

SOLUTIONS FOR WATER

A strong network "Made in Germany"



German Water
Partnership



Our Partners



Die
Bundesregierung

Federal Foreign Office (AA)
Federal Ministry of Education
and Research (BMBF)
Federal Ministry of Environment,
Nature Conservation and
Nuclear Safety (BMU)
Federal Ministry of Economics
and Technology (BMWi)
Federal Ministry for Economic
Cooperation and Development (BMZ)

Booklet on Capacities, Organisational Structures and Actors

EXCELLENCE
IN WATER TECHNOLOGY
& WATER MANAGEMENT

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Water is our passion

German Water Partnership is a strong network of private and public companies, research institutes, associations and institutions of the German water industry. Founded in April 2008 with the support of four federal ministries and the foreign office, the organization offers customers and decision makers around the world direct access to German competence and experience in the water industry. It is a centralized information portal and coordination center that provides customized solutions and qualified, effective service benefits to international customers, with expertise “Made in Germany.”

We all know that today, more than ever, the responsible use of water resources is of fundamental importance—indeed, it is one of the primary challenges of our time.

Water is essential for life, and is also a vital economic factor. Water—or the lack thereof—often provokes conflicts. As the United Nations Human Development Report of 2006 states, “There is more than enough water in the world”—but existing problems mainly in developing and emerging countries are often the result of inadequate water management.

And that’s exactly where action is needed. The world’s growing population and the steady growth of agricultural and industrial production call for absolutely effective and sustainable use of the important resource of water, which in turn requires capable water management.

The particular strength of the German water sector is based on an innovative, flexible and tradition-conscious network of highly specialized companies and institutions throughout the value chain. Cutting-edge research also makes a tremendous contribution to the benefit of all.



In addition to modern technical know-how, efficient and innovative solutions and products in all areas of water management—from drinking water to wastewater treatment—the experts of **German Water Partnership** are known for their conceptual strength. Our primary task is transporting this comprehensive German competence to our partner countries in a practical, qualified and precise manner.

A handwritten signature in blue ink that reads "Michael Beckereit".

Dr. Michael Beckereit
Chairman



Water is our business

Our profile:

Germany's pooled water competence

We, the German Water Partnership, pool the experience and competence of the German water industry and research, one of the most powerful in the world.

Our primary objectives are to concentrate information, the improvement of framework conditions for business development, to press ahead innovations and last but not least the desire to solve water management problems, particularly in developing and emerging countries.

Our partners—embedded in a capable network—guarantee for durable, high-quality, fail-safe and modern products as well as for reliable, qualified and effective service. The close cooperation of all partners ensures that German competences and experiences as well as German know-how are used best possible in the world.



**German Water
Partnership**

Our network: Research + Technology + Management + Capacity Building = "Made in Germany"

Under the roof of German Water Partnership research and practice interlink. This means that project ideas and necessary developments quickly merge into flexible planning, construction and operation: Teams of scientists in companies, at universities and research institutes continuously work on new techniques, technologies and procedures to respond to global challenges. These for example include the effects of climate change, demographic development and growing poverty, and they all are directly related to the resource water.

Basis for research and practice is knowledge transfer which is also supported by the network. The transfer also includes the cooperation of universities with companies.

The German water sector is well prepared for these future tasks. Even today one out of every five water technology articles which are exported worldwide carry the logo "Made in Germany". In comparison with the leading OECD countries Germany is market leader in the water sector, within the areas of measurement and control technology as well as in wastewater technologies, Germany is world market leader. The same applies to plant and component engineering.

Our highly educated and experienced engineers and experts cover the entire spectrum of services—from ideas to implementation and running of facilities.

Our Government:

A strong piece of support

As a strong partner the German Federal Government stands next to our network. The common platform complements the existing German commitment in international water politics. The following ministries support our network: the Federal Foreign Office (AA), the Federal Ministry of Education and Research (BMBF), the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the Federal Ministry of Economics and Technology (BMWi), and the Federal Ministry of Economic Cooperation and Development (BMZ).

All ministries contribute their longstanding expertise in international water politics. Particularly during the coordination and administration of projects abroad our network, our partners and our customers benefit from the experiences of the Federal Government.



Our four guiding principles:

Sustainable Use
Secure Supply
Efficient Treatment
Capacity Development

Our mission:

Supply of water – all around, worldwide, sustainable

German Water Partnership unites institutions of science, economy and politics. All partners of our large network can be contacted through our central contact address.

