Our long-term success depends on the water resources that supply our business operations and support the livelihoods of suppliers and consumers, which is why water is one of the focus areas of Creating Shared Value. Nestlé’s water efforts are centred around the six elements of the UN Global Compact (UNGC) CEO Water Mandate.
Water

Our long-term success depends on the water resources that supply our business operations and support the livelihoods of suppliers and consumers, which is why water is one of the focus areas of Creating Shared Value. Nestlé’s water efforts are centred around the six elements of the UN Global Compact (UNGC) CEO Water Mandate.

**Public policy**
We are committed to action-oriented dialogue with all stakeholders to help formulate strategies aimed at addressing the water “overdraft”.

**Partnerships**
We are working with others, through the Water Resources Group, UNGC CEO Water Mandate and other networks, to exchange ideas, foster new thinking and develop innovative solutions.

**Operations**
We are embedding sustainable water management into our business, implementing water-saving programmes and working to improve the water efficiency of our products.

**Supply chain**
To secure our long-term access to raw materials, we support hundreds of thousands of farmers through direct investment and training in water management, and work with other local stakeholders to share best practices.

**Communities**
Working with non-governmental organisation (NGOs), we help fund, support and run sustainable water management schemes to help improve conditions in communities on whom we depend for our raw materials.

**Our commitments**
Our W.A.T.E.R. Commitments in water use and stewardship, first announced in 2006, are key to driving water performance through our operations, supply chain and within communities.
Overview

Water and Creating Shared Value

**Value for Nestlé:** continuously improving environmental performance; productive factories; reduced risks; reduced costs; long-term availability of raw materials and water; and sustainable, profitable growth.

**Value for society:** addressing water challenges including universal access to clean water and sanitation facilities; raising water management standards in agriculture; and safeguarding farm viability and farmer incomes.

Context

Though we have enough freshwater across the world as a whole, a growing, more prosperous and increasingly urban population, combined with the impact of climate change, is making water scarcity a serious reality in many parts of the world.

Our goals

Our W.A.T.E.R. commitments in water use and stewardship, first announced in 2006, are key to driving water performance through our operations, supply chain and with communities:

- Work to achieve water efficiency across our operations
  - Leading in water resource management and excelling in the direct reduction of the direct water use in all our facilities.

- Advocate for effective water policies and stewardship
  - Promoting public policies that place value on water at every level.

- Treat effectively the water we discharge
  - Setting strict targets for returning clean water to the environment.

- Engage with suppliers, especially those in agriculture
  - Helping to improve their water management with focus on impacts at watershed level.

- Raise awareness of water access and conservation
  - Engaging employees, communities and consumers in the water imperative.

Since making these commitments, we have continued to gather feedback from stakeholders. In 2011, we undertook an extensive internal review and at the same time consulted externally with leading experts.

We are developing a set of key performance indicators (KPIs) that will underpin our qualitative W.A.T.E.R. commitments.

Systems

Nestlé manages its water impacts through The Nestlé Policy on Environmental Sustainability, which is detailed in the Environmental sustainability section.
Context

The ever-expanding demand for water by the world’s growing, more prosperous and increasingly urbanised population, combined with the impacts of climate change policies and responses, mean that water is of increasing strategic importance for business and economic prosperity. Yet water scarcity is a reality in many parts of the world and with it, livelihoods, human health and entire ecosystems are under threat.

Increasing shortage of freshwater
By 2030, demand for water is forecast to be 50% higher than today, and withdrawals could exceed natural renewal by over 60%, resulting in water scarcity for a third of the world’s population. With more than two-thirds of all water being withdrawn by agriculture, food security is also at stake if we are not able to solve the world’s water crisis. (2030 Water Resources Group 2009; IWMI 2003)

Impact on food security
There are documented risks of global cereal production falling short by up to one-third. And due to the overuse of groundwater, fluctuations in availability and prices of food worldwide resulting from weather patterns will become more severe. The water crisis has become global. (2030 Water Resources Group 2009; IWMI 2003)

Increased competition for freshwater
Currently, 70% of freshwater withdrawn is for agricultural use, and 85% in developing countries (World Bank). Further pressure will be put on water in agriculture due to changing dietary habits (increased meat consumption – meat production uses 10 times more water than vegetarian production) and subsidised biofuels (Hoekstra).

Access to safe drinking water
There has been significant improvement since 1990, but 884 million people (1,215 million in 1990, 850 million in 2006) – 37% of whom live in Sub-Saharan Africa – still use “unimproved sources” for drinking water, which includes unprotected wells and vendor-provided water. The poorest pay up to 10 times higher prices for water of precarious quality from street vendors. The sanitation situation is even worse; 2.6 billion people have no access to improved sanitation. (UNICEF/WHO 2010)

Water quality
During 1999–2000, the United States Geological Survey conducted the first nationwide investigation of the occurrence of pharmaceuticals, hormones and other organic contaminants in 139 streams from 30 states. A total of 95 contaminants were targeted including antibiotics, prescription and non-prescription drugs, steroids and hormones. A surprising 80% of streams sampled were positive for one or more contaminant; 13% tested positive for more than 20 targeted contaminants. (http://www.usgs.gov/)

Bottled water
Indeed, 70% of total global freshwater withdrawals are used by agriculture, 20% by industry, and 10% by households. Nestlé Waters uses 0.0009% of global freshwater withdrawals. It is not in the interests of our long-term business activities to mismanage the water resources we use.
Expert views

Nestlé has invited two leading water experts, Edna Molewa MP, Minister of Water and Environmental Affairs in South Africa, and Professor John Briscoe of Harvard University, to consider the global water challenge from differing perspectives.

“In our country of about 50 million people, we face the challenge of freshwater scarcity, which is exacerbated by its growing demand, pollution of its sources, unsustainable usage and wastage. Factors such as climate change and population growth also lead to an increase in water consumption.”

Edna Molewa MP, Minister of Water and Environmental Affairs in South Africa, discusses the challenges faced by South Africa in relation to freshwater scarcity – a problem exacerbated by growing demand, the pollution of sources, unsustainable usage and wastage.

“Water insecurity looms as one of the great challenges of the 21st century, and it is one that policy makers and business leaders must face together.”

Professor John Briscoe, who was Senior Water Advisor and Brazil Country Director for the World Bank and is now the Gordon McKay Professor of the Practice of Environmental Engineering at Harvard University, considers how the private sector is becoming an increasingly important contributor to the debate on water policy.
Mrs Edna Molewa, MP, is the Minister of Water and Environmental Affairs in South Africa.

