

EDITORIAL

Since 1993, World Water Day has been observed every year on 22 March. This was initially recommended in a resolution to the UN General Assembly agreed on at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. The World Water Day 2014 is focused on the theme of water and energy.

The nexus of water and energy covers a broad field. Water plays an important role in the generation of electricity, with consequences for water resources and surface waters. And of course considerable amounts of energy are consumed by all the processes involved in water and wastewater treatment. For example, sewage treatment is one of the largest consumers of energy for municipal authorities. In view of the growing cost pressures and the demands to meet climate targets, increasing efforts are being made to achieve improvements. We too have several projects aimed at making drinking water production and wastewater treatment more efficient. For example, in our recently concluded CARISMO project, the classic wastewater treatment process has been revised so that a larger proportion (60-80%) of the carbon compounds contained in municipal sewage can be removed mechanically by pre-treatment and fed into the digestion stage. In this way, the biogas yield can be increased by more than 80 per cent. An additional positive effect for the overall energy balance is the subsequent reduction in the energy demands for aeration. If this innovative process is implemented fully, then the result would be that wastewater treatment plant would not merely become energy neutral, but could in fact become net producers of regenerative energy. A wastewater treatment plant would then also be a power plant! However, all the efforts to improve energy efficiency should not divert attention away from the importance of maintaining the standards of wastewater treatment which have already been achieved!

Andreas Hartmann
Berlin Centre of Competence for Water, Managing Director

LATEST NEWS

© picture taken by: Ole Hartmann Schmidt



Climate Change and Water Management

EU Research Consortium PREPARED Makes Recommendations for Adaptation Strategies

In January 2014 scientists and experts of European water utilities met in Aarhus for a three days conference to discuss the recent results of the EU collaborative research project PREPARED. The event focused on the implementation of practical solutions for the operation and design of wastewater treatment plants and drinking water supply facilities, water safety plans and finally on the integration of climate change scenarios into infrastructure planning processes. Practical adaptive measures were presented on the spot in Aarhus: The local water utility Aarhusvand has already translated climate change assumptions into a monitoring and an early warning system for its combined sewer scheme.

www.prepared-fp7.eu

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Reuse of Treated Wastewater – EU Project DEMOWARE Starts with Comprehensive Field Tests



The EU FP7 joint research project DEMOWARE aims to foster the application of water reuse schemes. Against this background, nine demonstration sites throughout Europe have been selected to perform broadly based practical field tests. The results will be used for the implementation of a water reuse scheme which is currently being developed.

The joint research project DEMOWARE is coordinated by the Spanish water research centre CTM CENTRE TECNOLÒGIC and comprises a consortium of 20 European partners. The project volume totals up to 10.5 million € of which the EU funds 6 million Euro.

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NEWS FROM THE KWB NETWORK OFFICE

Selected non-profit research institutes share their expert tools

KWB participates in Watershare®, the initiative of KWR Watercycle Research Institute (NL), in which selected non-profit knowledge institutes in Europe and abroad share their expert tools in

order to help end-users. The uniqueness of Watershare® lies in the fact that water sector researchers, when solving 'local' practical problems, use tools from expert colleagues, and also, where possible,

improve these tools. In this manner, public knowledge is extended and applied much more widely." ●

→ [more information](#)



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INNOVATIVE WATER STRATEGIES AND SUSTAINABLE CONSTRUCTION

INTERVIEW WITH BRIGITTE REICHMANN, TECHNICAL ADVISER IN THE BERLIN SENATE DEPARTMENT FOR URBAN DEVELOPMENT AND THE ENVIRONMENT

Brigitte Reichmann (58) is a building engineer. She graduated from the Technical University of Dresden, Department of Constructional Engineering.

Her field of work includes, among other things, research on sustainable building concepts and also the development, supervision and evaluation of green construction projects. In recent years she has concentrated on topics relating to rainwater management as an element of environmental strategies.

Brigitte Reichmann, for many years you have been working on projects relating to ecological building, and you have made significant contributions to the developments in Berlin. Water always plays a special role. Was there some special reason why you developed this interest?