They are available for water management problems and they develop solutions, worldwide. This offer is valid not only for projects in developing and emerging countries, but for all who want to benefit from the competence and experience of our network.

For our partners and customers we provide all solutions from the entire spectrum of services and convey the whole range of offers. Consultation, planning and implementation as well as operation and financing of all water management facilities belong to our range of offers. Of course, we also put our competences into the area of education and trainings: for courses, workshops or vocational activities. Often indispensable and not be forgotten is our institutional and administrative know-how. The worldwide demand for investment in the water sector is enormous and will continue to grow.

However, outdated technology, shabby sewer systems, high water losses, inadequate wastewater disposal as well as misguided management require highly efficient measures. With our network we are able to help the local partners and customers to build and maintain sustainable infrastructures.

Our claim:

Good ideas well-implemented

Four guiding principles determine our holistic program. They define our mission: **Sustainable Use, Secure Supply, Efficient Treatment and Capacity Development.**

Thus, our task is to provide access to clean water to as many people as possible, to provide a careful wastewater treatment and sanitation as well as closing the water cycle to secure the water resource for generations to come and finally to establish a worldwide Capacity Development to reach the UN Millennium Goals by 2015.

And precisely in this way we will support and accompany our customers and partners with full force.



Sustainable Use

WATER, THE ELIXIR OF LIFE: PROTECT AND CONSERVE

Sustainability is based on the ethical principle: ‘We should not live at the expense of others and at the expense of future generations!’

This means, that dealing with water requires a sustainable water use and a sustainable water management to preserve and protect the water resources of the world. The German water industry acts accordingly and pursues this target.

Sustainable Use

Water under nature conservation – The German water industry takes particularly well care of twelve percent of the surface of our country because there are more than 17,000 water protection areas, from which we primarily produce drinking water.

In Germany we know from personal experience: ecosystems can also be preserved in a well-developed economy. With targeted measures and an advanced legislation, we have ensured that in formerly heavily industrial areas next to the rivers Elbe, Oder, Rhine and Ruhr new habitats, even healthy ecosystems could arise.

Sustainable protection and conservation of water resources has many facets: For us in Germany the protection begins when dealing with water – at home, in agriculture and industry. German companies developed water-saving devices and installations, the agriculture has access to efficient irrigation systems and new techniques in the industry promote sustainability: sewage-free paper production, modern staining technologies, the use of rainwater as well as own water cycles and waste recycling facilities in industrial plants.

Special attention to groundwater

In search of water from space – In a joint project with the “Gesellschaft für technische Zusammenarbeit” (GTZ) scientists exploit satellite images – in search of water. At costs of up to 400,000 dollars per drill hole the expensive satellite exploration from space pays off.

Rivers and lakes – of course they are also subject to sustained protection. The implementation of the EU Water Framework Directive is a successful example that water can be protected across political boundaries. Groundwater – one of the most important resources for winning drinking water – requires special attention: Given the growing global drinking water consumption a specific groundwater management is essential. This for example includes the use of effective cleaning methods as well as knowledge about water resources, hydro-geological structures and dynamic processes. Based on this information German experts can create concepts to secure freshwater resources on a long-term basis.

Restructuring the River Emscher – A major challenge for a Region



From 1800 until today the River Emscher has changed dramatically: Once naturally flowing, it became a straight, open wastewater sewer and today is to be restructured and revitalized.



Implementation of IWRM

Integrated **W**ater **R**esources **M**anagement (**IWRM**) is the key word: IWRM as an internationally recognized model defines major water resource protection rules—considering particularly the social and economic aspects of the respective regions.

The implementation is supported by the Federal Government. Therefore German competence teams of the water industry develop strategies, technologies, products and solutions which can limit the consequences for the environment caused by “mega-trends of sustainability” such as climate change, resource scarcity or demographic changes.

Sustainable Management—
Integrated Water Resources Management (IWRM) is a holistic approach to an optimal management and sustainable protection of water. IWRM is an internationally recognized water-political model and obligatory for the German commitment in the water sector.

**We stick up for a sustainable use:
German Water Partnership—
the intelligent network of the German water industry.**



Secure Supply

WATER, THE ELIXIR OF LIFE: WINNING AND DISTRIBUTION

In Germany we are in a good position: twenty-four-seven, during summer and winter and without interruption we have drinking water in the highest quality and purity directly from the tap.

We don't even have to leave home, or walk long distances and take large burdens on us.

