

Water management as a driver for urban and landscape development

Gestion de l'eau en tant que pilote pour le développement urbain et paysager

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RÉSUMÉ

Lié à la reconstruction du système de drainage de l'Emscher, l'Emschergenossenschaft – l'association de gestion du bassin fluvial de l'Emscher – favorise largement des systèmes de drainage urbains durables intégrant les infrastructures existantes dans la région. Avec la « future convention pour les eaux de ruissellement dans le bassin de l'Emscher », les communes de la région se sont engagées en 2005 à réduire de 15% les volumes d'eau pluviale atteignant les stations d'épuration d'ici 2020.

Pour intensifier le dialogue et la coopération avec des partenaires potentiels, l'initiative « L'eau dans les villes de de demain » a été lancée en 2014 pour permettre de combiner la planification de l'évacuation des eaux urbaines avec d'autres enjeux urbains et environnementaux (liés au changement climatique). Afin d'ancrer ce processus en tant que nouvelle méthode de planification dans les structures municipales, des résolutions politiques sont signées par les administrations. Un outil basé sur le SIG (système d'information géographique) permet une planification intégrée et équilibrée suivant les buts de l'initiative.

Avec la coopération et le soutien financier de l'Emschergenossenschaft et du ministère de l'environnement de la Rhénanie-du-Nord-Westphalie, plusieurs projets à but multifonctionnel sont actuellement en cours de réalisation ou seront réalisés dans les prochaines années.

ABSTRACT

Linked to the reconstruction of the Emscher drainage system, Emschergenossenschaft intensively pushes sustainable urban drainage systems within the existing drainage structures of the region. With the future convention for stormwater for the Emscher catchment, in 2005 the region committed to reduce stormwater discharge to the wastewater treatment plant by 15% until 2020.

To intensify dialogue and cooperation with possible partners, in 2014 the initiative "Water in the cities of tomorrow" was started to combine urban drainage planning with issues of urban and environmental planning but also other (climate change related) themes. To anchor this in some terms new methods of planning in municipal structures, political resolutions are signed within the municipal administrations. A GIS-based tool supports integrated and balanced planning in the means of the initiative.

With cooperation and financial support by Emschergenossenschaft and environmental ministry, several projects with multifunctional use are and will be under construction within the next years.

KEYWORDS

Integrated planning, GIS tool, climate change adaption, water sensible urban design, water balance, water framework directive, stakeholder engagement

WATER MANAGEMENT UNDER CHANGING CONDITIONS

The extensive structural change in the Emscher region began in the 1970s, and sees the coal and steel industries that dominated up to that time increasingly being replaced by the service sector and high technology. This process of change is decisively supported by the conversion of the open wastewater sewers of the Emscher system into ecologically improved watercourses (Fig. 1).



Fig. 1: The Borbecker Mühlenbach as an open wastewater sewer (left) and one year after the ecological improvement (right)

The Emscher conversion project forms a clearly visible element of the structural change in the region with examples which have drawn cross-regional attention and confirm the creative potential resulting from the structural change.

Achieving the water management objectives of the Emscher conversion, in terms of good ecological potential for the newly created watercourses, will fundamentally depend on the the amount of close-to-natural conditions of water balance in the catchment. Therefore Emschergenossenschaft is intensively advocating close-to-nature stormwater management, (Becker et al. 2009) also and in particular for the large-area existing settlements by information, cooperation and financial funding for the realization of disconnection projects.

Experience from two decades have shown that for many potential stakeholders, the funding, saved fees and creative effects achieved by the open management of stormwater represent sufficient incentives to implement such projects. The Future Convention for Stormwater concluded with the Emschergenossenschaft in 2005 by all municipalities and the Ministry of the Environment aims to manage 15% of the stormwater currently drained through the sewer system in a close-to-natural manner (Stemplewski et al. 2006) until the completion of the reconstruction process in 2020. Thus far, 6.7 percentage points have been achieved. Although this success is still a little lower than expectations, it shows the wide range of possibilities in the region. However, a coordinated approach to the planning and implementation of measures is seldom seen.

1 INTEGRATED WATER MANAGEMENT NEEDS PARTNERS

1.1 Different drivers under the umbrella of water management

While the motivations behind close-to-natural drainage projects are different from the perspectives of (municipal) water management, urban planning and climate change adaptation, the efforts made to manage water, and particularly stormwater, are extensively identical in their coverage (Juchheim/Ortmann 2009). Through joint consideration of objectives and ideas in urban and open space planning, it is possible to find and finance projects which are attractive, efficient and effective for many different objectives (Fig. 2).

