

On the road with ...

Piet De Becker in Doode Bemde (Flanders)

“Nature-based solution for river floods is the best”

Curriculum Vitae Piet De Becker

1980 - now
Manager Doode Bemde

1986 - now
Work on ecological networks worldwide
and biodiversity monitoring

1986 - now
Research Institute for Nature and Forest
(NBO)

Education
Agriculture (BSc)
Hydrology (MSc)



Piet De Becker is the manager of Doode Bemde nature reserve in the valley of the river Dijle upstream (south) of the city of Leuven. The strongly meandering river originates in and flows through a loamy catchment area, which is part of a limited area in Europe. The alluvial character of the river, with regular flooding, is a damage risk for the city of Leuven. The solution for avoiding flood damage proposed by the nature conservation NGO is nature-based flooding as opposed to the technical solution with storm basins proposed by the river manager. The nature-based solution has proven its worth since the start of this century.



How would you characterise the landscape of Doode Bemde and the Dijle?

‘The scenery is a beautiful entity with an alluvial river that is eroded up to 70 meters deep in the silt plateau. The 1 km wide alluvial floodplain still has connections towards the predominantly agricultural plateau to the west and a forested plateau to the east. The valley is part of the European loam region that runs from the south of the Netherlands to Paris and in the east to the Ardennes. This loam region covers about eight percent of Europe, an exceptional area. In this loam area, the Dijle is one of the few alluvial rivers of this size that was not “normalised” - straightened, broadened, deepened - in the period directly after World War II. Loamy soils are perfect agricultural lands. This area was cultivated in the past, but it has not been tackled so thoroughly that there is no way back

to a more natural system. In the loam region, you will only find a very limited number of fairly well-preserved examples like the Dijle. This is a nutrient-rich (eco-)system with a number of EU high-priority habitats, such as well-developed Alnion forest/alder carr, Filipendulion tall herb vegetation and Alopecurion grasslands.’

What does European Union contribute to the preservation and development of this area?

‘Doode Bemde nature reserve is a European Habitat and Birds Directive area. The European status of Natura 2000 protects the area. In the context of the Water Framework Directive, the valley has been seen as a high-priority catchment for improving water quality. The abominable water quality of the 1990s has seriously improved. In 2003, we received money from the EU LIFE fund, predominantly for purchasing land. This was im-

portant for achieving management objectives. We have cleared a number of poplar plantations to give way to more natural vegetation.’

Your approach to the flooding of the Dijle causes problems with recreation. Can you tell me about that?

‘Until the 1990s, water quality was a smelly mess. No one wanted to go into the water with a boat. The water quality has improved significantly since then. Along with that came the growing interest in water recreation. However, the system of natural flooding works by increasing the roughness of the river. Therefore, it is essential that trees and shrubs fall into the river, and they have to remain in and above the water. Semi-professional kayakers, who have some steering skills, tackle these obstructions easily. However, the majority of water recreationists



lack these skills or try to “float” with unsuitable material and even with small children. They are evidently exposed to considerable risks. What is difficult about the legislation in Flanders is that the river itself falls outside the legislation. From an administrative point of view, it is not navigable for large ships. No one can forbid you to be on that river. You only need to have permission from the bank owner to board. If people crash through the trees in the river and go to court for damage claims, the bank owners (in this case, the NGO) and the river manager could be held liable. That’s a risk. If the judge rules against us, we must remove the trees. Then our system of water management will collapse: storm basins have to be built, and we will be back where we were twenty years ago. We have been trying to get that regulated by law, but we are not there yet. That is why the river manager and

the nature conservation NGO try to address the outdoor sports organisations with the friendly and emphatic request not to use the river stretches where trees are located. The success of that address is “susceptible to improvement”, to say the least.’

Another possible problem with this flooding regime is that more silt is deposited on the banks and in the depressions. Does this change the abiotic environment of the vegetation?

‘The basic assumption is that Leuven and its university campus should not flood. We tried to devise a more or less nature-based system to meet these goals. That system has an impact on the conservation status of habitats. We’ve been monitoring that for twenty years. So far, we have not been able to observe any deterioration as was our fear. On the contrary, the situation is

improving. That is probably due to the fact that agricultural activity has largely been stopped in favour of nature management, which has taken over. One would expect these floods to have a negative impact on biodiversity due to the drowning of species and the inflow of nutrients, but one could also expect nature-oriented management practices to have positive effects due to nutrient abstraction. The system has been operational for 22 years now and what we can see so far is that the balance is not on the negative side.’

Safeguarding Leuven from flooding can be seen as an ecosystem service of this valley. Are there more ecosystem services?

