD-Netherlands Policy Dialogue on Water Governance was set up. The policy dialogue is an effective mechanism to share facts and data that substantiate the discussion among Dutch stakeholders, and to advance the debate about potentially difficult policy and institutional reforms. It is designed to inform the policy debate about the reform of water governance and water management in the Netherlands.

Did you know?

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Only four EECCA countries (Belarus, Kazakhstan, the Kyrgyz Republic and the Russian Federation) have uninterrupted water supply 24 hours a day, and, where wastewater is collected, it is often not treated because many wastewater treatment plants are not functioning.





8 Reaching out to key stakeholders

The OECD provides a forum in which governments can work together to share experiences and seek solutions to common problems. We work with governments to understand what drives economic, social and environmental change. We analyse and compare data to anticipate future trends. We set international standards on a wide range of things, from agriculture and tax to the safety of chemicals. OECD's main target audience is governments but we work with business, labour and civil society organisations.

As such, the OECD is well equipped to organise the debates and engage with a variety of stakeholders. The work on water, which cuts across the Organisation, is regularly monitored and reviewed by delegates in the context of specialised Committees on Environment, Territorial Development and Agriculture. In order to reach out to a wider community, the OECD has set up three dedicated networks, which complement the architecture of bodies involved in OECD work on water:

- the OECD Water Governance Initiative (see page 9);
- the OECD Urban Roundtable of Mayors and Ministers. The Roundtable was established in 2007 and provides a forum to develop inter-governmental approaches for stronger, more effective urban policy. The Roundtable will meet in Marseille in December 2013 and focus on how national governments and cities can better work together to foster growth and well-being. Delegates at the Roundtable play a topical role in the work on urban water management;
- the Network of Economic Regulators. This forum for cross-sectoral regulators was established to understand how economic regulators are discharging their functions and contributing to the policy cycle. It helps analyse how the principles of good regulatory policy and governance apply in the water sector and can contribute to improved water management.

Water indicators and data

The availability of high quality water information is crucial for responsive and cost-effective water policies. The OECD provides leadership in the development of indicators to measure performance, produces harmonised data and helps countries improve their environmental information systems. Over the past decade, many countries have been upgrading their water monitoring systems and their data collection efforts, supported with new information technologies and web-based communication. A review of the information demands arising from OECD work, shows that important gaps still remain. The quality of water data currently available at national and international level is insufficient to effectively support integrated water management and water policies.

Gaps in information on the economic and institutional aspects, for example, constrain the analysis of water policies and their effectiveness. Information on water resources and hydrological systems, though available in many countries, remains incomplete and often lacks coherence, thus constraining the calculation of water stress indicators.

With the rapid developments in water policy reform in many countries, this lack

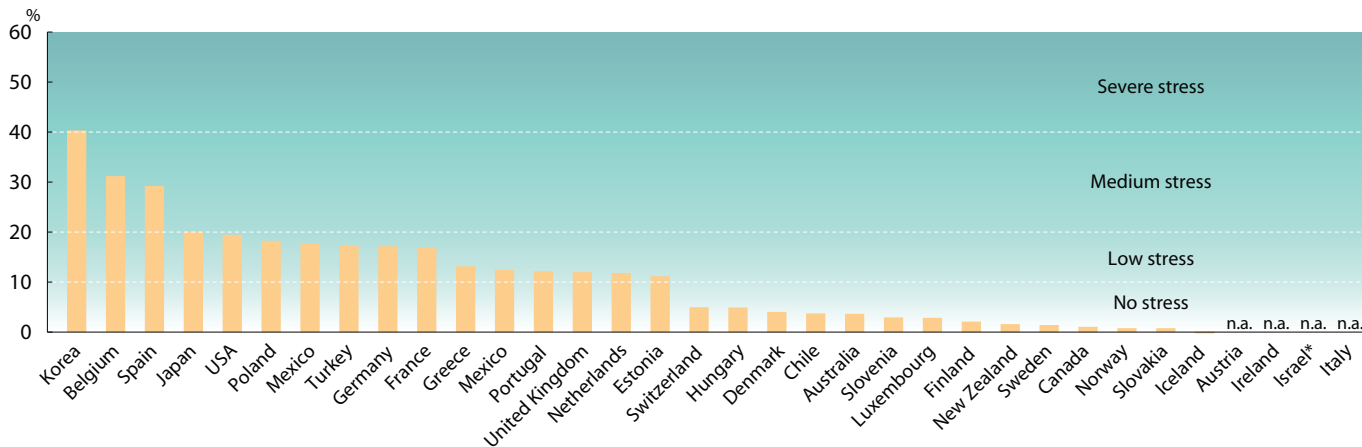


of information has been brought into sharp focus and has meant that the implementation of water policy initiatives often builds on scant data and information. To address this issue, the OECD held a workshop in Zaragoza, Spain (2010) on improving the information base to better guide water resource management.