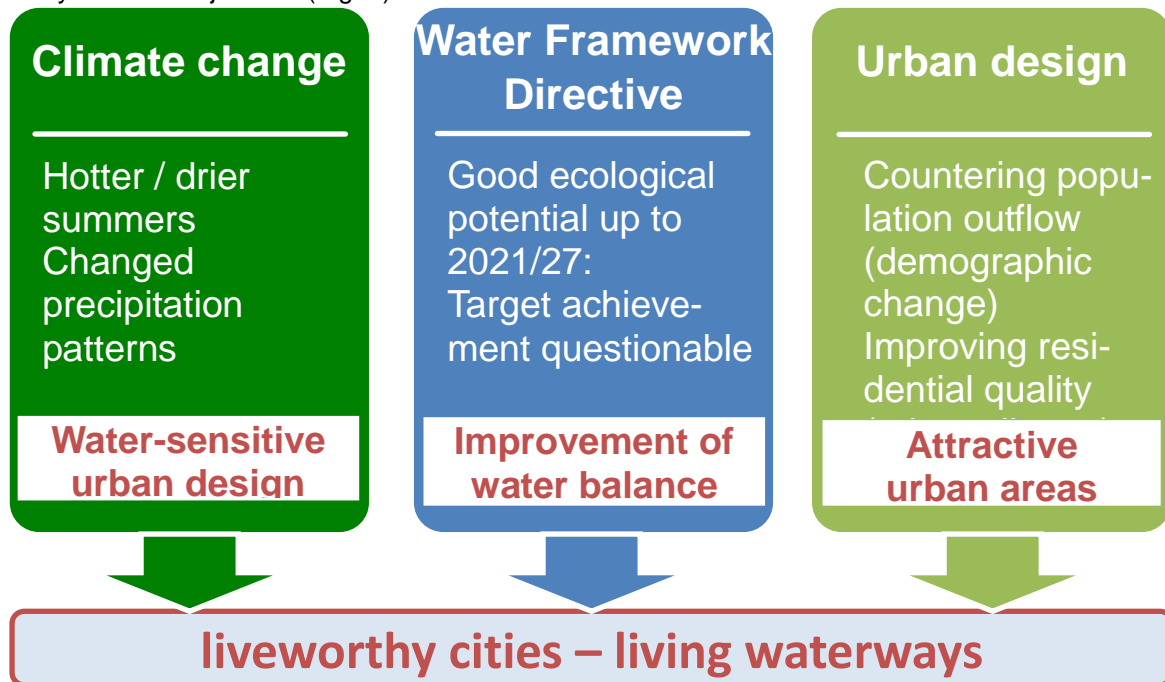


Fig. 2: Different "driving factors" with the same objectives

Emschergenossenschaft has been and still is coordinating regional and local interests and requirements in issues relating to water management for the entire Emscher region. Since 2006, the *Masterplan Emscher Future* as an adaptable planning platform ensures a sustainable consensus between the stakeholders and creates impulses for new projects (Emschergenossenschaft 2006). The expansion of this tried-and-tested cooperation for the systematic interconnection of urban and open space planning activities with subject areas such as stormwater management and ecological development of waterbodies is a promising means of generating and implementing multifunctional projects. As a waterboard, Emschergenossenschaft can take over the role of a "facilitator" with a key role in integrated urban and open space development (Raasch/Spengler 2015). Given that the municipalities in the Emscher region have no leeway in their budgets for measures that exceed the scope of the absolutely essential, holistic planning with extensive support is not just reasonable but indispensable for the development and implementation of any kind of projects.

1.2 Water management and urban landscape design – the “green by blue” alliance

In 2013, Emschergenossenschaft and the municipality of Herten presenting the study "Integrated water management as a motor for urban and open space development in Herten" gave a proof for the strength of integrated planning, closely interlinking water management, urban and open space development planning and thus achieving multiple benefits (Emschergenossenschaft 2014a).

1.3 Emscher-Dialogue - Symposium for cooperation

Within the sphere integrated water management, a broadly based dialogue is essential. Since 2001, the so-called Emscher-Dialogue is a communication platform including all organisations, institutions and interested citizens in the reconstruction planning process. The Emscher-Dialogue 2014 "Water in the city of tomorrow" was the kick-off for an open information exchange about integrated water management and future perspectives resulting from and for water sensible urban design. The Herten

Project was presented to the representatives from municipal administration and other experts generating big interest and wide agreement. The event represented the prelude further steps for the political anchorage of further binding agreements for cooperative planning and acting of the waterboards water management and the municipalities planning objectives.

2 POLITICAL ANCHORAGE AND FINANCIAL SUPPORT

Two weeks later all Emscher municipalities, the federal environmental ministry and Emschergenossenschaft signed a declaration of intent to cooperate for the "Water in the city of tomorrow" initiative (Emschergenossenschaft 2014b). This future initiative expands the spatial and content-related applicability of the previous Emscher Future masterplan, reinforces and promotes the commitment to the Future convention for Stormwater from 2005, and will improve the effectiveness and sustainability of efforts to boost living conditions in the region by intensifying the planning cooperation in an innovative planning culture and optimizing the effectiveness of scarce financial and human resources.

