Yet another hot summer! It was at this point, exactly one year ago, having survived the record-breaking heat, that we had cautiously begun to speculate whether we were now beginning to see the effects of climate change. Let’s not delude ourselves any longer. It is now time to bid speculations a firm farewell and, instead, to look reality square in the face. Phenomena such as droughts, heat, forest fires, torrential rain etc. are all climatic events which scientists predicted years ago in no uncertain terms – events that are now becoming a reality. Against this backdrop, we recommend reading the comprehensive assessment “Germany: National Assessment on Climate Change”, published in 2017 by the “Climate Service Center Germany (GERICS)”. More than 120 authors were involved in creating this document, with the KWB, among others, acting as a reviewer. This assessment provides a striking depiction of all the expected consequences of climate change in the form of timelines and graphics. With regional differentiations, the summer months in Germany will remain hot and dry or become even hotter over the coming decades should we fail to achieve the climate goals which have been strongly recommended by scientists.

When it comes to water, research has been taking place to develop measures to adapt to the consequences of climate change for several years now. Whether directly or indirectly, almost all research topics now deal with climate phenomena. This is also true for the KWB. Most of our projects deal with making urban water management more resistant to the effects of climate change. At the same time, we are working on designing the technical processes involved in treating water and waste water to be more energy-efficient and thus more climate-neutral. Thanks to national and international research projects, we are seeing good progress being made across Europe with regard to research into climate change adaptation. In this respect, we can be optimistic of soon having a range of tools at our disposal when it comes to meeting the challenges of climate change in the field of water management. Once we have these tools, we then just have to make sure that we use them.

Edith Roßbach, Regina Gnirss
CEOs Kompetenzzentrum Wasser Berlin

Launch of EU-funded Project “Digital-Water.City“

Under the leadership of Kompetenzzentrum Wasser Berlin gGmbH (KWB), 24 partners from 10 European countries will develop digital solutions for the water management in cities.

The EU is supporting the „DWC – Digital-Water.City“ project which was launched on 1 June 2019 for three and a half years with €5 million. KWB and Berliner Wasserbetriebe will support the city of Paris in preparation for the 2024 Olympic and Paralympic Games by means of a model-based early warning system for the determination of bathing water quality. In the Digital-Water-City project, the cities of Paris, Milan, Copenhagen, Sofia and Berlin will build a bridge between digital and physical applications: A network of scientific institutions, industrial enterprises and water utilities will focus on pioneering digital approaches, which will be further developed over the next three and a half years to solve challenges in the water sector and which will be subject to practical tests. In Berlin, low-cost sensors will be developed, optimised and cross-linked throughout the city. Artificial intelligence and machine learning applications will be used to monitor and control the combined sewer network, predictive maintenance applications will improve the asset management of wells.

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Berlin is now a „Water-Wise City“

To help cities to manage the challenges of climate change and growing population the IWA International Water Association has developed 17 principles under the label “Water-Wise Cities”.

On the initiative Berlin’s water utility Berliner Wasserbetriebe and the Berlin Center of Competence for Water (KWB), the City of Berlin has now endorsed the IWA principles, besides Amsterdam, Brisbane, Copenhagen and 11 other major cities. At the opening ceremony of the International Water Reuse Conference 2019 recently held in Berlin, Stefan Tidow, Permanent Secretary of the Berlin Senate Department for the Environment, Transport and Climate Protection, and Jörg Simon, Chairman of the Board of Berliner Wasserbetriebe, have signed the corresponding document in the presence of IWA Executive Director Prof. Kalanithy Vairavamoorthy.

The principles adapted to the factors determining Berlin’s water management will be published shortly on the IWA-Website.
RESPONDING TO THE CHALLENGES OF CLIMATE CHANGE!

BERLIN IS GETTING INVOLVED IN THE INTERNATIONAL WATER ASSOCIATION (IWA)’S “WATER-WISE CITIES” CAMPAIGN

Interview with Stefan Tidow, Permanent Secretary for the Environment and Climate Protection in Berlin’s Senate Department for the Environment, Transport and Climate Protection. In mid-June 2019, he and Jörg Simon, the head of Berliner Wasserbetriebe – Berlin’s water supply company – signed a commitment to the IWA’s Principles for “Water-Wise Cities”. With its 17 management rules, international specialist body IWA aims to support large cities when it comes to designing their water management systems to more effectively deal with the changes presented by climate change and demographic development. To date, prominent cities such as Amsterdam, Brisbane and Copenhagen, among others, have made the decision to apply these management rules, which have been developed by international experts in water management.

Mr Tidow, you and Jörg Simon signed a commitment to the management rules for “Water-Wise Cities” in Berlin in mid-June. With a view to climate change, these rules suggest a range of measures to make the management of water resources more sustainable in the long term. Is Berlin on the right path here?