After working at first on the urban renewal of Berlin, I later devoted myself to the topic of ecological construction. The first model projects focussing on water that I worked on formed part of the Federal Programme for Experimental Housing and Urban Construction (EXWOST). In the field of "Urban ecology and environmentally-friendly construction", I was working together with many dedicated colleagues, particularly from the "Water Module". The integrated water strategy in Block 6 in Berlin-Kreuzberg and the models for usable water in buildings and façade and roof greening in Block 103, one of the most extensive building projects in the "soft" urban renewal of Berlin, have had a considerable influence on the development of new technologies and methods.

A key aspect of green construction is the handling of rain water. Why has this topic become increasingly important in recent years?

Rain water is a key element in resource conservation and water protection, and it can be used as part of innovative sustainable building strategies. The introduction of charges for feeding rainwater into the drainage system in Berlin has not only led

to a fairer system, but has also increased awareness about the topic of rainwater.

The KURAS cooperation project was started half a year ago by the Federal Ministry of Education and Research. Among other things this will be investigating the potential for decentralised rainwater management in Berlin's inner-city districts. What in particular motivated your department to participate in the KURAS project?

Against the background of global developments and the impacts of climate change, it is important to evaluate the suitability of possible approaches in order to develop sustainable planning and construction concepts which will also meet the needs of future generations. Sustainable rainwater management in buildings and city districts can form an important component of integrated urban strategies. The deployment of innovative environmental technologies in building design not only offers considerable scope for reducing environmental pollution and protecting the climate, but can also reduce the running costs of buildings and real estate.

KURAS is intended to provide insights into sustainable construction, in particular for innovative water infrastructures. These are topics that are important for our department in the fields of urban development, environmental protection, and building for the future.

There are many visions for life in the cities of the future. What do you associate with the concepts Vertical Gardening und Roof Water Farm?

The topics of vertical gardens and urban farming are being discussed not only in Berlin, but all over the world. Our Department is receiving growing numbers of queries, for example about the temporary use of vacant lots, or concerning projects for vertical gardens, new systems for façade greening, or the use of roof areas for urban farming. This is also linked to topics such as supply and disposal infrastructures, the greening of buildings, close-loop material

cycles, and the use of recovered nutrients for the production of food. The topics of urban gardening and urban farming also have to be considered in relation to Berlin's strategies for biodiversity. Our Senate Department has supported the research project "ZFARM – Urban farming for the future". This has produced initial guidelines for roof greenhouses.

We are associated partners in the RoofWater Farm project, which is supported by the Federal Ministry of Education and Research. The aim here is to build on the work already carried out in the Block 6 project in Berlin-Kreuzberg in order to investigate the possibilities for integrated water treatment in buildings, in connection with the development of technologies for water-based plant and fish production. The findings will be used as a basis for the formulation of recommendations for future projects.

Do you have your own vision of what Berlin should be like in the future? What contribution can research make towards realising this?

I have a vision of Berlin as a 'green' city which is worth living in, with clean lakes and rivers, and with a good quality drinking water supply from the region. The buildings should be designed to meet the needs of the users and to satisfy environmental requirements, which should include closed-loop cycles for resources. As a further aspect, I envisage the extended use of existing buildings or their conversion for other uses as a priority over new constructions.

Research always has to be one step ahead, in order for us to be able to consider and evaluate competing goals and to integrate changing requirements in legislation and regulations. The findings of research should form part of the on-going discussion processes, for example the Urban Development Strategy Berlin 2030. Independent research can only be successful in a practical context, and it has to be adequately financed.

Thank you very much. Bodo Weigert asked the questions

WATER RESEARCH IN BERLIN AND BRANDENBURG

Senatsverwaltung
für Stadtentwicklung
und Umwelt

berlin Berlin



Photo © Ch. Kabbe 2013



AIRPREX® reactor for struvite recovery at WWTP Wassmannsdorf

Phosphorous Balance for Berlin's Waste and Wastewater Paths

Phosphorous is a natural fertiliser essential to plant growth. European fertiliser manufacturers and the agricultural production throughout Europe are almost entirely dependent on imported raw phosphate. For this reason, the recovery of phosphorous from industrial processes has been pushed ahead in recent times.