In our country of about 50 million people, we face the challenge of freshwater scarcity, which is exacerbated by its growing demand, pollution of its sources, unsustainable usage and wastage. Factors such as climate change and population growth also lead to an increase in water consumption.

We admit that there are real and significant challenges with regard to water management in our country. In this regard, we have already begun to think creatively about different ways of preserving and protecting this precious resource, thus making more water available for economic growth and the creation of decent jobs.

South Africa is a water-scarce country with a low rainfall – about 50% of the world average – and one of the lowest run-offs in the world. Rainfall is also highly seasonal, with around 80% occurring within a span of five months. While this raises many concerns regarding water availability and security in the country, the South African government believes that if we manage our resources well and use water judiciously, there will be no imminent shortage of water. Current projections indicate that South Africa will, in all probability, exceed the limits of our economically useable land-based water resources by 2050. However, my department is working on innovative measures to ensure that there will be clean water for human consumption for future generations.

We have no option but to change our behaviour and attitudes towards water use, as part of our ongoing endeavours to build sustainable livelihoods for the people of our country. Indeed, if we do not change the way we use our water resources, challenges will be experienced in our initiatives to make more water available for economic growth and the creation of decent jobs. Water limitations will create constraints to meet the energy generation capacity we need for economic growth. It will also impact negatively on the agricultural sector’s ability to create jobs and provide food security for our country. The mining and industrial sectors will also experience constraints in contributing to economic growth and employment creation.

We therefore have a collective responsibility to proactively protect our water resources. In this regard, the work that Nestlé’s Mossel Bay factory in South Africa has done in reducing its water consumption by 50% in 2010 is to be applauded. It is encouraging to note there are companies that look internally into their processes to improve the efficient use of water, thereby encouraging other water users to do the same.

We also congratulate Nestlé as the winner of the 2011 Stockholm Industry Water Award for its leadership, performance and efforts to improve water management within its supply chain globally. The education of the general public on water conservation continues to be highly imperative. Thus, we have begun with campaigns aimed at raising awareness about water conservation and encouraging our communities to get involved in waging war against water wastage. We have also commenced a programme to desalinate sea water for domestic consumption in severely water-stressed areas.
Collectively, these interventions contribute towards making more water available to allow our country to pursue the strategic objective of growing the economy and creating more decent jobs. To improve the collaboration with business, we signed a Memorandum of Agreement with the Water Resources Group (WRG), an influential public–private global network on water, supported by the World Economic Forum and the International Finance Corporation. The intent is to forge a partnership with WRG through a public–private group, chaired by a Director-General of my department, to oversee the activities to address critical water issues in South Africa: water conservation, demand management and developing more sustainable management of groundwater resources.

We invite all citizens of South Africa to support us in this quest to make our country a water-conscious country for the benefit of present and future generations. As we chart a new policy context, we shall continue to infuse in our approach the constitutional and human rights imperatives towards our service delivery model.

We trust that we can continue to rely on the support of various stakeholders, particularly companies like Nestlé, as we do our work to make more water available for economic growth and the creation of decent jobs.

The comments on this page are the author’s independent opinions and are not necessarily shared by Nestlé.
The business of water

**Professor John Briscoe** was Senior Water Advisor and Brazil Country Director for the World Bank. He is now the Gordon McKay Professor of the Practice of Environmental Engineering at Harvard University.

**Water insecurity looms as one of the great challenges of the 21st century, and it is one that policy makers and business leaders must face together.**

Public sector leaders and non-governmental organisations have long dominated the debate on water policy. However, over the last decade, a growing number of private sector companies (with Nestlé playing a leading role) have also started to engage, on two tracks.

Track One is being defined by companies that are developing technologies, which can enable society to get more product – more food, energy, income, employment – per drop of water. There are three broad segments. The first comprises companies that develop productivity-enhancing seeds and agricultural technologies. A second segment of companies is developing new technologies for treating water and wastewater. The third segment comprises companies that provide users with just-in-time and just-what’s-needed information, such as on the probability of rainfall, on soil moisture, on water and on fertilizer requirements. Precision agriculture can produce much more crop per drop than traditional methods can, and industries and cities can use much less water too.

Track Two is motivated by the understanding that growing concerns regarding water scarcity and quality can become a threat to a company’s social licence to operate. Companies have responded in several ways. Some have made large donations to activist groups in the hopes of buying peace; others have focused on the water standards that they can then meet in their plants. The most far-sighted of these companies, however – with Nestlé a leading example among them – recognise that while companies have to manage water and other resources efficiently behind their factory gate, society (along with companies and their suppliers) needs an equitable, efficiency-stimulating, and predictable legal and regulatory environment that governs all water uses in a watershed. These companies also believe that private businesses have useful and legitimate inputs to make into the policy formulation process.

I have seen, first-hand, two examples where companies are engaging on this big stage.

The first example was in Brazil, where improving the quality of public sector performance is, arguably, the biggest systemic challenge facing the country. Eight years ago, a newly elected Governor of one of the largest states realised this but did not have the people or tools to address the problem. The Governor approached executives from two of Brazil’s most successful high-morale companies (InBev and Gerdau). Together, they laid down two basic ground rules: that they would assist only if the effort were led by the Governor, and there would be very careful avoidance of even the hint of a conflict of interest. The companies then provided human and financial resources, which the state used to execute a hugely successful “management shock”, a process that is now being emulated in a dozen other Brazilian states.
The second example is in Pakistan, where the Chief Minister of the largest province is pulling together public and private expertise to address the existential challenges of water productivity and water security. The private effort has been led by the local private sector, with multinationals – led by Nestlé – playing a strong supporting role.

Nestlé engages for three reasons. First, its corporate philosophy of Creating Shared Value plays a major role, because Nestlé in Lahore is not just the milk factory, but includes the 190,000 farmers who provide milk to the factory. These farmers tell Nestlé that water is a major challenge – not only for their cattle, but for their crops and their families.

Second, Pakistan is an important and profitable market for Nestlé and the Company realises that its corporate well-being is dependent on a more prosperous and secure country.