‘Recreation. Until 2019 we counted 20,000 – 30,000 visitors per year. Since 2020 – coronavirus period – that number has multiplied. Now



there are 125,000 walkers and cyclists on an annual basis. As things had got out of hand in the past, we started talking to outdoor sports organisations. Visits were then significantly reduced, but visits have increased again in the coronavirus period. Agriculture is another ecosystem service. We have been working well with twelve farmers for thirty years, four of which have agriculture as their main occupation. In the beginning, this was not always easy. Now we know each other. If they follow the rules – no use of pesticides or fertiliser, mowing from 25 June, shearing cattle until it gets too wet in autumn – they can use tens of hectares of grassland. I can assure you that they cooperate with us nowadays and with a lot of pleasure.’

For the European Landscape Convention, it is important that people can be proud of their land-

scape. Is this landscape highly appreciated in Flanders? Or is it just a beautiful project for conservationists?

‘The area is part of Brabantse Wouden, one of the five candidates for the National Park status, with a fairly high chance of success. There is a lot of recreation, which is a kind of appreciation too. I’m convinced that biodiversity is not what visitors appreciate most. I tend to think they come here for the scenery: “the décor”.’

In the Netherlands, a lot of research has been done into nature images and landscape preferences of Turkish and Moroccan migrants. This has revealed differences with other Dutch people, for example that they like to barbecue with large groups.

‘The foreign students from Leuven university are highly educated and use the area for walking and cycling. We notice very few migrant workers

here. Although, occasionally, we come across eastern European people (Poles and Ukrainians, the latter even before the war), who come to fish for carp in the ponds. They are reminded that that is not the intention here. Occasionally we have to deal with “barbecuing in the wild”. People are kindly requested to move to special places set up for these barbecues. Hardly any migrants are active in my nature conservation NGO although they are more than welcome. I regularly come into contact with these people, but not in the NGO. Nature conservation apparently does not belong to their world (yet). Members from those groups are also not specifically recruited. In the information material, you mainly see fellow white people. The NGO now works a lot with schools, and there are children with a migration background. I suspect that interest will grow in future generations.’

The management plan for the area will be evaluated shortly. What changes can we expect?

‘The scale is different now. The current plan has operated for 25 years now. Back then, we thought at plot level, now we look for system management. Our management focus is no longer on small plots and individual trees. We look at larger structures and management units. We try to do the management as efficiently as possible. The number of man-hours invested has remained more or less the same over those 25 years, while the area has quadrupled or fivefold. We try to “jig-saw puzzle” together hundreds of parcels of land gradually purchased or rented from numerous different landowners into a connected area of about 400 ha. We are letting half of this area develop spontaneously. Here, we only remove what things we definitely do not want, such as invasive exotic species. A quarter of the area is managed very intensively, i.e. the grasslands. The scrubland and ponds are the remaining quarter of the area. They are managed cyclically.’

What are the biggest problems in cooperation with interest groups and governments?

‘First of all, recreation. In winter, the area is not easily accessible. Wet loam soils are extremely slippery. You need appropriate clothing, but people don’t want to see that. We received name-calling mail and people went to the mayor or even the minister of the environment to complain about the quality of those paths. We are now talking about the possibility of limited hardening. If you don’t do that, people will

follow other routes, shortcuts will form, people will crawl under a wire and huge areas of the grasslands will then be ruined. That problem has increased exponentially. It’s challenging, but it’s also depressing. There is hardly any support from municipalities and the region for that aspect. As far as management of the area is concerned, we have had to argue very strongly not to intervene in improving the surface of the footpaths. That does not make you an appreciated interlocutor.’

What has been the tipping point to be able to work with the river manager in this way? What can you learn from it in Europe?

