GRÜNE LIGA Water Policy Office

GRÜNE LIGA (GREEN LEAGUE) was founded as a network of environmental grassroots organizations in East Germany in March 1990 – shortly after the fall of the Berlin wall, and half a year before the reunification of the country. The members of our network work on a variety of environmental topics. GRÜNE LIGA is a leading environmental NGO in the field of water policy in Germany.

The Elbe river basin, which is shared by four nations and ten federal German states, is a regional focus of our work. The Water Policy Office has observer status in the International Commission for the Protection of the Elbe River (IKSE) and in the German inter-state coordination group Flussgebietsgemeinschaft Elbe (FGG Elbe). The Elbe basin stretches from Southern Bohemia to the North Sea, among the cities in the basin are Prague, Dresden, Berlin and Hamburg.

The Water Policy Office has been an active member of the Water Working Group of the European Environmental Bureau (EEB) in Brussels for almost 20 years right from the start of the EU-wide drafting process of the Water Framework Directive. The EEB's view on the future of EU water policy is summarized in our common position „The EEB's Main Priorities on the Blueprint to Safeguard Europe's Water Resources". The first and foremost task is to save European freshwater biodiversity from infrastructure damage, such as new hydropower dams and inland water way projects. In line with the EEB, we also advocate a fundamental reform of the EU's Common Agricultural Policy, in particular since agriculture is the main cause of eutrophication, one of the biggest threats to Europe's inland waters and seas.

GRÜNE LIGA has hosted the Wild & Scenic Film Festival in Berlin every year since January 2016. Over the course of three days, the festival combines film screenings, thematic introductions and talks with scientists and activists, along with opportunities to get together. The Wild & Scenic Film Festival was created by the South Yuba River Citizens League (SYRCL) in Nevada City, California.

Publications

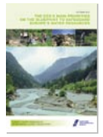
„Verminderung der Nährstoffbelastung – zentrales Thema für Flussgebietsmanagement, Trinkwasserversorgung und Meeresschutz" 2016

„Flussauen zurückgewinnen – natürlichen Wasserrückhalt verbessern!"
2014

„EU Common Agricultural Policy 2014–2020:
CAP-Reform must deliver to safeguard Europe's waters"
2012

„Wanderfische willkommen! – Ökologische Durchgängigkeit und der Erhalt frei fliessender Flüsse im FGM"
2015

„Water for Life – GRÜNE LIGA Policy Paper on the UN Water for Life decade and the Water, Energy and Food Security Nexus"
2012



„The EEB's Main Priorities on the Blueprint to Safeguard Europe's Water Resources"
2012

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To prevent excessive spillover into the Landwehr Canal, the overall ecological concept at Potsdamer Platz merges green roofs and ponds, as well as rainwater storage tanks for rainwater use as process water.

Stormwater Management in Urban Areas

Keywords:
stormwater management, rainwater use

Funded by the Federal Ministry of Education and Research, the project KURAS issued, as a part of the overall project, an Ecological City Plan depicting stormwater management projects in Berlin. The first part of the Ecological City Plan consists of 19 fact sheets, which illustrate measures, benefits and long-term effects of stormwater management in different locations.

Drivers and Pressures

The combined sewer system collects both wastewater and stormwater discharge in a single pipe. The system has, however, a limited water discharge capacity. If during periods of heavy rain the capacity of the sewer is exceeded, it can cause an overflow of wastewater and stormwater directly into surface waters. As a consequence, this may lead to deteriorating bathing water quality. The resulting discharge and overflow endangers both the good ecological and chemical status of water bodies.

Quality Components

The management of stormwater aims to improve both environmental quality as well as the quality of life of residents. Ecological, social and economic aspects should be viewed as interconnected features within an overall ecological concept. Components such as biodiversity, ground and surface water quality as well as resource efficiency depict environmental quality. Likewise, quality of life is measured by aspects such as urban climate, open space quality, use at the building level and operating costs.

Location

The combined sewer system stretches underneath Berlin's extended inner city. The projects illustrated in the Ecological City Plan are located mainly in the city centre. The location of all projects can be found on the webpage of the Senate Department for Urban Development and Housing:

- *http://www.stadtentwicklung.berlin.de/bauen/oekologisches_bauen/de/modellvorhaben/kuras/oekologischer_stadtplan.shtml.*

Motivation

Berlin's combined sewer system discharges wastewater and stormwater, thereby ensuring not only a high level of hygiene, but also protection against flooding. Berlin's combined system, however, has insufficient capacity to accommodate the increased rainwater amount during periods of heavy rain, whose effects are further exacerbated by climate change. Heavy rain causes the sewage network to experience an overload thirty to fifty times a year. As a consequence, the combined waste- and stormwater is discharged into water bodies, especially into the Spree, reducing the river's water quality. The aim is to increase the amount of evaporation areas for newly planned development as well as redevelopment projects. Greening measures should hence be assessed as an important element of stormwater management (Drucksache 18/0662 Abgeordnetenhaus Berlin „Aktivitäten im Bereich der Gebäude- und Bauwerksbegrünung" vom 14.11.2017).