And third, while Nestlé is, of course, a multinational, in any place (like Pakistan) it is at least as much local as international. One of Pakistan’s most far-sighted business leaders is a major shareholder, and Nestlé’s staff is almost exclusively Pakistani. And every Pakistani knows just how vulnerable his or her country is when it comes to water. And so Nestlé – like InBev and Gerdau in Brazil – is putting its management know-how at the service of reforming political leaders, and encouraging other domestic and international companies to do the same.

Dealing with the growing and changing threat of water insecurity is one of mankind’s great, existential challenges. The glass is certainly half empty. But it is also half full, as political leaders increasingly engage with the fundamentals of reform, and as business leaders understand that this is an issue where they can, in partnership with progressive political leaders, make a big, systemic difference.

The comments on this page are the author’s independent opinions and are not necessarily shared by Nestlé.
Public policy

The global issue of water “overdraft” cannot be solved by the private sector alone. To stimulate concrete action, we are heavily involved in the public policy debate, and are convinced that committed engagement with relevant stakeholders at watershed, government and international levels is the right way to develop effective strategies.

Key challenges

- Engaging effectively with governments to demonstrate that water shortage can be overcome at an affordable cost.
- Although our pilot projects are encouraging, getting government buy-in and leadership remains crucial.

Goals

- Participate in the public policy debate on balancing water withdrawals with natural renewals.
- Contribute to action-oriented dialogue that will increase the efficiency of water use at a watershed level, to deliver a balanced regulatory framework.

Actions

- Engaging in public sector dialogue with national governments and inter-governmental fora.
- Chairing the 2030 Water Resources Group and leading the World Economic Forum water effort.

Performance

- Water cost curves tested in India, Pakistan, South Africa, Jordan, Mexico and Mongolia, with the World Resources Group.
- Participation at high level in public-private sector dialogue in several fora including World Economic Forum, World Water Week and Chatham House.
Contributing to the public debate

Water has been an issue of concern and action for us since the 1930s, when we built our first wastewater treatment plant. Today, we remain active and concerned, exemplified by the engagement of Nestlé Chairman Peter Brabeck-Letmathe with the World Economic Forum (WEF) over many years, including its Annual Meeting in Davos, Switzerland, in January 2011.

Since 2008, we have also played a leading role in the 2030 Water Resources Group (WEF-WRG), formed with the International Finance Corporation of the World Bank Group, McKinsey & Company and a consortium of business partners. Under the leadership of Mr Brabeck-Letmathe, the WEF-WRG seeks new insights into water scarcity, explores the opportunities and costs of possible solutions, and fosters results-based stakeholder dialogue. Beyond the debate, we also want to be part of the solution with our own efforts within the context of a cost-effective, comprehensive strategy.

Stockholm Industry Water Award

At World Water Week, the Stockholm Industry Water Award was presented to Nestlé in recognition of our improved management and efficiency of water use in our operations. Since 2001, we have reduced total water withdrawals by 28%, and aim to reduce water use by a further 10% by 2015.
Charting our water future

After a year-long collaboration, the World Economic Forum – Water Resources Group (WEF-WRG) published its landmark report, Charting Our Water Future, in November 2009. As well as providing a clear insight into global challenges, the work also provides practical tools to help stakeholders compare the impact, scale, cost, trade-offs and effectiveness of different measures and technologies to reduce the water gap at a watershed level, enabling water management to be integrated into wider economic and social decisions.

The water cost curve is a key tool, designed to add to stakeholder understanding by providing a comprehensive assessment of supply- and demand-side levers that can bring water withdrawals in individual watersheds back into line with natural renewal.

India, for example, has long invested heavily in large-scale water infrastructure but managing its water resources remains a key challenge. In Charting Our Water Future, the WEF-WRG analysed 140 measures and selected 37 that could help close India’s projected supply/demand gap across 19 major catchment areas. If the cheapest options were selected for managing water resources, annual expenditure in 2030 would be USD 5.9 billion.

Major water challenges for us all

Long daily treks to collect and carry water (six kilometres on average by African women and children (International Federation of Red Cross and Red Crescent Societies)), no access to improved water sources, and no access to adequate sanitation are difficult realities for many. Better public policy and governance are important to Nestlé because they are on the critical path towards universal access to clean water for every person – an ambition which we wholeheartedly support – and at the same time, in working towards solutions that tackle water security issues faced by millions of people we are also minimising the risks to our own business.

6 km

The average daily walk to collect water by African women and children.
Testing the water cost curve

Ultimately, solutions are needed for watersheds, river basins and aquifers and Nestlé is leading the way through several multi-stakeholder pilot projects to assist governments in setting priorities and developing strategies.

In Mexico (see cost curve below), an intense effort has been made to carry out rigorous prospective scenarios in each of the country’s 13 hydrological-administrative regions. In order to achieve balanced supply and demand for water, it will be necessary to concentrate on four lines of action: increasing the modernisation (relining primary and secondary channels) and the technification of irrigation districts and units; continuing with the construction of infrastructure to supply areas of growth; boosting efficiency of drinking water and sanitation systems; and increasing the use of efficient technologies in homes, businesses and industry.

We are also supporting coordinated action to deepen the Mongolian authorities’ understanding of water resources, future demand and the full range of possible solutions, and develop a ‘Mongolian Water Initiative’ implementation plan.

The 2030 Water Resources Group Water Cost Curve
Measures that integrate technical solutions, nationwide

![Water Cost Curve](image)

Source: 2030 Water Agenda (National Water Commission of Mexico)

Bringing local stakeholders together
The World Economic Forum-Water Resources Group is led by Nestlé Chairman, Peter Brabeck-Letmathe, and is actively seeking coordinated action involving all stakeholders at national and international levels.

ENGAGEMENT: A World Economic Forum-Water Resources Group meeting in Mongolia, co-hosted by the Office of the President of Mongolia and the Water Resources Group in June 2011, attended by Nestlé Chairman Peter Brabeck-Letmathe.
Collective action

The water challenge is a global issue that calls for joint action. Nestlé is committed to learning from others, as well as sharing our own learning – as a founding signatory of the UN Global Compact CEO Water Mandate, and as an active member of national and international networks.

Key challenges

- Selecting appropriately from a multitude of risk and impact assessment tools, which are set to expand, driven by demand from investors.
- Co-ordinating and harmonising across initiatives to deliver local, practical and multi-stakeholder solutions.

Goals

- Demonstrate leadership in voluntary multi-stakeholder initiatives, which recognise water issues as shared risks and responsibilities and promote water stewardship.
- Pursue collective action in watersheds relevant to our operations to balance water use.

