What is permitted where in the design of the Netherlands?

New housing, renewable energy, food production, nature, water storage and recreation all make a claim to Dutch space. At the same time, there are boundaries to shaping the Netherlands, as shown by the nitrogen crisis, climate change, declining biodiversity and poor water quality. It is therefore necessary to manage our soil and water better, according to researchers at WUR. ▶

Bas Breman, Project Manager at WUR.

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Problem: the boundaries to the 'makeability' of the Netherlands lead to disturbance of the natural environment and biodiversity. Climate change calls for a different approach.

T02 Solution: WUR is investigating ways to focus on 'water and soil control' in all spatial developments. By using the most fertile soils for food production, building new housing on higher grounds in connection with the sea level rise, as well as switching to other crops, other business systems, and other building methods in certain areas.

Impact: an attractive spatial design of the Netherlands. Exploiting and strengthening the natural system is not only beneficial for the natural environment and biodiversity, but also for people. By planting more greenery in your own garden or on balconies, cities become cooler, more people start exercising and stay healthier.

"God created the earth, except the Netherlands, because the Dutch did so themselves", is a well-known saying. Land reclamation by draining the Zuyder Sea, keeping the water level in ditches at a certain level, tilling the soil for agriculture. "In the Netherlands, certainly in the last 60 to 70 years, we have become very used to manipulating the system to our liking", says Bas Breman, Project Manager at WUR. "That has brought us a great deal, but now we are increasingly becoming aware that we are reaching the limits."

Vulnerability

The flip side of this shaping is a certain vulnerability, Breman explains. "Natural systems have lost much of their resilience. Heavy tilling of agricultural soils happens at the expense of the soil quality and the ability to store water. All interventions to drain the water quickly have caused us to now have a shortage in dry spells." Because of climate change and weather extremes, we desperately need this resilience, he emphasizes, and for this reason it is good to focus on soil and water systems again in all spatial developments. Focusing on water and soil control means that we take the natural system as the starting point for all space claims and spatial developments, such as housing and energy. This includes relief in the landscape, the substrate, the soil, the water system, ecology and land usage. "That is the basis and determines what you can or cannot do somewhere."

Smart environmental management

To do this, we literally have to start thinking and dealing smarter with nature, says Breman: "By using the most fertile soils for food production and building new housing on higher grounds in connection with the sea level rise. Retain fresh potable water wherever possible and switch to other crops, other business systems, and other building methods in certain areas." Using and strengthening the natural system has many advantages, he explains. The planting of different vegetation on dykes not only ensures that these deeper roots strengthen and reinforce the dyke, but also benefit biodiversity. Prolonged water retention in the sandy soils in the stream valleys further increase availability of freshwater, which can ultimately have added value for agriculture as well as for the natural environment. Breman: "People can also strengthen the natural system in their immediate living environment and benefit directly from it. By planting more greenery in your own garden or on balconies, cities become cooler, more people start exercising and stay healthier."

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What is permitted where?

The researcher refers to the report '*Niet alles kan overal*' ['Not everything is possible everywhere'] on the approach to the nitrogen problem in 2020. "The next question is: but what is suitable and where? What is the natural capital in a particular place and how can you link that as best as possible to the current challenges that we as a society are facing? We need food, energy and housing, and we must also combat climate change." His research group has been working for many years on studies surrounding the topics of water and soil control. ▶

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An example is '*De Natuurverkenning*' ['The Nature Survey'], a publication every four years by the Netherlands Environmental Assessment Agency. The latest edition looked at how the Netherlands can become more nature-inclusive by 2050. "Instead of dividing the Netherlands into areas for housing, businesses and agriculture, as we have done over the past decades, we are making nature more emphatically part of our environment", he explains, "and with that, we are also using its resilience for challenges such as climate change." Breman's colleagues also developed the map 'The Netherlands in 2120'. This is a vision of what our country can look like in a hundred years' time if nature is taken as the basis of spatial planning and what choices we have to make now.

Increasing interest

Using a water and soil basis to design the land is already happening on a small scale, but it is a challenge to scale it up, Breman has noticed. Interest has been growing since the topic was mentioned in last year's Letter to Parliament from the Ministry of Infrastructure and Water Management as being 'a very important starting point', and it is also a key principle within the new National Programme for Rural Areas. "Many government agencies are inspired by our research and want to do something with it", he says. "Companies have also realised that they should do something about this. For example, banks, project developers or construction companies. In consequence to the map 'Netherlands in 2120', we received hundreds of requests to give presentations."

Sticking their necks out

For this redesign, he also says that new things must also be tried out, experiments for which people stick their necks out. For example, rice cultivation in peat meadow areas with high water levels. "It is not yet certain whether there is a business model for this and there will undoubtedly be counteractions from the social environment. How can you deal with that?" Here, the WUR's slogan 'Finding Answers Together' is appropriate, he says, because: "We have a great deal of knowledge, but we don't know everything either. We are able to provide guidance in these kinds of social quests and help in seeking solutions based on different perspectives to start a dialogue, about what does or does not work."

Far-reaching but necessary

To do things differently when it comes to aspects like eating, living, building or running a farm, is of course quite drastic and Breman therefore stresses the importance of engaging with the people involved in the process. Jointly understanding how the natural system works, exploring new land usage, new business models, but also looking at how certain ingrained patterns of behaviour can change and to accept that some things simply cannot go on like this any longer. This societal side of things is sometimes forgotten and is perhaps the greatest challenge." This redesign of the Netherlands is far-reaching, but has many advantages, Breman summarizes. Besides, if we don't do it, we'll be even worse off. "By protecting and strengthening our soil and water systems, we will keep nature and agriculture healthy and we can literally and figuratively reap the benefits." ■

Who: WUR

Duration: the research group conducts various studies on this topic.

Follow-up: ongoing research, including through a National Growth Fund application NL2120.