Central to OECD work are core environmental indicators to measure environmental progress. Two water-related indicators are: intensity of use of water resources (water stress) and wastewater treatment connection rates.

Water stress, OECD countries

2009 or latest year available; water abstractions as a % of total renewable resource



Note: Water stress below 10% = no stress; 10-20% = low stress; 20-40% = medium stress; above 40% = severe stress.

Source: OECD Environmental data.

* The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

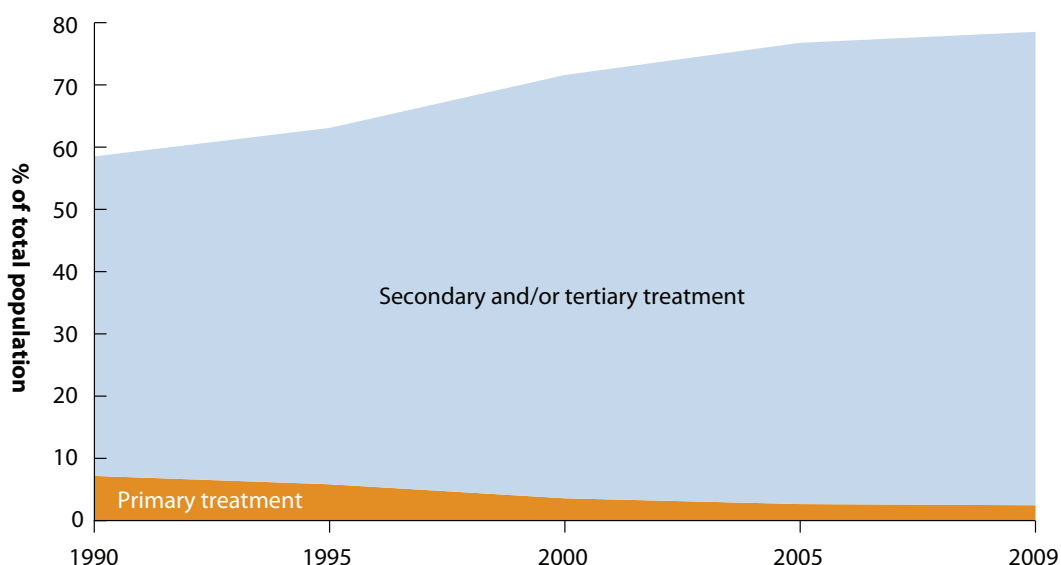


Did you know?

There are only three ways to cover the costs incurred to supply safe water and proper sanitation services.

Commonly referred to as the “3Ts”, these are tariffs (revenues from pricing water-related services), taxes (via budgetary transfers and subsidies) and transfers from development assistance (paid by foreign tax payers). The steady stream of revenue from these sources would open the way for repayable finance in the form of loans, bonds and equity.

OECD population connected to wastewater treatment plants, 1990–2009



Data exclude: Australia, Chile, Mexico, Slovak Republic and Slovenia.

Source: OECD Environmental data.

Intensity of use of freshwater resources (both surface and groundwater) is expressed as gross abstractions per capita, as a percentage of total available renewable freshwater resources, including inflows from neighbouring countries (see below) and as a percentage of internal resources. It has to be noted that when measured at national level these indicators may hide significant variations at territorial level.

Wastewater treatment connection rates show the percentage of the national population actually connected to public waste water treatment plants. The extent of secondary (biological) and/or tertiary

(chemical) treatment provides an indication of efforts to reduce pollution loads.

Future OECD work will build on and improve existing indicators, and possibly complement them with indicators on pollution loads to water bodies and the intensity of use of freshwater resources at subnational level. The OECD is also developing water-related indicators to better monitor progress towards green growth. They deal with resource productivity (water productivity), the stock of renewable resources (freshwater resources), environmental quality of life (access to sewage treatment and drinking water), and economic opportunities and policy responses (water pricing and cost recovery).