Yes, Berlin is on the right path. However, we are also aware that we still have a long road ahead of us when it comes to achieving our goals. In the environmental department, we have been taking a comprehensive approach to the subject of climate change and its effects on the water cycle for many years now. Unlike other cities, which use long-distance pipelines to transport water into the city from the surrounding region, Berlin supplies itself with its own drinking water from within the city area. In addition to the many benefits which this offers, this also means that the system bears a great deal of responsibility when it comes to ensuring its future and guaranteeing sustainable operation. This is why we also believe that it is important to develop a more proactive approach to resource management. We have to move away from decisions which are made based on current conditions and which then have to be reversed after only a few years, for example closing waterworks. This is why we have taken a new direction with our “Masterplan Wasser” [Water Master Plan]. This should help us to proactively observe changes such as climate change and a growing population, as well as other factors, in the long term, and to think through the possible decisions which could be made in specific scenarios.

The IWA not only promotes the more economical use of water, it also promotes more energy efficiency when it comes to treating water and waste water. Is this something which is also being discussed in Berlin?

We take issues such as energy and preventing CO2 emissions very seriously. Among other things, the state of Berlin and the Berliner Wasserbetriebe (BWB), as a key player in treating the city’s water, are committed to reducing those CO2 emissions which are created during the water treatment process. A joint climate protection agreement which aims to do exactly that already exists. This means that a range of energy-saving measures to increase efficiency have been introduced at the BWB. What’s more, the use of in-plant power generation and renewable energies has also been increased. Since 1990, the BWB has already reduced its CO2 emissions by more than 50 percent. Currently, it generates approximately 23 percent of its total energy requirements itself. Among other things, the current climate protection agreement stipulates that annual CO2 emissions associated with energy consumption shall be reduced by at least 14,000 tonnes by the end of 2025, which amounts to a reduction of 5 percent.

Furthermore, as part of the Berlin Energy and Climate Protection Programme (BEK 2030), we are working towards helping Berlin’s sewage treatment plants to manage their demand for electricity with an eye to the future, as well as to regulate their energy consumption and make it more flexible. What’s more, plans are also being made to use the thermal potential of waste water to provide heat for districts in the city. To this end, the BEK makes provisions for using the thermal potential presented by local waste water at central pump stations as a source of heat for heat pumps. The aim to also feed waste heat into the heating network in the future has also been incorporated into the BEK.

Through their “Water-Wise Cities” concept, the IWA is also striving towards more transparency in planning and decision-making processes when it comes to managing water with their thematic area “the engagement of civil society”. What does Berlin have to offer here?

Berlin profits from the exceptional level of involvement shown by many highly-active initiatives, e.g. the Wassertsicht. We take the justified demands of our citizens for more transparency and participation into consideration. However, this does not mean that decision-making processes can always automatically lead to the results which said initiatives are looking for. With regard to establishing measures for bodies of water in accordance with the Water Framework Directive, we have had some very positive experiences with citizens’ workshops and forums. However, it is often difficult to find a solution which satisfies both the range of different interests and the administration. We have recently begun breaking new ground by actively initiating processes together as part of the Blue Community initiative. However, considerable efforts will have to be made, and new formats developed, in order to reach all levels of the population.

Interview: Dr. Bodo Weigert
Creating Synergies between Municipal Solid Waste and Wastewater Management (REEF 2W)

The potential of municipal waste disposal to enhance energy efficiency and produce energy from renewable sources is far from being exhausted. Since mid-2017, the REEF 2W project, funded by the European Union in the programme INTERREG 2, has been working on solutions for combined energy production from waste disposal and wastewater treatment.

The project involves public and private institutions from Austria, Croatia, the Czech Republic, Italy and Germany. Under the leadership of the KWB, the Berlin case study focuses on the use of novel technologies for biogas treatment and biogas feed-in to the gas distribution system to maximise the energy output. This way, the municipal wastewater sector contributes to the interconnection of those sectors which are relevant for the implementation of the energy transition. In addition, the efficiency of biogas utilisation can be substantially increased by the use of power-to-gas technology (with green electricity). As part of the REEF2W project, a mathematical model has been developed for a Berlin sewage treatment plant which allows for the comparison of the various technology combinations and biogas utilisation scenarios in terms of energy, economy and environment. The results of the economic analysis show that biogas purification is a very reasonable utilisation concept for the biogas obtained. The use of power-to-gas technology, on the other hand, does not yet make sense, since this technology is associated with very high investment costs and funding programmes for its introduction are currently not available.

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Smart Framework for Real-time Monitoring and Control of Subsurface Processes in Managed Aquifer Recharge Applications (SMART-Control)

Enhancing groundwater recharge by storing surplus water in the subsurface in times of high availability followed by recovery in times of high demand represents a low cost technology that reduces the impact of water scarcity by increasing seasonal water availability. This technique, referred to as managed aquifer recharge (MAR) is a globally accepted solution for sustainable water resources management and increases the resilience of water supply infrastructures to extreme hydro-climatic events.