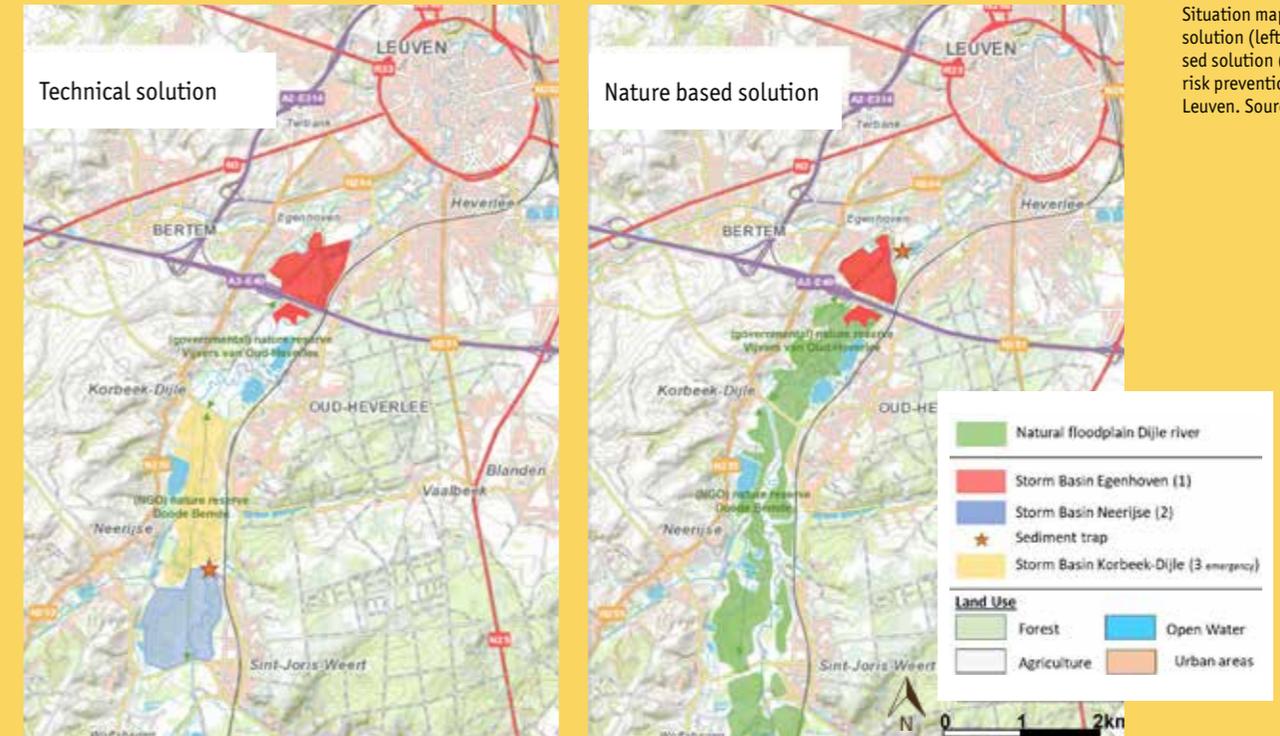
‘I am convinced that there is a need in Europe for this kind of (nature-oriented) flood management solutions. But in most cases, neither party can do it separately. The river manager cannot do it singlehanded because he is confronted with adjacent landowners who are unwilling to deal with the surplus flooding. So you have to do it with landowners who do want it, for example nature managers, whether they are governmental or not. Nature managers alone cannot tackle river management issues because that is not their responsibility. But they can make an effort together with river managers. You can’t expect a solution to come from the government side exclusively. The government should also not expect it to come from the side of the nature managers. This is pre-eminently a problem you have to tackle in a concerted way. In the case of the Dijle, in the beginning, the river managers just didn’t want to talk to us at the start and that fitted in with the “zeitgeist” then. Now there is a

concerted effort, but that learning process has taken a very long time. Previously, it required a considerable effort from both parties to adjust to each other’s views. Both parties are now very happy with it. The river manager because it is very cost-efficient. And the nature manager because the chosen flood management solution can still create added value for nature and it solves an important social/economic problem. The final result brought us further than we’d ever expected.’

How did you finally convince the river manager?

‘With political pressure. We have organised a lot of walks to show people how beautiful the area is. You arouse public awareness using that approach. The number of “noses” for and against is decisive for politicians. But that process takes an awful lot of time. There was a lot of abuse and name-calling in the press, public hearings were not always pleasant. Fortunately, time has shown that we were right. And that we have been able to reach very effective compromises. The win-win is actually very clear here.’

JOS DEKKER & GEERT DE BLUST



Situation map with technical solution (left) and nature-based solution (right) for flood risk prevention of the city of Leuven. Source: De Becker.

Nature-based flood management in the Dijle valley

Leuven was built along and over the river Dijle and, until recently, regularly suffered from flooding, with a lot of economic damage in the city. The solution was sought in taking technical measures, such as the construction of storm basins for retention upstream in the Dijle valley.

These basins temporarily store peak volumes of water. However, this is an expensive measure. In addition, the transported river sediment, tonnes of silt (in the case of the Dijle) settles into the basin, at the expense of nature. The nature conservation NGO “Vrienden van Heverleebos en Meerdaalwoud” (VHM) came up with a nature-based solution.

In order to maintain maximum biodiversity and avoid flood damage in Leuven, the flood water had to be retained as briefly as possible and on the largest possible surface in the valley (see figure). That way, the sediment load was more evenly distributed over a larger area, compared to the storm basins where the load is settling on a limited surface.

No major works such as dams and control infrastructure were needed. To induce the flooding, the channel of the river had to be roughened by leaving fallen trees in the river and no longer mowing the banks. It worked! Even in the case of extreme events such as the summer of 2021, there was a series of floods, which spread over the area of the valley. However, Leuven was saved. This flood management does, however, cause problems, including for recreation in the valley (see text).

References

- vhm.be/doode-bemde/overstromingen.html
- **Turkelboom, F., R. Demeyer, L. Vranken, Piet De Becker et al., 2021.** How does a nature-based solution for flood control compare to a technical solution? Case study evidence from Belgium. Ambio.