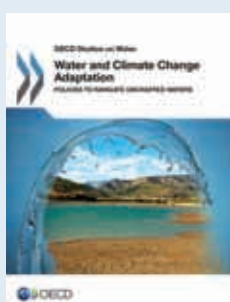


Key water publications



OECD (2013), *Water Security for Better Lives*, Paris

The report explains why governments must take a risk-based approach to water management and proposes steps to help implement this approach. The OECD proposes that water security is about managing water risks, including risks of water shortage, excess, pollution, and risks of undermining the resilience of freshwater systems (rivers, lakes, aquifers). Two observations follow. First, water security comes at a cost. This raises difficult policy questions: how much is the community ready to spend to achieve a certain level of security? Second, protecting against one set of risks can enhance other risks. How can these trade-offs be avoided, or addressed? The risk-based approach has been used to review initiatives taken by OECD countries to adapt water management to climate change, or to inform policy debates on water management in selected countries.



OECD (2013), *Water and Climate Change Adaptation: Policies to Navigate Uncharted Waters*, Paris

This report sets out the challenge for freshwater in a changing climate and provides policy guidance on how to navigate this new “waterscape”. It highlights the range of expected changes in the water cycle and the challenges of making practical, on-site adaptation decisions for water. It offers policymakers a risk-based approach to better “know”, “target” and “manage” water risks and proposes policy guidelines to prioritise action and improve the efficiency, timeliness and equity of adaptation responses. The report also draws out general trends and examples of good practice from a survey of policies on water and adaptation across all 34 member countries and the European Commission. Finally, the report highlights the benefits of well-designed economic instruments (e.g. insurance schemes, water trading, water pricing), ecosystem-based approaches and ‘real options’ approaches to financing. These approaches can improve the flexibility of water policy and investment, reducing the cost of adjusting to changing conditions.

Individual country profiles for all OECD member countries and the European Commission are available for download at www.oecd.org/env/resources/waterandclimatechange.htm. Each profile summarises the challenge posed by climate change to water and the policy response.



OECD (2013), *OECD Compendium of Agri-environmental Indicators*, Paris

This second edition compiles indicators that monitor the contribution of agriculture to the environment. It is part of OECD work on agriculture and the environment, with the key objective to use agri-environmental indicators as a tool to assist policy makers. The report has three main sections: a description of the policy and market drivers impacting on the environmental performance of agriculture; an assessment of agri-environmental performance in specific domains; a review of recent use of the OECD agri-environmental indicators for policy monitoring and evaluation. The chapter on water covers water resources withdrawals, irrigated area, and irrigation water application rates; and water quality (nitrates, phosphorus and pesticides).



OECD (2013), *Making Water Reform Happen in Mexico*, Paris

The report provides evidence-based assessment and policy recommendations in support of Mexico’s water reform. It analyses implementation bottlenecks and identifies good practices in four key areas considered as essential drivers for change in the water sector of Mexico: multi-level and river basin governance; economic efficiency and financial sustainability; and regulatory functions for water supply and sanitation. This report is the result of a one-year policy dialogue between the OECD and Mexico, after the adoption of the 2030 Water Agenda as a strategic and long-term vision for Mexico’s water sector.

OECD (2013, forthcoming), *Managing Water for Green Growth*, Paris

This report explores how water can be managed to drive green growth. In practice, managing water for green growth does not need to be radically new. For instance, water efficiency and water demand management will contribute to green growth. However, the report identifies four features of managing water for green growth: i) Water allocation. It should reflect a development strategy (a pragmatic proxy to social welfare maximisation); ii) Innovation. It can decrease costs and enhance water efficiency; iii) Investment in environment-friendly water infrastructures. They can enhance water security in the face of uncertainty, at low cost for society and the environment; and iv) Access to water supply and sanitation to all. It generates huge benefits for society, the economy and the environment. The report sketches a policy framework governments can use to assess how water management in their country contributes to green growth.