Coordinated by the Technical University Dresden, the main objective of the SMART-Control project is to reduce the risks in the application of sustainable groundwater management techniques, particularly of Managed Aquifer Recharge, by the development of a web-based monitoring and control system.

The case studies of the project in Germany, France, Cyprus and Brazil are operated under very different hydrogeological, climatic and socioeconomic conditions and essentially serve to increase water availability in urban areas, to minimize seawater intrusion in coastal aquifers and to adapt to extreme conditions climate events. The project is being funded by the BMBF under the EU-supported Water JPI program.

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Supported by:

Federal Ministry for Economic Affairs and Energy

on the basis of a decision by the German Bundestag

With the R2Q Project to the City of the Future

Cities require a lot of energy and many resources like water, land and building materials. Already now, cities around the world are responsible for the consumption of 80% of the energy produced and up to 70% of the consumption of resources, with tendency to rise.

The project R2Q which is coordinated by the University of Applied Sciences Münsteraims to develop and test novel and pioneering approaches allowing for the sustainable management of resources in cities. R2Q is the example of two districts of the city of Herne, where both residential and commercial areas as well as traffic areas are located close together, will be used to investigate how water, urban areas, materials - for example building materials - and energy can be used more efficiently by linking all residents. To this end, R2Q will develop a resource plan coordinated with professionals, citizens and policy makers, which can be used for future construction and redevelopment measures in city districts, also outside of Herne.

The KWB contributes its expertise in rainwater management and water pollution control to the project and will develop tools to assess the impact of the resource plans on the quality of water bodies. The particular challenge is to create as functional and simple evaluation and model approaches as possible to support the planning.

The project receives funding from the programme “Resource-efficient City districts for the Future” issued by the German Federal Ministry of Education and Research (BMBF).

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In addition, new methods will make technical information on water management in the city more visible to the public. In this context, the use of Augmented Reality (AR) technology is intended to visualise geological structures and groundwater flows. As a basis for open innovation and the involvement of different stakeholders, various Communities of Practices will be established to facilitate the transferability of the digital solutions developed and the international transfer of knowledge at local level and also beyond the project.

www.digital-water.city

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EVENTS

Meet us at the following events:

08-12 September 2019
3rd IWA Resource Recovery Conference 2019
Venue: Venedig, Italien
Organiser: International Water Association
Information

19 September 2019
22. Stadtgespräch "Wasser bewegt Berlin" - Fallen Berlin und Brandenburg trocken? Was tun in Zeiten der Klimakrise?
Venue: Naturschutzzentrum Ökowerk Berlin
Organiser: Stiftung Zukunft Berlin with partner
Information

23-24 September 2019
DWA-Dialog Berlin 2019
Venue: Maritim proArte Hotel, Berlin
Organiser: DWA
Information

24 October 2019
GREEN TALENTS Networking Conference 2019 – Smart Green Planet – Solutions for a Sustainable Future
Venue: BMBF und Kalkscheune
Organiser: German Ministry of Education and Research
Information

04-05 November 2019
Berlin Sewage Sludge Conference
Venue: Mercure Hotel MOA Berlin, Germany
Veranstalter: Thomé-Kozmiensky Verlag GmbH
Informationen

KEY READS

Life Cycle Assessment of Recycled and Conventional Fertilisers
by Fabian Kraus, Malte Zamzow, Lea Conzelmann, Christian Remy, Anne Kleyböcker, Wolfgang Seis, Ulf Miehe Kompetenzzentrum Wasser Berlin gGmbH; Ludwig Hermann, Ralf Hermann Proman Management GmbH; Christian Kabbe formerly Kompetenzzentrum Wasser Berlin gGmbH; with the collaboration of Julius Kühn Institute.

Editor: German Federal Environment Agency (UBA), Wörlitzer Platz 1, D-06844 Dessau-RoßlauFebruary 2019, ISSN 1862-4804.

Download
Language: German

The present study is related to the amendment of the Sewage Sludge Ordinance of 2017, which calls for the recovery of phosphorus from major sewage treatment plants in a transitional period from 2029 onwards. The detailed investigations yielded by the KWB project PORWÄRTS have revealed the technical, ecological and economic conditions which have to be considered if phosphorus recycling from the wastewater path is to be implemented on a national level.

The study provides extensive information on the environmental impact of conventionally produced phosphate fertilisers (from phosphate mining to agricultural application) compared to fertilisers produced by P recovery from the wastewater path. In addition, the study informs on the contamination by heavy metals, organic pollutants and pharmaceutical residues and documents the results of comparative risk assessments of fertiliser application relating to the exposure pathways soil organisms, groundwater and human health.

about us

Through network activities, the KWB strengthens Berlin’s position as an international centre in the field of water economy and technology. Its associates are the Technologiestiftung Berlin, the Berliner Wasserbetriebe and the Berlinwasser Holding. Partners and actors are scientific facilities, public institutions, companies as well as multipliers from public and private sectors.

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