



# A green tool to measure the environmental and ecological benefits of green areas

Antwerp, Belgium

## IN A NUTSHELL

Among many other co-benefits, blue-green infrastructures help cities become more resilient to climate change. Antwerp's 'Greentool' allows urban planners to explore green potential to improve the living environment (heat stress, air quality, etc.) in a specific area or neighbourhood.

### Addressing heat and flood stress

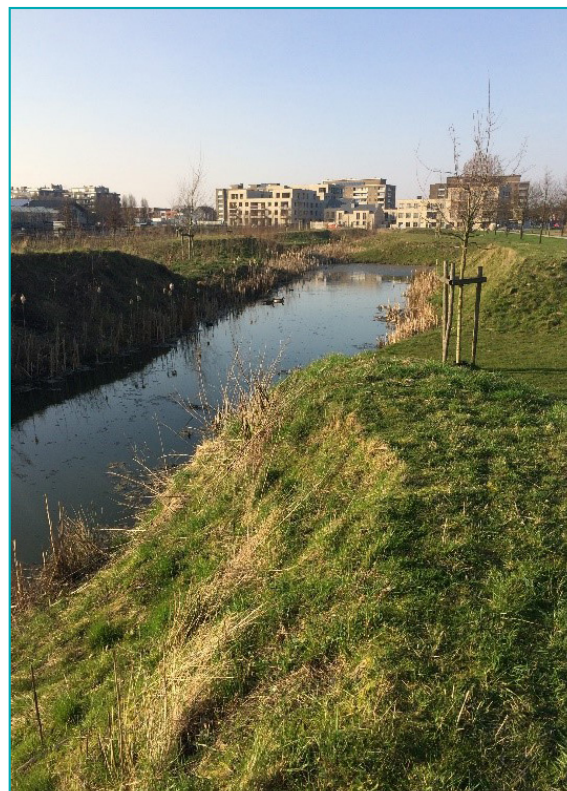
Although Antwerp has avoided major floods so far, the city is at risk of fluvial flooding, sea level rise and storms. Antwerp also suffers from increasingly extreme temperatures. In the city, from late afternoon to night time, the average temperature is up to eight degrees warmer than in rural areas. This phenomenon is called the 'urban heat island effect'. Only green spaces are significantly cooler than the rest of the urban territory, and contribute to retaining excess water.

Beyond water management and heat stress reduction, greening the city contributes to reducing air and noise pollution, increasing biodiversity, and capturing CO<sub>2</sub>. Antwerp's green plan, adopted in 2017, acknowledges these environmental and ecological benefits. But in many cases, those benefits are barely known and not easy to quantify.

### Better informed urban planning decisions

To address this knowledge gap, the city of Antwerp has commissioned the creation of Greentool, aimed at providing information about blue-green measures and their effect on environmental challenges. Initially designed as an application to help Antwerp administrators make urban planning decisions, it has been adopted by private investors willing to invest in green actions and projects, and by technicians in charge of execution and maintenance.

The tool, which is entirely public, contains interactive maps that enable sites analysis. The user can visualise the location's current characteristics (soil, plants, etc.) and discover the effect of existing blue-green measures on seven parameters: biodiversity, CO<sub>2</sub> capture, noise, air quality, recreation and proximity, heat stress, and water management. Each parameter receives a score ranked from 0 to 5. It makes it possible to explore the impact of a possible measure (such as green roofs, water tanks or tree planting) on these seven parameters, compared to the existing situation.



One of Antwerp's green areas: Park of Eden

## ANTWERP



Population:

512,000

Area

204.51 km<sup>2</sup>

Signatory  
to the Covenant  
of Mayors since:

2009

CO<sub>2</sub> emission  
reduction target:

-20% compared to  
2005 levels

The tool helps users by inspiring the design process, quantifying impact on a specific site, comparing and combining measures, stimulating dialogue between stakeholders, and integrating blue-green infrastructures and challenges into the planning process.

The tool provides inspiration and scientific information on nearly 50 blue-green measures. It is a pedagogical instrument aimed at informing the city-officers about such measures and their impact on the day-to-day life of citizens.

Antwerp's Greentool was designed by VITO (the Flemish Institute of technology and research) and the University of Ghent, and was released in January 2017.

The tool was commissioned via a tender. Since 2016, the city of Antwerp is part of the European EnRoute project on urban green infrastructure along with VITO, which made it possible to further develop the tool.

The city of Antwerp decided to develop this instrument because green areas play a mitigating role in every action plan of their environment department. They wanted to make it accessible – together with their mapping-exercises and other research – for every city-officer in an attractive manner.

## Benefits

The tool is being used by the environment department in their advisory process. Spatial planners can also use this tool to analyse projects they are working on and determine the best location to create a green area. For instance, it was used in the Sint Andries neighbourhood, in the very heart of the city, as part of the Citylab 2050 project (Stadslab2050) which aims to create more space for green areas by setting up experiments together with the local stakeholders. The tool showed how green roofs in this neighbourhood could contribute to lessen heat-stress and foster water-retention.

Antwerp also integrated an analysi



Since the project has just begun, key figures are not available yet. The Covenant of Mayors secretariat will communicate on the outcomes of this project in the months to come.



## FINANCING THE PROJECT

- + **Financing source(s):**  
The tool is entirely financed by the city and is free to use for everyone. It was meant for internal use in the first place but Antwerp decided to make it accessible for everybody.
- + **Total amount:**  
€180,000

## USEFUL LINKS

- ▶ Antwerp's Greentool: <https://groentool.antwerpen.be/>
- ▶ Enroute project: <http://oppla.eu/enroute>
- ▶ Cimate-ADAPT profile of Antwerp: <http://bit.ly/2fL3Mff>
- ▶ Covenant of Mayors profile of Antwerp: <http://bit.ly/2frHbYf>



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