Actions

- Acting in all workstreams of the CEO Water Mandate and one of the first companies to contribute to the Water Carbon Disclosure Project (CDP).
- Advocating for common standards through ISO 14046, the Alliance for Water Stewardship (AWS) and the Water Footprint Network.
- Engaging in local water preservation and stewardship initiatives in countries including Colombia, India and France.

Performance

- Appointment to AWS International Standard Development Committee: first draft standard by Q1 2012.
- Harmonisation of CEO Water Mandate and Water CDP reporting requirements.
- “Ecological corridors” in the Nestlé Waters Switzerland ECO-Broye project.
Managing water issues

We have embedded responsibility for water into our business units, providing a solid cross-functional platform to manage water-related issues. Our Water Task Force, chaired by José Lopez, sets high-level strategy, while our Operations Water Task Force translates this in operational targets, objectives and KPIs, enabling us to face current and future challenges, and delivering competitive advantage through responsible water management.

The Nestlé Water Taskforce also coordinates the Company’s involvement in the various collective action initiatives, which translate our ambition to contribute to solutions to the global water crisis.

COLOMBIA – Improving water management

Through the SuizAgua project, we work with the Swiss Development Agency and a consortium of Swiss companies in Colombia to assess water use impact along the product life cycle. The project seeks to improve water management in dairy operations and the supply chain in Florencia and Bugalagrande, by estimating water use in traditional and silvopasture systems, helping farmers with water stewardship and improving the environmental performance of our products.

SWITZERLAND – Nestlé Waters partnership approach

Since acquiring the Henniez brand in 2007, Nestlé Waters’ ECO-Broye programme has fostered local partnerships to help preserve natural resources and maintain farmer income in this region of Switzerland. The initiatives, which will be extended by the stakeholders themselves, involve farmers establishing “ecological corridors” across 1500 hectares of farmland to preserve and stimulate local biodiversity; organic filtration in a tributary of the River Broye to improve surface water quality; and a biogas digester to turn organic farm waste into clean energy, to be controlled by Nestlé Waters.
Engagement and disclosure

Nestlé is a founding signatory of the UN Global Compact CEO Water Mandate, a unique private-public initiative in which approximately 87 companies, including Nestlé, are working with environmental organisations and other stakeholders to support water disclosure, public policy engagement and the human right to water. We actively participate in the Mandate’s working groups on these areas of engagement, and publish a public Communication on Progress every year; this report forms our 2011 communication.

In 2011, the Mandate held two working conferences in Copenhagen and Stockholm. Initiatives underway through the working groups include:

- **Water Disclosure Guidelines** to advance a more standardised global approach to corporate water disclosure;
- the *Water, Business and Human Rights* report of the Institute for Human Rights and Business, to which we contributed. A specific guidebook on how companies should implement the right to water and sanitation is also underway; and
- a Water Action Hub, bringing together companies, governments, NGOs and communities at a basin level. On the ground, collective action initiatives are ongoing in Southeast Asia and South Africa as well as continued engagement in the international water policy arena.

**Stockholm International Water Institute**

We also play an active role in Stockholm World Water Week in order to exchange ideas and innovations among experts, practitioners and decision-makers. This is an annual event hosted by the Stockholm International Water Institute and at the 2011 event, themed Water in an Urbanising World, the Stockholm Industry Water Award was presented to Nestlé. As well as participating in World Water Weeks, we collaborate with the Institute’s experts on specific topics including the water impact of food waste.

**CDP Water Disclosure Project**

We believe that transparent disclosure is vital to aid financial and policy decision-making and therefore actively participate in the Carbon Disclosure Project (CDP) Water Disclosure Project. We helped extend the CDP questionnaire beyond carbon to include water, and were among the first companies to contribute to the CDP’s Water Disclosure report in 2010, and again in 2011, detailing how we assess, manage and respond to water-related risks in our operations and supply chain. We have also been part of the CDP Supply Chain Leadership Collaboration initiative to assess our suppliers since its creation in 2007.

**Water Footprint Network**

We are a member of the Water Footprint Network, founded in 2008, and participate in a working group, providing response options from the private sector aligned with the work we conducted in the 2030 Water Resources Group. We have also shared our water management experiences in Vietnam, India, the UK and Colombia.

"Nestlé continues to demonstrate how important water is to its long-term success by assigning board-level responsibility for its Company-wide water policy and taking local action to reduce its exposure to water-related risk."

Marcus Norton, Head of CDP Water Disclosure
Developing industry standards

Developing standards for assessing water use impact
Due to the current lack of global standards, organisations around the world apply different methodologies to assess the impact of water use. We support internationally consistent measurement and management tools, processes and practices, and we are actively participating in the development of a new ISO 14046 Standard Water Footprint – Requirements and Guidelines. Based on a life-cycle approach, the standard will deliver principles, requirements and guidelines for assessing the water impact of products, processes and organisations. It will also define how different water sources and releases, and local environmental and socio-economic conditions can be considered. This standard is expected to be complete by 2014.

Alliance for Water Stewardship
As a participant in the recently formed Alliance for Water Stewardship (AWS), we are working with others towards establishing a voluntary certification programme over the next two years, allowing water managers and users to demonstrate compliance with, or support for, a new International Water Stewardship Standard. This voluntary standard will help companies to measure, manage and engage with others, improve water stewardship practices beyond their own activities, and will complement regulatory efforts to reduce water-related impacts.

FRANCE – Product environmental communications to consumers
Nestlé France, Nestlé Waters and Nestlé Nespresso are participating in a national experiment on environmental communication to consumers in France. The initiative, launched in July 2011 by the French Ministry of Ecology, Sustainable Development, Transport and Housing, communicates environmental performance (greenhouse gas emissions, water, biodiversity) of products from Vittel, Nescafé and Nespresso. The year-long project will explore what is required to introduce environmental labelling on products in France. A similar test on consumer goods assessment has been started by the European Commission, in which we participate with Nespresso, Nescafé, Vittel, KitKat and Purina Gourmet. We are also co-chairing the Steering Committee of the European Food Sustainable Consumption and Production Roundtable, together with the European Commission, to develop a harmonised methodology to assess the environmental performance of food products.
Direct operations

While acknowledging that we have made good progress over the years towards greater water efficiency, we know there is much more to do. We will continue to pursue rigorous water management standards and water-saving programmes throughout our operations.