Wastewater and domestic waste contain large amounts of phosphorous. For the precise design of phosphorous recovery schemes it is of particular importance to know the details about its quantities occurring and flows. The Land Berlin is one of the first German Federal States having integrated phosphorous in its recycling management scheme. In the scope of a survey conducted by KWB, all relevant phosphorous containing substance flows throughout Berlin will be recorded and analysed in terms of their recovery potential. Based on the quantities and qualities determined it will be possible to develop guidelines for the implementation of a Berlin waste management scheme allowing for a pioneering recycling industry and a sustainable and efficient use of phosphorous resources.

The results will be presented in spring of this year in Berlin. The project is funded under Berlin's Environmental Relief Programme and co-financed by the European Union.

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Trace Organics in Stormwater Runoff

Each year about 74% or 44 million m³ of stormwater runoff are discharged mostly untreated into Berlin's surface waters. Due to its intensive contact with roof and road surfaces, stormwater runoff is considerably polluted and causes, besides the discharges from combined sewers and wastewater treatment plants, significant water quality problems in receiving streams.

Studies from Switzerland have revealed that stormwater may also contain organic trace substances such as biocides, plasticiser and combustion products leading to additional stress for water bodies. To support Berlin's strategy for reduction of trace organic contaminants, KWB examines the relevance of stormwater runoff as potential source of trace organic substances discharged into surface waters. Within the research project OgRe, stormwater of different catchment types (areas with old or new buildings, roads etc.) will be sampled and analysed for trace organic pollutants, thus describing the status of all locally important substances occurring in Berlin's stormwater runoff. Annual loads of relevant micropollutants discharged via stormwater runoff into receiving waters are estimated and compared with relevant pollution loads originating from other entry paths. The project is funded under Berlin's Environmental Relief Programme which is co-financed by the European Union and by Veolia.

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Photo © BWB/Donath

CARISMO

Wastewater to Energy

The organic matter contained in wastewater represents a largely unused renewable source of energy. Instead, energy is required in wastewater treatment for the biological degradation of these substances, e.g. for aeration. CARISMO aims to develop wastewater treatment plant as net producers of regenerative energy.

The project's basic idea is to withdraw carbon from wastewater to the highest possible extent and to feed it into the sludge fouling process. In the scope of the CARISMO project, two new processes were tested: Flocculation and micro-sieving (100 µm pore size) as well as an upstream moving bed biofilm reactor (MBBR). Results of an holistic energy balance show that CARISMO schemes can increase biogas yield per m³ wastewater by 76-83% compared to the reference scheme. Thus, the new concept yields an "energy-positive" process with a net energy balance of -0.17 kWh/m³ wastewater, whereas the reference scheme still requires 0.2 kWh/m³ under optimised conditions.

The project was financed by Veolia and BWB.

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Photo © KWB

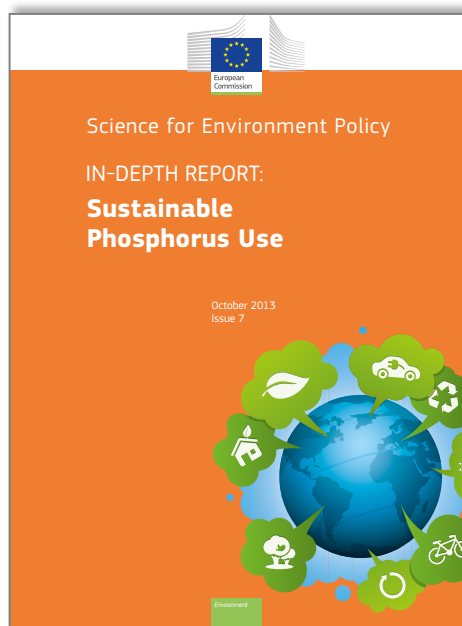
>> continuation of page 1 (DEMOWARE)

The DEMOWARE project's main objective is to identify existing barriers in the fields of water reuse. In the scope of the project, the following issues will be dealt with: Wastewater treatment and reuse, process monitoring and performance control, risk and environmental benefit analysis, business models and pricing strategies as well as governance and stakeholder collaboration. Specific work packages are dedicated to the exploitation, commercialisation and dissemination of the project results. The project outcomes will guide the development of a live in-development water reuse scheme.