As supplements to this, responsibilities, new forms of cooperation, and specific projects are being identified and agreed within the framework of individually designed bilateral agreements contending details as responsibilities, projects and cooperation manner. This brings a hitherto unknown quality to the intensity, scope, and binding nature of the cooperation and the coordination of measures between the Emschergenossenschaft and its member municipalities, as well as within the municipal administrations (Fig. 3). The State of North Rhine-Westphalia has not only approved of the content of the future initiative, but has also authorized financial support for its implementation. Consistent with this, a corresponding grant program is intended to combine financing from the European Regional Development Fund and the wastewater charges of the State of North Rhine-Westphalia for measures under the EU Water Framework Directive on a situation-specific basis.



Fig. 3: Forms and contents of regional and local commitment

3 GIS-BASED SUPPORT

Within the "green by blue" project, a GIS-based tool was created to facilitate the comprehensive exchange of information between the various stakeholders for the gained holistic approaches. The "ZUGABE Cooperation Module" - the acronym stands for ZUKunftsChancen GANzheitlich BEtrachten

("considering future opportunities holistically") - supports the dialogue by preparing and compiling all available data in a way that synergy effects can be systematically identified and analyzed. This joint process for collecting the corresponding information ensures a significant gain in understanding. Since the module additionally classifies the data stored in terms of significance, it is easy for technical planners, members of the public and politicians alike to identify priorities in a clearly comprehensible manner ().

The first applications of the ZUGABE showed that benefits were not restricted to the stormwater-related aspects. All municipal departments, e.g. road maintenance, urban drainage, parks maintenance, urban land use planning etc., are thus enabled to see the relevance of their own projects for their colleagues' departments, and to approach their colleagues in a spirit of cooperative and holistic action.

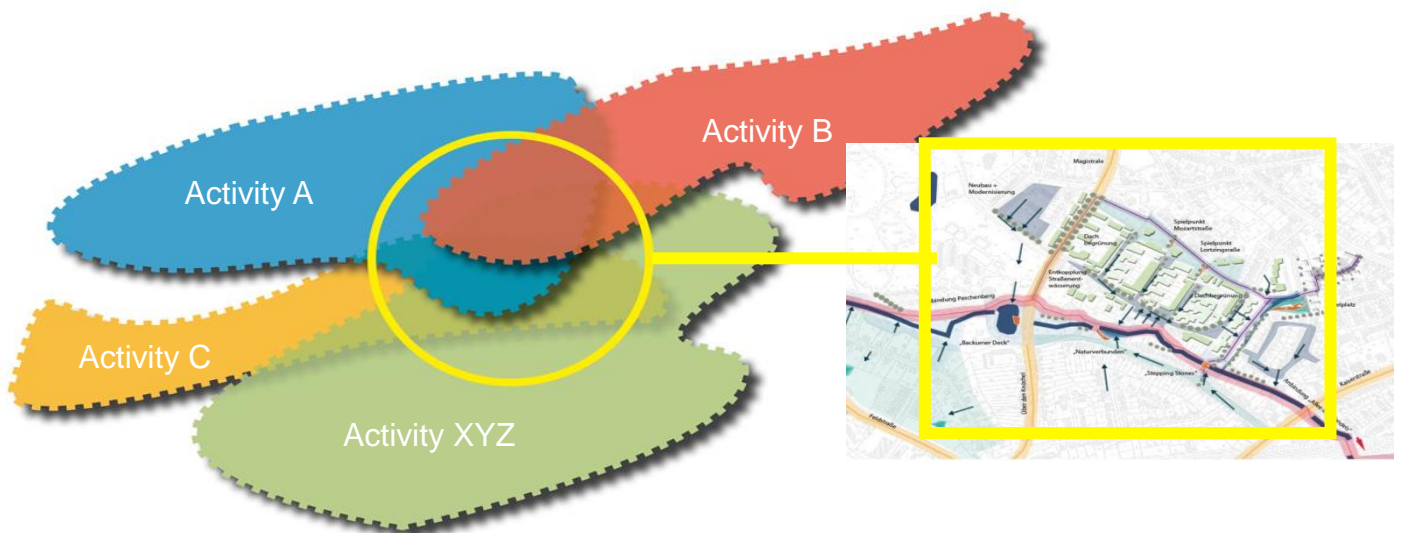


Fig. 4: Principle of the ZUGABE cooperation module

4 FUTURE PERSPECTIVES - FIRST PROJECTS

The development and realization of integrated, multifunctional projects with best resources' effectiveness presupposes an intensified, multidisciplinary cooperation. So first activities were focussing on the creation of suitable structures. Within semiannual expert meetings and exchanges, multi-municipal work groups for special fields of interest (e.g. economy of measures, dialog and clusters within and between municipal administrations, standards and concepts for water sensible urban design) and the study of best-practice examples, the idea and aim of "Water in the Cities of Tomorrow" is on a way to new structures of planning and cooperation.

With the (financial) support of the federal environmental ministry, the realization of first projects has started in 2015. They will be accompanied by several more in the following years.

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