In Germany we owe all that to a wise management of water resources, optimal and most sophisticated technologies in water and plant engineering as well as a very good state of our networks.



Secure Supply

Germany with low figures of water losses – Due to defective water pipes water often gets lost. In Germany on average only about 8% of the water trickles away. Within Europe Germany is leading – and also in a global comparison among the best.

Water suppliers create clear relationships – Germany water suppliers deliver about 5.4 billion cubic meters of drinking water to consumers each year.

Dams provide twice – Dams are an integral part of the drinking water supply – and the energy production. Worldwide there are over 40,000 dams, more than half of them are located in China. Germany has 311 large water saving facilities.

In an European comparison, the German water suppliers are ahead: 99 percent of the population is connected to the public drinking water supply, whose figures of water losses are the lowest. In an international comparison our standard satisfies the highest demands: The resource management is sustainable, the environmental legislation is overall and effective, the know-how is extensive and the professionals are well trained. All these factors are prerequisites to deliver clean water in sufficient quantity at any time to any place.

Germany has sufficient water resources. 64% of the drinking water is extracted from groundwater, 27% from surface water, which is collected in reservoirs, lakes or ponds. 9% of drinking water is directly taken from springs. A multiple of the daily basic need per person, recommended by the WHO, can be made available. Not at least this is due to high-efficient technologies “Made in Germany”.

Germany also has a well-functioning drinking water supply network. For maintenance purposes only, German water suppliers invest around EUR 1.5 billion annually, an investment which is financed with about 2% of its per capita income. These supply networks are aging, tend to be fragile and start leaking. In order to minimize these processes, underground drinking water supply networks are monitored regularly and then maintained and/or repaired with the help of the latest technologies.



Setting up a water well in the Ashanti-region (Ghana)



Water for the agriculture – irrigation system near Beit She'an (Westbank)



Urban underground structure

German companies expect far greater dimensions from the drinking water distribution and sewer systems worldwide: Half of the world's population lives in cities, whose underground infrastructure—if available at all—is older than 100 years. That makes water losses increasingly likely. Over the next 25 years an estimated sum of over 25 trillion is needed to secure the infrastructure of the cities. The most urgent problems are seen in the maintenance sector and the expansion of water distribution and wastewater disposal networks. The timely renewal of damaged and outdated parts of both systems is hereby the cost-effective way to greater sustainability.

4,868 billion cubic meters— According to a study the world's population will consume around 4,868 billion cubic meters of water in 2025 in the areas of agriculture, industry and the public supply of drinking water. Compared to 1995 this means an increase of 36%. With about 70% the agriculture will remain main user.

Less is more—Each German citizen consumes an average amount of 125 liters of water a day. For comparison: 164 liters a day are consumed in France, 168 liters a day in England and Wales and almost 300 liters of drinking water per citizen are consumed in the U.S. and Japan.



**We stand for a secure supply:
German Water Partnership—
the intelligent network of the German water industry.**



Efficient Treatment

WATER, THE ELIXIR OF LIFE: PREPARATION AND RECYCLING

In Germany water simply comes from the tap: clean, in sufficient quantities, at a reasonable price and at any time. Is it really that simple? OPEN and CLOSE?

Not quite! The available water in our country for winning drinking water may be cloudy, may contain pollutants or too much iron and manganese.

For the treatment of these waters the German water suppliers provide sophisticated technologies: various physical and chemical processes, for example filtration, oxidation, sedimentation and disinfection.

Efficient Treatment

13 times around the world – The length of the German public sewerage pipe system totals 515.000 Km, that's almost 13 times around the world. Combined sewers account for about 46%, wastewater sewers account for about 33% of the network. The remaining 21% refer to storm water sewers.

More "water employees" than automobile employees – Employer water industry: The entire sector of drinking and wastewater employs more than 100,000 people in Germany – more employees than in the automobile industry.

Black and grey water – Black water is described as sewage water which is polluted with faeces coming from toilets. Wastewater without faeces is called grey water which arises from showering, bathing or washing hands. It can be recycled for to the so called re-used-water, for example, for flushing the toilet or cleaning the house.

German teams of scientists always forge new paths in the development of treatment methods – and are leading worldwide. This includes the continuation of established desalination methods as well as new methods, such as membrane and evaporation technologies. In connection with the use of renewable energies, these technologies can contribute to a stable and sustainable water supply particularly in dry areas.

Where fresh water is used, wastewater must be disposed. That means that without an efficient treatment of wastewater, which is based on a reliable purification technology, there will be no clean drinking water. A sustainable water management also requires an effective sewage treatment. And that is where Germany also sets standards.

