



LILLE EUROPEAN
MÉTROPOLE

Alternative rainwater management

The European Metropolis of Lille has succeeded in making rainwater management a tool for sustainable development. In its town planning operations, and in particular in several EcoQuartiers carried out as part of the EcoCity approach, integrated rainwater management is an organising component with multiple positive spin-offs.

Since the 2000s, Lille European Metropolis has harnessed itself to reconciling town planning and the water cycle. In 2004, it integrated the rainwater requirements into the local urban planning (LUP), then, in 2012, it published a guide intended for urban planners, project managers and technical departments to encourage the use of preventive and compensatory techniques for rainwater management. The publication of this guide is accompanied by the decision to apply these "alternative" techniques in urban planning and redevelopment operations or the creation of roads and public spaces carried out in the metropolitan area. Since then, exemplar operations have multiplied.

10,000 M³ OF RAINWATER STORED

At the junction of Roubaix, Tourcoing and Wattrelos, the Union district, developed by the Ville Renouvelée mixed-ownership company, is an ambitious example of the city's EcoQuartier, where hydraulic management of rainwater is done out in the open with landscaped valleys and two ponds



KEY DATA

- > **80** hectares for the ÉcoQuartier de l'Union
- > **25** hectares for the ÉcoQuartier des Rives de la Haute Deûle, extended to 38 hectares as part of the second phase
- > **25** hectares for the ÉcoQuartier Fives Cail
- > **€490,000** support from the City of Tomorrow Investment for the Future Program for the ÉcoQuartier de l'Union
- > **€695,000** of IFP support for Les Rives de la Haute Deûle
- > **€700,000** of IFP support for the ÉcoQuartier Fives Cail

(see photo above). One of them joins up the park and the Roubaix canal; it constitutes a real pleasure pool around which it is intended, in the long term, to set up living and entertainment areas.

The developer Soreli has developed a hydraulic system made up of drainage basins in order to convey the rainwater collected to the natural environment for the ÉcoQuartier des Rives de la Haute Deûle, west of the Lille urban district. This system is reliant on a water garden fed by a set of rainwater harvesting devices (landscaped ditches and canals). These gullies and canals collect the rainwater runoff from the drainage basins thus formed (private plots of land and waterproofed public spaces) in order to store them



temporarily and then transport them, after decantation and by gravity, to the Deûle canal at a regulated water quality level and flow. As a whole, the system set up on the Rives de la Haute Deûle project enables the storage of around 10,000 m³ of rainwater and avoidance of the annual transiting around 100,000 m³ of rainwater through a wastewater treatment plants. This exemplary rainwater management merited the 2009 ÉcoQuartier prize and the *Moniteur* development one in 2010 for the urban development operations.

MULTIPLE BENEFITS

These experiments have value as models and their use has taken off in all the métropole's development operations. Thus on the Fives Cail EcoQuartier, located on a 25-hectare former industrial wasteland developed by Soreli, the rainwater recovered from the roofs of the old preserved and rehabilitated industrial halls is collected in a monumental overground tank which stores it and discharges it back into the network at a controlled leakage rate (see photo above). These waters are then used in the development of public spaces, where they are made visible in pedestrian walkways, within planted spaces, where they are also used for watering.

Avoiding discharging rainwater into the network, percolating it through filters where possible, enables run-off, the cause of environmental pollution through soil leaching and network saturation and floods, to be controlled. But the

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“ Our region, which is both very dense and exposed to residual industrial pollution, forces us to be imaginative in managing our rainwater. Our polluted soil doesn't percolate very well and other solutions must be found to avoid run-off. Tested on peri-urban spaces, these innovative solutions are now deployed within the dense fabrics of ancient cities, where little space is available. The solutions put into effect also require us to review our management methods for engineering structures combining several uses. When green spaces participate in sanitation, different urban and inter-municipal authority departments must be able to work together. Alternative rainwater management changes our habits.”

Maxime Bitter,
Director of Urban Planning,
Development and City Matters
at Lille European Métropole

benefits are multiple: the wetlands, storage basins, gullies, flood meadows, the canals resulting from this alternative rainwater management make up so many oases of urban coolness, recreational spaces, biodiversity reserves. They make the city more sustainable, more resilient, more pleasant to live in too. Thanks to the water, nature is coming back to the city, trees have been planted, the roads network has plants alongside the roads, vast lawns make the landscape greener, fountains, ponds and water gardens are inviting to take a stroll in.

MEETING MOBILITY NEEDS

Alternative rainwater management also makes it possible to recharge groundwater table. In addition, partnerships tied with research enable us to continue to improve these practices. In October 2019, the métropole deliberated in favour of a financial contribution towards a Lille University research program aimed at assessing the role of soil flora and fauna in improving the performance of engineering structures.

Thus, Lille European Metropolis has demonstrated the feasibility of rolling out an alternative rainwater management system integrated into public spaces in an existing urban fabric. It has made an asset out of subject matter viewed as a constraint. The integrated management of this water enables meeting the multiple challenges of the regional climate-air-energy plan, the health-environment plan, those of the returning nature and biodiversity to the city, combating floods and improving the quality of waterways. The city becomes more resilient by making room for the rain.

KEY FIGURES

- > **10,000 M³** stored rainwater and **100,000 M³** of rainwater treatment avoided across the Haute Deûle Rives eco-quartier
- > **AN OVERGROUND** storage tank at Fives Cail being **9.4 M** high - maximum capacity of **1,800 M³** (in the event of an exceptional rain event), ordinary capacity of **675 M³** used in the development public spaces and for watering



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