Key challenges

- Developing and supporting collective action within watersheds from which our factories withdraw water, because most water stewardship challenges lie beyond our factory gates.
- Maintaining progress in water efficiency while delivering business growth.

Goals

- Be the most efficient water user among food manufacturers and lead in water resource management.
- Continuously improve water efficiency across our operations, further reduce water withdrawals and discharges, and return clean water to the environment.

Actions

- Embedding sustainable water management into business decisions by preserving water availability and quality, and by improving the environmental performance of our products, including their water efficiency.
- Implementing programmes to reduce water withdrawal and reuse water, use alternative water sources such as rainwater harvesting and invest in water-saving technologies.

Performance

- 274 water-saving projects run in our factories, Water Resources Review programmes conducted at 100 Nestlé sites and CHF 28 million invested in water-saving and cleaning programmes during the year.
- 28% reduction in water withdrawals since 2001 [KPI], while our food and beverage production volume increased by 73% [KPI].
Water management

Driving operational efficiency
As part of our commitment to drive operational efficiency, we are focused on reducing water withdrawal and increasing reuse, using alternative water sources such as rainwater harvesting, and continually working to improve the water efficiency of our products. We aim to return clean water to the environment.

NIGERIA – Optimising water reuse and efficiency

The Agbara manufacturing complex is one of two Nestlé factories in Nigeria, producing a wide range of brands and products including Maggi Cubes, Milo and Cerelac. The close proximity of our food manufacturing plant and the Nestlé Waters plant at Agbara has enabled us to install a connection so that all surplus water from the Nestlé Waters deep well is used by Nestlé Nigeria plants, leading to a reduction in the water ratio (m³/tonne of finished product) and an annual water saving of 100 000 m³/year.

Determining water management action plans
Assessing the water-related risks facing our factories is crucial to identifying where to prioritise our water management efforts. The risk of reduced water quantity or quality – “physical risk” – is often linked to local competition among domestic, industrial and agricultural users.

Our factories are widespread in all continents and therefore share the same geographical distribution of water-stress level faced by our suppliers, customers and consumers. From our Combined Water-Stress Index, which takes an average of two leading publicly available water-stress indicators (water withdrawals to availability ratio; estimated annual renewable water supply per person for 2025), we evaluate that 40% of our factories are located in water-stressed regions, and 10% are situated in areas of severe water scarcity. Especially in water stressed areas, we strive to be the most efficient water user. We conduct Water Resources Reviews in these factories first – a process through which we evaluate the long-term availability of water resources around our factories, and through which we engage with stakeholders from academia, civil society and the public sector in order to address water management beyond our factory gates at a watershed level – to raise awareness, identify key issues and devise action plans.

The approach outlined above ensures that our operations not only respect the human right to water, but at the same time consider collective, long-term, local water sustainability.

We carried out Water Resources Reviews around 12 sites in 2011 and a total of 100 factories worldwide.
SOUTH AFRICA – Raising employee awareness and buy-in to water conservation

In 2010, the Western Cape region experienced its worst drought in 132 years, and in response Nestlé introduced a multi-pronged approach which included engineering interventions and awareness campaigns. The programme, which will run until 2015, is part of our work with organisations including the South African Government, the Water Resources Group (WRG) and several multinational companies to help close the water gap by 2030, ensuring the availability of water in the future.

Conserving precious water

Nestlé, responding to the drought and need for enhanced water conservation, accelerated water use reduction projects and initiatives at the Mossel Bay factory.

The water saving project at the Nestlé factory, which is supplied by the municipality, reduced its water consumption by approximately 50% in 2010 compared to 2009 values. Significant savings of municipal water were due to the recovery and use of condensate from the milk evaporation process. This recovered water was used as make-up water for the boiler, refrigeration plant and cooling tower, to wash the Company’s fleet of milk tankers, and washing the floor in the boiler.

Raising employee awareness

Nestlé used a multi-pronged approach to realise and sustain the water savings. This included awareness campaigns, measuring and monitoring water usage, sharing results and engineering interventions. Specific actions included:

- sharing information through notice boards and emails to reinforce the water saving message to staff, while water saving suggestions by staff were implemented and rewarded;
- using a water measurement system to monitor water usage in the various sections of the plant; and
- implementing water saving measures such as shortening automated wash times, modifying hosepipe nozzles to reduce water flow, reducing shower head water flow and reducing the pressure in ablution blocks.

By the end of 2010, the average monthly water consumption at the factory had dropped to approximately 13 600 kilolitres, equivalent to 7.5 kilolitres of water consumed per tonne of product produced. Phase three, which will run from 2012 to 2015, will involve engineering work to convert the factory into a zero water intake facility.

The Mossel Bay case study was featured in the 2030 Water Resources Group: Catalogue of Good Practices in water use efficiency document, which was prepared for the World Economic Forum 2012 Annual Meeting.
PHILIPPINES – Recovering and reusing rainwater

Our Lipa factory has constructed a system that collects rainwater from catchment areas, such as the Coffee-Mate warehouse roof, and supplies it to the cooling tower for use as make-up water. This is expected to enable the factory to reduce its overall water withdrawals by around 10,000 m³.
Performance

We aim to be the most efficient water user among food manufacturers. We withdrew 143 million m³ of water in 2011 [KPI], or 3.17 m³ per tonne of product [KPI]; this is a 4% reduction in withdrawal per tonne of product from 2010.

Since 2001, water withdrawals have fallen by 28% [KPI], while our food and beverage production volume increased by 73% [KPI]. For example, our bottled water business, Nestlé Waters, needs water to fill the bottle and also for additional uses such as cleaning and cooling. Between 2005 and 2011, Nestlé Waters reduced its additional water use by 36%, reaching a global average of 0.63 litres of additional water per litre that we produce.

ITALY – Using water twice

At the Nestlé Waters San Pellegrino plant, we have developed a “cascade” system enabling water to be used not once but twice, for rinsing and washing of the bottles, which saves water while still meeting all requirements in hygiene and product quality.

Water-saving projects

Between 2001 and 2011, the wastewater from our factories was reduced by 38% [KPI] through recovering water from production processes and reusing it for other applications, from cooling to landscape irrigation. In 2011, we recycled 7.8 million m³ of water, as we seek to reduce water discharge.