In the Federal Republic of Germany nearly the entire amount of wastewater is treated according to the highest EU standards. In large and small sized wastewater treatment plants sewage sludge remains after mechanical, biological and chemical purification steps, annually about 2.3 million metric tons. Uncontaminated sludge can be used as fertilizer in agriculture, the vast majority, however, is used thermally.

Our energy management in wastewater treatment plants is excellent. Sewage treatment is energy-intensive – a part of the energy is recovered by using the heat or by generating power from biogas. Additional procedures use the sewage sludge to regain nutrients such as nitrogen and phosphorus, which are used as fertilizers.



Collecting, treating and distributing rainwater in basins, Burkina Faso



Sewage treatment on Psyttalia, Greece



In many countries around the world people still die on water-borne diseases. With their competence and experience the German water industry can help to solve the problems. The strength of German companies lies in their technically sound and innovative solutions in various areas, including the treatment of drinking water as well as sewage and sludge management. These technologies are also used in many regions worldwide and they contribute to minimize health risks, to establish minimal prosperity and to reduce environmental and groundwater pollution.

Small gardens in the Philippines – In the Philippines the “Gesellschaft für technische Zusammenarbeit” (GTZ) together with the population builds sewage and biogas plants as well as dry toilets which collect urine separately. At the same time, small gardens are set up where the fertilizer which derived from the sludge is being used.

Ecological Sanitation (EcoSan) – EcoSan concepts follow a water cycle-oriented approach in urban water management: Household sewage is regarded as a valuable substance. The nutrients from the sewage are partially or fully repatriated as fertilizers in agriculture.

**For an efficient treatment we recommend ourselves:
German Water Partnership –
the intelligent network of the German water industry.**



Capacity Development

WATER, THE ELIXIR OF LIFE: LEARN AND PASS IT ON

“There is more than enough water in the world”, states the Human Development Report 2006 of the United Nations. Most problems with the resource water don’t result from the supposedly too small quantity but often from inadequate and/or misguided water management.



Capacity Development

Water satisfies the thirst for knowledge – In central Vietnam drinking water is scarce and needs to be transported over long distances into remote villages – a task that is carried out traditionally by young women. Under these circumstances the education suffers because the girls go to the wells instead of going to school. To change this, the UNICEF speaks up for a better water supply in Vietnam.

To study water management – 23 universities in Germany offer study courses in the water sector. The universities from Aachen to Zwickau set scientific, technical or economic priorities. Many universities and universities of applied sciences offer water technologies and water management topics in international study courses.

The world market of water – The global market for water and waste water disposal is currently estimated at EUR 250 billions. According to projections by the EU this value will increase to EUR 400 billions in 2010. The main focus will be the sanitation and the drinking water supply for the cities.

Capacity Development means improving water management by expanding the knowledge and skills of consumers as well as of the institutions in charge. And that's precisely where we must start. We have to optimize and work on this holistic process which covers different levels and allows a sustainable development in the water sector.

