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Laboratory below sea level

The Amsterdam district Watergraafsmeer gets flooded every year. There is no master plan to solve this problem. Instead local residents are supposed to come up with ideas. During the congress Water Cities in Transition, held this week in Amsterdam, tours were organized through this new open air urban water laboratory.



Every year Watergraafsmeer must deal with serious water problems. (Photo: Rick Nijman)

Trams, cars and bicycles shoot past. The atmosphere at the roundabout near Amstel train station, where a group of congress attendees have gathered, is one of a typically bustling city. A year ago the site looked very different, however, as the area was completely flooded.

Watergraafsmeer is the lowest district in Amsterdam, built in a polder 5.5 meters below sea level. It's an area that suffers from water nuisance, and climate change and urban densification will only make things worse. The city district authority and local water board, Waternet, want to tackle the problems by collaborating closely with all stakeholders in the area. The area is considered an open air urban water laboratory where no measures are imposed; rather, the authorities are facilitating initiatives from residents and local companies.

Delft researchers are also working in this laboratory. One of them is Dr Frans van de Ven (CEG faculty). A student of his conducted research on how to get stakeholders involved. More Delft researchers and students might now join in, as a collaboration agreement was signed this week between the city district authority, Waternet and several universities and research institutes.

Getting the local residents involved is a logical step, Van de Ven explains: "We want to retain the water as much as possible locally after heavy rainfall. One measure by which you can do this is by making green roofs. But you can't impose that. Many of these houses are private property."

Besides taking various measures, such as putting vegetation on roofs, one must also ensure that the excess water inflicts the least possible damage to the neighborhoods. As the group continues its tour deeper in the Watergraafsmeer, it becomes apparent how the water experts envision this unfolding. “We’re now walking in a street that might become a floating road,” Delft PhD student Floris Bogaard says. “We can use the road as a water retention area. A basin could be created in which the road, consisting of pontoons, could be laid down.”

But are the local residents keen on living in a drainage pit, which basically is what their neighborhood will become? “Of course we don’t describe it as such,” Bogaard says, laughing. “I think people do want to live in a neighborhood which has a green allure. Maybe we could also generate electricity with the road. As cars drive over it they will make the road tremble, and this energy could be used to illuminate the road. And recreational ponds will keep the neighborhood nice and cool in summer.”

It is a good spot to start experimenting, Boogaard believes, as the neighborhood needs to be renovated anyway. The whole sewage system for one is terribly outdated. “And if all fails, it is really easy to solve the problems,” the researcher adds. “We simply dump a whole lot of sand to fill up the road.”

But what the people really think of all this is not yet clear. The ideas certainly didn’t come from them. “It’s quite hard to get people involved,” a Waternet researcher admits. The only resident the congress attendees meet along the way is an old lady on a mobile scooter who confronts a Waternet employee in order to say that the ground water is bubbling up near her house.

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