Continuous improvement, driven by Nestlé Continuous Excellence, has resulted in a range of water-saving initiatives at many of our factories:
Creating Shared Value at Nestlé

Nutrition

Rural development

Water

Environmental sustainability

Compliance

Our people

Treating wastewater effectively

We use municipal wastewater treatment facilities wherever possible, but where these are not efficient enough, we invest in our own facilities, returning treated water to the environment according to local legislation and internal standards, whichever is more stringent. We have 301 on-site treatment plants, and in 2011 invested CHF 6 million in new and improved facilities.

We discharged 93.9 million m³ of water [KPI] in 2011, with an average of 68.6 mg Chemical Oxygen Demand per litre [KPI].

AFRICA – Returning clean water to the environment

A USD 2.2 million investment at our factory in Tema, Ghana, provided a new wastewater treatment plant to improve on the local municipal facilities. The plant began operations in 2010 and treats the wastewater from the factory as well as the adjacent Nestlé Distribution Centre, in full compliance with local environmental legislation and our own standards. Although legislation in the Democratic Republic of Congo requires nothing more than a septic tank, our newest water treatment plant – at the Maggi factory in Kinshasa – became operational in October 2011.

USD 2.2m

Invested by Nestlé in wastewater treatment at Tema

Location | Initiative | Annual water saving
--- | --- | ---
LaVie, Vietnam | Frequency inverter adjusts water flow from wells according to production needs. | 150,000 m³/year
San Pellegrino, Italy | Treated rinse water reused for washing glass bottles and pasteurisation. | 119,000 m³/year
Agbara, Nigeria | Surplus water from bottled water production sent to nearby Nestlé Nigeria for reuse. | 100,000 m³/year
Guelph, Canada | Frequency inverters optimise water flow; capacity of water tanks increased. | 62,000 m³/year
Lipa, Philippines | Rainwater collected from new Coffee-Mate warehouse roof used in cooling tower. | 9600 m³/year
Anderson, USA | Membrane Bioreactor system uses treated rinse water from production lines to cool the plant. | 86,000 m³
Supply chain

The answer to many water challenges is beyond the scope of Nestlé alone and we fully recognise the important role of our suppliers. Through our interaction with millions of farmers, we are committed to join our efforts to theirs, to develop good water management practices and find effective solutions at watershed level.

Key challenges

- Implementing good water management practices across complex supply chains.
- Delivering the water stewardship message beyond those suppliers with whom we interact directly.
- Sensitising farmers to the value of water in the frequent absence of adequate pricing structures.

Goals

- Help ensure that water is managed effectively throughout the agricultural value chain.
- Protect the livelihoods of 25 million million people involved in Nestlé’s entire value chain.

Actions

- Engaging in water preservation activities with local stakeholders.
- Sharing sustainable water use best practice and guidelines with other food companies.
- Promoting sustainable development in 46 countries through the Nestlé Sustainable Agriculture Initiative (SAIN).

Performance

- A new SAIN pilot project in India suggests that water use could be reduced by around 30–40%.
- Ongoing implementation of Responsible Sourcing Guidelines for 12 of our key commodities and extension of our Water Guidelines for Suppliers of Agricultural Raw Materials.
Overseeing water use

Partnerships on water impacts in the supply chain
We are encouraging efficient water management practices at a watershed level – for example, through our leadership of the Sustainable Agriculture Initiative (SAI) water and agriculture working group, and by implementing and testing methods designed to increase water-use efficiency on farms.

In India, for example, a new pilot project led by SAI and run by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), uses a simple water impact calculator to determine the amount of water required under differing landform and irrigation conditions. Tests on rice, potatoes, tomatoes and fruit at five locations in Gujarat, Rajasthan and Andhra Pradesh revealed that water use could be reduced to around 30–40% by using the calculator, without affecting yields. ICRISAT will conduct further tests on maize and cotton during the monsoon period, and is also looking into the feasibility of farmers providing data via mobile phones.

Assessing water use in coffee production
Growing coffee, a major ingredient in many Nestlé products, uses a significant amount of water, and sometimes takes place in countries where water is already scarce. To better understand and quantify potential risks to key production inputs – such as water – and to coffee itself, we launched a study in 2011 in partnership with the International Water Management Institute, the Swiss Agency for Development and Cooperation and EDE Consulting. The initiative includes:

- a global assessment of the “consumptive water use” (water consumed in the production process without being returned) of coffee production at farm level; and
- a two-year, site-specific study at Dak Lak in Vietnam.

In response to the rapid growth of Robusta coffee production in Vietnam, which has led to deforestation and land degradation, the study will promote the value of water among smallholders and recommend practical ways to optimise water use.

COLOMBIA – Investing in supply chain water management

Investing in supply chain water management
In the new central coffee mill in Jardín, Antioquia, the water infrastructure is designed to reduce water consumption by half and treat 100% of the waste water. The first AAA coffee from the mill was produced in 2011, and included in the first AAA Limited edition grand cru, Dhjana, launched in September.

-50%
Water saving
Supply chain initiatives

SAIN water projects
The Sustainable Agriculture Initiative at Nestlé (SAIN) is our initiative to support farmers and promote sustainable development worldwide, which celebrated its 10-year anniversary in 2011. SAIN focuses on a broad range of commodities including milk, coffee and cocoa, and enables us to address some key challenges in water management and irrigation. For example:

- three farms in El Piñal, Venezuela, have planted trees to control soil erosion, provide shade for livestock and reduce water loss to evaporation and run-off;
- 90% of the wastewater processed at Gerber’s baby food factory in Fremont, United States, is returned to the local aquifer by irrigating local crops;
- our chicory supplier in Gujarat, India, built a rainwater collection pond to mitigate the decline of the local water table;
- in China, water use at our coffee demonstration farm in Yunnan Province was reduced by 80% in 2010 through the introduction of new post-harvest equipment; and
- a partnership with the Swiss College of Agriculture is using the updated Response-Inducing Sustainability Evaluation (RISE) 2.0 tool to improve the sustainability of water use in Mexico’s dairy industry at 13 farms in the Torreon municipality.

SOUTH AFRICA – Addressing long-term drought
The Western Cape region of South Africa has experienced lengthy droughts for years, leaving the Wolwedans dam, near Mossel Bay, only 10% full at times. In response, our Mossel Bay milk factory installed equipment that enables condensate from production lines to be reused, helping halve water usage between October 2009 and May 2010.