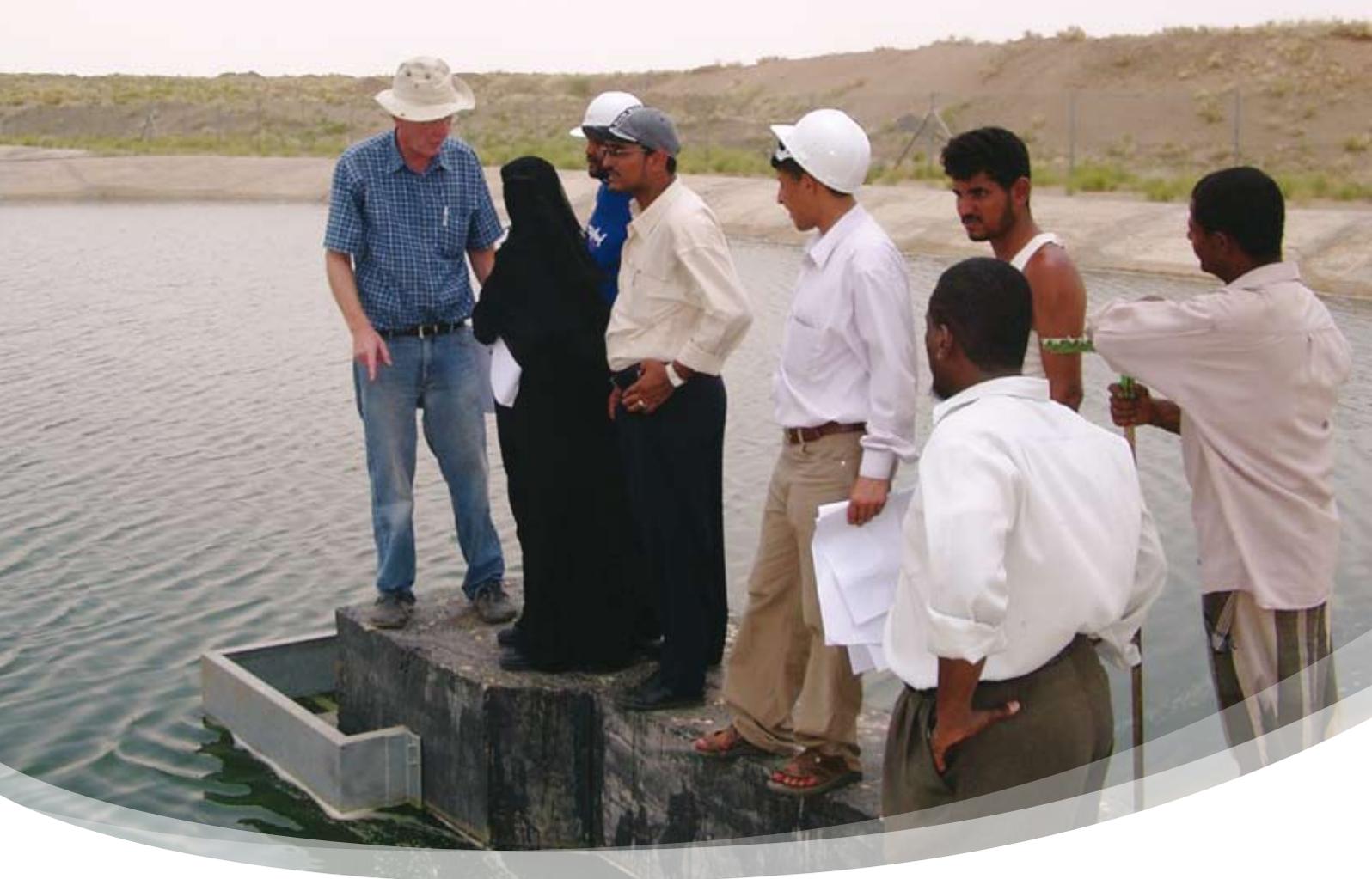
Today's high standard of water management in Germany is the result of constant learning, innovation and the willingness of all concerned parties to find and consistently implement solutions. The experience from decades of steady improvement and optimization of German water management and technical know how is directly integrated into international projects of German companies and institutions – for the well-being of humans and the environment all over the world.

Worldwide there are still around 1 billion (one billion!) people without adequate water supply, approximately 2.5 billion (two and a half billion!) people lack sanitation facilities. The United Nations have proclaimed a decade of water for the period from 2005 to 2015 and presented a work plan on "Capacity Development" – there is an urgent need for action on many different levels. The successes achieved in water management in Germany can act as role models and sign posts for other regions in the world.

German Government as partner

On basis of development cooperations the German Government, which is the world's third largest bilateral donor, currently supports 28 partner countries and activities in around 80 countries in the development of their water sectors with EUR 350 million annually. Expert teams and syndicates support their project partners in all matters. Together they develop need-based and sustainable solutions from the supply of clean drinking water to transboundary water management in international river basins, education programs on the subject of water and health and reforms of the water sector.





A sustainable cooperation, the establishment of strong and viable networks as well as the connection of German technology and its implementation in the partner country are also the target of numerous educational programs. Diverse scholarship programs, for example from the BMBF, DWA and GTZ, support young talented German and international scientists and engineers. Water is being researched across disciplines at many German universities as well as facilities of the Max-Planck, Helmholtz and Leibniz Institutes. Last but not least many countries—consultants, suppliers and also operators—are concerned with applied research.

We all know that water is not the only basic prerequisite for social stability and prosperity—it also creates new areas of life and economy.

**For Capacity Development we form an alliance:
German Water Partnership—
the intelligent network of the German water industry.**



Water management in Kenya—
Only 48% of the rural population of Kenya is supplied with drinking water. As part of a large structural reform this shall change. The Federal Government is committed to help for example with the training of members and user groups for future water management consulting activities.



Member of
**German Water
Partnership**





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