Within this framework, Kompetenzzentrum Wasser Berlin is primarily responsible for the implementation of the specific hygiene requirements for agricultural water reuse at the demonstration site in Brunswick. Furthermore, KWB analyses the preconditions for MAR technologies combined with appropriate pre-treatment as a storage option in regions running low on water. In addition, KWB leads the work package related to the development of a decision support system for assessing the potential consequences of water reuse schemes. Finally KWB, as one of the major partners to the project, is involved in the management, dissemination and exploitation activities of the project.

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→ <http://ec.europa.eu/environment/integration/research/newsalert/pdf/IR7.pdf>

EVENTS

Meet us at the following upcoming events:

12-13 March 2014

Strategic Workshop on Water Safety Plans (WSP) for Europe

Organiser: UBA and WHO in cooperation with KWB, IWA, DVGW, EUREAU
Venue: Berliner Wasserbetriebe, Berlin, Germany

19-21 March 2014

ESSENER TAGUNG für Wasser- und Abfallwirtschaft "Ist unsere Wasserwirtschaft zukunftsfähig?"

Organiser: ISA
Venue: Messe Essen-Ost, Essen, Germany
www.essenertagung.de

8 April 2014

Berlin Water Workshop: Adaptation of Water Management to Climate Change – Results of the EU FP7 Project PREPARED

Organiser: KWB
Venue: Berliner Wasserbetriebe, Berlin, Germany

5-9 May 2014

IFAT 2014 – Trade Fair for Water, Sewage, Waste and Raw Materials Management

Venue: Messe Munic, Germany.
Stand B1.2009
www.IFAT.de

FOCUS

Sustainable Phosphorus Use

IN-DEPTH-REPORT of the European Commission

Editor: Science Communication Unit, University of the West of England, Bristol (2013). Report produced for the European Commission DG Environment October 2013

This In-depth Report provides an overview of the current state of scientific knowledge on the phosphorus challenge and research on the sustainable use of this important and finite element. Well-documented and precise information is given about phosphorus as an essential resource in agriculture, but also about its contribution to considerable surface water pollution across the EU and globally. The authors show that the EU is reliant on imports and increasingly dependent on phosphorus reserves that are less accessible and more polluted with toxic elements. The report takes into account different perspectives, indicates possible policy interventions and highlights existing research gaps.

Download:

26-30 May 2014

11th IWA Leading Edge Conference on Water and Wastewater Technologies LET 2014

Organiser: IWA
Venue: Abu Dhabi, UAE
www.iwahq.org/26d/events/iwa-events/2014/let2014.html

17-18 June 2014

Water Research Horizon Conference

Organiser: Water Science Alliance
Venue: Botanical Garden and Museum Berlin, Germany
www.ufz.de/water-research-horizon

23-25 June 2014

EcoSTP 2014 Conference: "Eco-Technologies for Sewage Treatment Plants"

Organiser: IWA in cooperation with EU-COST Action Water2020
Venue: Verona, Italy www.ecostp.org

25-26 June 2014

Water Innovation Europe "Water: green tape or blue gold?"

Organiser: WssTP
Location: Brussels, Belgium

17-21 August 2014

HIC 2014 – 11th International Conference on Hydroinformatics

Organiser: IAHR, IWA, TU Tech, IAHS, The City College of New York
Venue: The City College of New York, New York, USA <http://hic2014.org>

12-17 September

ICUD 2014 International Conference on Urban Drainage

Organiser: NRE Malaysia, DID Malaysia, IWA, IAHR
Venue: Borneo Convention Centre Kuching, Sarawak, Malaysian Borneo
www.13icud2014.com

about us

The Berlin Centre of Competence for Water (Kompetenzzentrum Wasser Berlin, KWB) is a public-private partnership company. Its associates are the TSB Technologiestiftung Berlin, the Berliner Wasserbetriebe, the Berlinwasser Holding and Veolia Wasser. The KWB stands as a network node to strengthen the position of Berlin as an international centre in the field of water economy and technology. Partners and actors are scientific facilities, public institutions, companies as well as multipliers from public and private sectors.

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