Relevance for the WFD

The effects of Berlin's stormwater management projects contribute to the achievement of goals established by the Water Framework Directive. These projects aim to reduce the runoff of phosphorus and filterable substances as per article 4 of the directive, which would ensure decreased substance pollution of sewers and therefore surface waters. In addition, large-area projects such as soil filters are meant to prevent pollution load runoff into water bodies. The stormwater flow and peak runoff are minimised, which prevents flooding as per article 1. To reduce resource costs as per article 9, stormwater is used for irrigation and to produce process water.

The former Solon site in Adlershof – green roofs, ponds and infiltration ditches keep the rainwater on the property entirely.

Goals and measures

The different measures implemented in the projects aim to improve environmental quality and resource conservation as well as quality of life aspects for residents. The main goals for water protection are groundwater und surface water quality. The measures are meant to improve the ecological and chemical status of surface waters, and to reduce the chemical load in the groundwater. The use of rainwater should additionally reduce resource consumption. Individual measures include solutions at the building level, such as building greening measures and using stormwater as process water. At the neighbourhood level, measures including the unsealing of surface pavements, artificial water bodies and measures allowing stormwater infiltration aim to reduce sewage overload.
Their goal is not only to prevent flooding and combined sewage discharge into surface waters, but also to reduce chemical concentrations in the groundwater. Finally, measures such as soil filters and installations to increase the storage volume within the sewer system are shown on the sewage drainage area level.

Actors and method

Since 19 different projects were developed, a large number of actors participated in their implementation. Each project's details can be found on the website of the Senate Department for Urban Development and Housing:

- *http://www.stadtentwicklung.berlin.de/bauen/oekologisches_bauen/de/modellvorhaben/kuras/oekologischer_stadtplan.shtml*

Results and assessment

The implemented measures in the 19 projects, which were divided into seven categories, were assessed in the KURAS project. With regards to groundwater, the unsealing of surface pavements and water infiltration measures (greenspaces, infiltration basins) could not sufficiently satisfy the deterioration prohibition, since zinc and chloride discharge was increased despite the purification effect.
The impact on surface waters was however positive. Results show that the reduction of peak runoff and stormwater flow due to measures relating to building greening, stormwater usage, unsealing of surface pavements, water infiltration through basins, infiltration ditches and greenspaces, ponds as well as soil filters was attained at rates ranging from 39 % (partly sealed surfaces) to up to 100 %.
The greening of facades and rooftops reduced wastewater discharge by 50 – 70 %, while water storage systems for water use decreased drink water demand and wastewater discharge by 70 %.

Green roofs and artificial water surfaces on the grounds of IGG Malzfabrik in Schöneberg ensure the retention of rainwater as well as its usage as process water.

Costs and benefits

In many of the projects the physical, chemical and microbiological water pollution level in storage systems was low, making the water utilisable as process water. The application of greenspaces and infiltration basins resulted in reduced operational costs and stormwater management service charges, especially when these measures were fully decoupled from the sewage system. Since stormwater was meant to be reused in many of the projects, the drinking water demand was substituted by stormwater use in areas where good drinking water quality was not required. In some cases, this happened at a rate of up to 77% (Lankwitz). Altogether, the cost effectiveness of the measures should be assessed in a cost-benefit analysis, where the local situation and non-monetary project goals should be taken into account. For more information, see the following guideline:

- *http://www.stadtentwicklung.berlin.de/service/rundschreiben/de/download/rs/2011/RsVIC_012011.pdf*

The soil filter with a rainwater purification basin in Adlershof minimises pollution discharge into the Teltow Canal by introducing the purified rainwater into the water body with a time delay.

Lessons learned

Stormwater management reduces the overload of combined sewage systems and prevents the deterioration of the ecological and chemical condition of surface waters. Still, water infiltration measures should be better suitable at minimising substance pollution in the groundwater. The use of stormwater as process water shows that when stormwater management is implemented within an overall ecological concept, multiple benefits can be created.

Contact/ Literature/Links

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KURAS: *http://www.kuras-projekt.de*
Ecological City Map Senate Department for Urban Development and Housing:

- *http://www.stadtentwicklung.berlin.de/bauen/oekologisches_bauen/de/modellvorhaben/kuras/oekologischer_stadtplan.shtml*

Flussbad Berlin - Mischwasserkanalisation und ihre Überläufe:

- *http://www.flussbad-berlin.de/-/wasserreinigung-story*