In 2010 the Western Cape region experienced its worst drought in 132 years, and in response Nestlé introduced a multi-pronged approach which included engineering interventions and awareness campaigns. The programme, which will run until 2015, is part of our work with organisations including the South African Government, the Water Resources Group (WRG) and several multinational companies to help close the water gap by 2030, ensuring the availability of water in the future.

In 2011, we launched phase two of the programme, a SAIN project to optimise water use further up the value chain engaging with 17 dairy farmers, five of whom work within the dam’s catchment area, to increase milk production. Local experts, including Nestlé Agricultural Services, are providing training and financial assistance to help with soil moisture monitoring, soil fertility management, irrigation scheduling and the use of drought-resistant crops. Phase three, which will run from 2012 to 2015, will involve engineering work to convert the factory into a zero water intake facility.

MONITORING: Farmer Anton Roets measures irrigation at Goue Akker Farm, which supplies milk to the Nestlé factory in Mossel Bay, South Africa.
**Nespresso AAA programme**

In Colombia, one of the most important coffee sourcing countries for Nespresso and the country with the highest number of individual AAA farmers, the two main priorities of the AAA programme are to join the efforts of the local coffee authorities to regain the declining productivity of recent years and to address water management – one of the main issues of the coffee industry in the region.

At the end of 2011, 37,000 farmers in Colombia have already joined the AAA Programme.

*Nespresso* has been working closely with the Federación Nacional de Cafeteros de Colombia and other partners to create innovative and efficient solutions to address water conservation issues. The first of these has led to the installation of 17,000 water treatment units including 2,700 in 2010/11. The second initiative has been the co-financing and implementation of a central mill in Jardín, Antioquia.

**Local community partnerships in Greece**

In Greece, a Nestlé Waters project is supporting local communities in reducing potential threats to the quantity and quality of regional water resources. The initiative, which began in 2007, has involved hydrogeological investigation, assessing the vulnerability of the local groundwater and the identification of potential drilling sites in less water-scarce areas. Our engagement with local stakeholders in the planning process has helped secure a win–win approach for the local authorities, the farmers and their communities, and Nestlé.

**Guidelines on Responsible Sourcing and water**

We have recently begun introducing guidelines on the responsible use of water in agriculture. The guidelines apply to all relevant agricultural and forest-based raw materials and complement our Supplier Code and the Responsible Sourcing Guidelines (RSGs) that we are developing and implementing for 12 major agricultural materials and packaging materials. The water guidelines contain general requirements on water management in agriculture as well as specific provisions for water-stressed areas.

We have also recently adapted the 10 main principles of SAI’s Water and Agriculture programme, through which we engage with farmers on areas such as water efficiency, irrigation, pollution, drought-tolerant crops and preventing leaks. From these principles, we have introduced Nestlé’s Water Guidelines for Suppliers of Agricultural Raw Materials to a series of commodities through our Responsible Sourcing guidelines. New materials have also been developed to inform, train and educate sourcing personnel, support staff and farmers.
INDIA – Partnerships and awareness-raising

A 2010 joint study by Nestlé and the International Water Management Institute into the water intensity of milk, wheat and rice production in the Punjab determined that groundwater levels are falling rapidly due to agricultural over-use. Nestlé India therefore designed a programme to raise awareness among Punjab dairy farmers, and another for school students, to highlight the effects of over-exploitation of groundwater and the remedial action possible.

In 2011, we also joined a Department of Agriculture project to learn about Systems of Rice Intensification (SRI): innovative paddy cultivation techniques promoted by NGOs in southern India that increase yields using fewer seeds, pesticides and fertilizers, and less water. The study compared SRI and non-SRI yields for the summer harvest and if results are positive, we will extend the techniques to our milk suppliers.
Community engagement

Nestlé helps to address local water issues in communities where we operate because improved water availability and access is essential for rural development and quality of life in the communities we depend on for raw material supply. Working with others, we contribute funding, operational support and training for sustainable water management schemes around the world.

Key challenges

- Helping to change the wholly unacceptable reality that 884 million people have no access to improved water sources, 2.6 billion people have no access to adequate sanitation, and the poorest pay up to 10 times more for water than the rich.
- Supporting effective solutions, which are needed because these challenges can lead to serious public health problems and exacerbate potential conflicting demands for water connected to our operations.

Goals

- Contribute to the universal goal of translating the human right to water and sanitation into reality.
- Support this worldwide, in areas close to our operations, by fostering access to clean drinking water and sanitary installations as well as water, health and hygiene education.

Actions

- Developing sustainable, technologically adapted community water management schemes, jointly with expert partners from NGOs.
- Sharing best practice with employees in all Nestlé sites.
- Delivering water, sanitation and hygiene projects in schools and villages near our operations around the world.

Performance

- Access to water and sanitation for over 100,000 people, through our work with the International Federation of Red Cross and Red Crescent Societies since 2007.
- 40 water and sanitation partnership projects worldwide in 2011, and 126 factories provided clean drinking water to communities in 2010.
- Water Education for Teachers programmes established in a dozen countries.
Engagement initiatives

Water, hygiene and sanitation

Since 2007, we have worked with the International Federation of Red Cross and Red Crescent Societies (IFRC) and the Red Cross Society of Côte d’Ivoire to provide water and sanitation facilities and hygiene training in Côte d’Ivoire. More than 60 000 adults and children are starting to feel the benefit, and the programme will be further extended in the next three years, covering 55 schools, 65 water points and sanitation facilities and at least 53 000 beneficiaries in the cocoa-growing areas of Côte d’Ivoire.

Due to serious civil unrest and the displacement of thousands of people following the 2010 presidential elections, the IFRC’s ability to implement the activities planned for 2011 was significantly restricted, but the Nestlé project’s technical staff was temporarily refocused to assist 31 000 people in 50 communities in Côte d’Ivoire and neighbouring Liberia with safe drinking water and hygiene-awareness support. The Nestlé-IFRC programme in Côte d’Ivoire is part of their global 2010-13 partnership of CHF 2.25 million on water and sanitation, food security and the IFRC World Disasters Report. In 2011, we also supported the emergency relief operations of the IFRC and its National Societies in Japan and the Horn of Africa with a total of over CHF 800 000.

Meanwhile, in India, our Water Awareness programme has been rolled out, promoting responsible water use among children in schools near our factories and installing 156 drinking fountains. These now provide 66 000 students with clean drinking water.