OECD (2012), *A Framework for Financing Water Resources Management*, Paris

A lack of finance for water resources management is a primary concern for most OECD countries. This is exacerbated in the current fiscal environment of tight budgets and strong fiscal consolidation, as public funding provides the lion's share of financial resources for water management. This report provides governments with a framework to assess and strengthen the financial dimension of water resources management. It proposes a set of four principles to frame financing strategies for water management, with a specific focus on the potential role of economic instruments. It highlights implementation issues, which have to be addressed in a pragmatic way. It outlines a staged approach that governments might wish to consider to assess the financial status of their water policies and to design robust financial strategies for water management. Case studies illustrate selected instruments and how they can be used to finance water resources management.



OECD (2012), *Environmental Outlook to 2050*, Paris

The OECD Environmental Outlook to 2050 asks "What will the next four decades bring?" Based on joint modelling by the OECD and the Netherlands Environmental Assessment Agency (PBL), it looks forward to the year 2050 to find out what demographic and economic trends might mean for the environment if the world does not adopt more ambitious green policies. It also looks at what policies could change that picture for the better. This Outlook focuses on four areas: climate change, biodiversity, freshwater and health impacts of pollution. These four key environmental challenges were identified by the previous Environmental Outlook to 2030 (OECD, 2008) as "Red Light" issues requiring urgent attention.



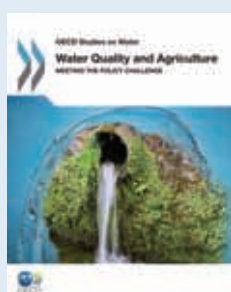
OECD (2012), *Meeting the Water Reform Challenge*, Paris

Building on the water challenges identified by the OECD Environment Outlook to 2050: The Consequences of Inaction, this report examines three fundamental areas that need to be addressed whatever reform agendas are pursued by governments: financing of the water sector; the governance and institutional arrangements that are in place; and coherence between water policies and policies in place in other sectors of the economy. The report provides governments with practical advice and policy tools to pursue urgent reform in their water sectors.



OECD (2012), *Water Governance in Latin America and the Caribbean: A Multilevel Approach*, Paris

The report calls for more integrated water policies and governance mechanisms that are context-specific, flexible and beneficial to the poor. It provides an institutional mapping of the allocation of water policy roles and responsibilities in 13 LAC countries (Argentina, Brazil, Chile, Costa Rica, Cuba, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru). The report then evaluates the importance of 7 multi-level governance gaps: mismatch between administrative and hydrological boundaries, lack of capacity at sub-national level, information asymmetry, diverging objectives between policy areas, under-financing, sectoral fragmentation across ministries and public agencies, and poor accountability. The report also highlights good practices for vertical and horizontal coordination of water policy, and suggests guidelines to better manage interdependencies across public actors within and outside the water box.



OECD (2012), *Water Quality and Agriculture: Meeting the Policy Challenge*, Paris

Improving water quality is consistently ranked as a top environmental concern in OECD public opinion surveys. The key challenge for policy makers in addressing water quality issues in agriculture is to reduce water pollution while encouraging higher water quality for recreational and other uses. This book examines linking policies, farm management and water quality. It looks at recent trends and prospects for water pollution from agriculture and the implications of climate change. It assesses the costs and benefits of agriculture's impact on water systems, and presents case studies of policy experiences from the United States, Australia, New Zealand, the Baltic region, France, the United Kingdom and the European Union in general. Finally the report provides a set of recommendations for countries for meeting the challenge of improving agricultural water quality.



OECD (2011), *Ten Years of Water Sector Reform in Eastern Europe, Caucasus and Central Asia*, Paris

OECD (2011), *Meeting the Challenge of Financing Water and Sanitation – Tools and Approaches*, OECD, Paris.

OECD (2011), *Benefits of Investing in Water and Sanitation: an OECD Perspective*, OECD, Paris.

OECD (2011), *Water Governance in OECD Countries: A Multi-level Approach*, OECD, Paris.

OECD (2010), *Innovative Finance Mechanisms for the Water Sector*, OECD, Paris.

OECD (2010), *Sustainable Management of Water Resources in Agriculture*, OECD, Paris.

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OECD (2009), *Managing Water for All: An OECD Perspective on Pricing and Financing*, Paris.

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OECD-DAC (2010), *Financing Water and Sanitation in Developing Countries: the Contribution of External Aid*, OECD, Paris.

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“We have the ability to provide clean water for every man, woman and child on the Earth. What has been lacking is the collective will to accomplish this. What are we waiting for? This is the commitment we need to make to the world, now.”

Jean-Michel Cousteau



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BETTER POLICIES FOR BETTER LIVES

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