Project WET and World Water Day

Project WET (Water Education for Teachers) is an international NGO that uses educational tools to raise awareness of water issues among school children around the world. Nestlé Waters has been its main sponsor since 1992, helping Project WET to establish programmes in a dozen countries including Vietnam, China, the United Arab Emirates, Lebanon and, most recently, Egypt.

Every March, Nestlé Waters marks World Water Day in partnership with Project WET. Children and teachers participate in Together for Water festivals, to increase awareness of the importance of freshwater for nature, healthy hydration, good hygiene and disease prevention. In 2011, more than 10 000 children and 400 Nestlé Waters employees participated in events across 25 countries.

Nestlé Waters brings relief

When a natural disaster occurs, water sources and distribution systems are often polluted or damaged, resulting in an immediate need for safe drinking water. Nestlé Waters can play a vital role to provide affected communities with bottled water, financial donations and logistical support, in partnership with NGOs or local authorities. In 2011, we provided disaster relief in Japan, Turkey, Thailand and the United States, as well as some continued support in Haiti. In total, we donated more than 3 million bottles of water in 2011.
INDIA, BANGLADESH AND SRI LANKA
Provision of clean drinking water and education programme

We have constructed clean drinking water facilities for the communities surrounding our factories in India, Bangladesh and Sri Lanka. Investing in the drilling of deep bore wells and new water tanks, for example, has given school children regular access to clean drinking water. In addition, our Water Awareness programme teaches students about the importance of clean water, the need for water conservation and the link between clean water, hygiene, health and wellness.

Nestlé has launched 184 clean drinking water projects in the South Asia region, benefitting over 100,000 pupils in village schools, and in an effort to encourage more girls to attend village schools we have constructed 51 sanitation facilities reaching more than 25,000 girls in rural areas. Furthermore, our Water Awareness programme has been rolled out, promoting responsible water use among children in schools near our factories and installing 156 drinking fountains. These now provide 66,000 students with clean drinking water.

CAMBODIA – Access to clean water

Many communities in Ratanakiri, Cambodia, have poor hygiene and little access to clean water, meaning that the local population can suffer from respiratory infections and diarrhoeal diseases. With support from Nestlé Nordic countries – Denmark, Finland, Norway and Sweden – the Cambodian Red Cross has constructed seven wells to ensure clean drinking water to hundreds of households. Some 875 people in 175 households now live within 500 metres of a well and have been trained by the Red Cross to maintain the water points themselves. Those living further away receive a household water filter to provide safe drinking water.

Water user groups and water maintenance committees have also been established around each water point, and two Water, Sanitation and Hygiene (WASH) clubs have been set up to educate local people about clean drinking water and the importance of good hygiene.
MALAYSIA – WWF Project for the conservation of the Setiu Wetlands

As well as being rich in natural resources, the Setiu Wetlands on the East Coast of Malaysia are vital for the fishing sector and provide flood control for the region. To help preserve the area, Nestlé Malaysia has been working with the World Wildlife Fund (WWF) to increase environmental awareness among local communities and create sustainable income opportunities for local people, particularly women who play a major role in the area’s sustainable development.

Participants are offered training on basic entrepreneurial skills and eco-tourism, and Nestlé Malaysia and WWF also provide workshops on how they can sustain a local snack business, covering topics such as packaging, hygiene, marketing, environmental awareness and communication skills. To sustain the project, the participants are also taught how to pass the training on to other women. The initiative has generated increased income for the local community and is helping protect the environment for future generations.

NEW ZEALAND – Nestlé Community Environment programme

The Nestlé Community Environment programme (NCEP) was launched in 2003 and is now active in 19 Nestlé production sites across the Oceania region. The programme, which involves Nestlé sites, community organisations, schools and local government, aims to make a positive environmental impact in the communities in which Nestlé operates, enhance and maintain Nestlé’s reputation as a careful steward of the environment, and foster positive relationships with local residents and organisations.

So far, the programme has resulted in:

- 44 re-vegetation, regeneration or conservation projects leading to more than one million trees being planted;
- 13 water conservation projects including the installation of eight water tanks in schools;
- six waste reduction and education projects within schools and communities; and
- seven habitat protection and education projects that support the conservation of endangered species.
The future for Nestlé and water

This report has documented our progress and some key challenges to date in the Creating Shared Value key focus area of water. To conclude, we examine the future for Nestlé in the water arena.

Our W.A.T.E.R. commitments in water use and stewardship, first announced in 2006, are key to driving water performance through our operations, supply chain and within communities. Our commitments are being developed under continuous review, and we continue to gather feedback on them from our stakeholders. In 2011, they underwent an extensive internal review and at the same time we consulted externally with leading experts. The result is the five commitments outlined below, which will be further refined as we continue to gather feedback, including inviting comment from water experts attending our stakeholder convenings.

We are grateful to the following expert reviewers who have provided opinions to date, and whose comments will be taken into account as we move forward: Professor Asit K. Biswas, Founder of Third World Centre for Water Management; Professor John Briscoe, Gordon McKay Professor of the Practice of Environmental Engineering, Harvard University; Colin Chartres, Director General, International Water Management Institute; Professor Jan Lundqvist, Senior Scientific Advisor, Stockholm International Water Institute; Stuart Orr, Freshwater Manager, WWF International, Switzerland; Gavin Power, Deputy Director of the UN Global Compact and Head of the CEO Water Mandate; Professor Ismail Serageldin, Director, Library of Alexandria and Chair and Member of advisory committees for academic, research, scientific and international institutions.

Our W.A.T.E.R. commitments

W ork to achieve water efficiency across our operations
  Leading in water resource management and excelling in the direct reduction of the direct water use in all our facilities.

A dvocate for effective water policies and stewardship
  Promoting public policies that place value on water at every level.

T reat effectively the water we discharge
  Setting strict targets for returning clean water to the environment.

E ngage with suppliers, especially those in agriculture
  Helping to improve their water management with focus on impacts at watershed level.

R aise awareness of water access and conservation
  Engaging employees, communities and consumers in the water imperative.

Towards W.A.T.E.R. KPIs

We are developing a set of key performance indicators (KPIs) that will underpin our qualitative W.A.T.E.R. commitments and enable systematic measurement of performance. This is work in progress and requires wide consultation across the business and with experts to define comprehensive, robust measures that we can use to track performance over the next five years and beyond. We also recognise the need, and the challenge, to track performance in terms of end impacts at the watershed level, because this is the ultimate measure of progress towards meeting today’s global water challenges.