

Interview: Joost Panhuijsen

'Nature always lends a hand'

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Professor Marcel Stive's voice is heard and respected in many a delta. As a scientist, consultant and creator of the sand engine, he is putting his stamp on the Dutch coast of the future. Other countries – including Vietnam – are eager to draw on his expertise. "You can't pull any tricks."

Joost Panhuijsen

In 2008, you served on the Delta Committee as professor of coastal engineering. Are you satisfied with the way in which the Delta Committee's recommendations were received?

"A few weeks after the report was published, the Balkenende government had already expressed its support, and the House of Representatives accepted it in 2011. So there were no problems at all in political terms. We can expect heavy discussions in future, however, when push comes to shove and the government must make hundreds of millions available."

Because of the current cutbacks?

"That certainly doesn't make the debate any easier. The conclusion is likely to be to go ahead with the plan, but at a slower pace. Our recommendations were actually never meant to be converted directly into concrete policy. 'Improve the safety of the dike rings by a factor of ten' - I still think it's good advice, but something like that is easier said than done. Our report was not a blueprint, but rather a discussion. We wanted to show the topics on which politicians need to take decisions."

At any rate, the Delta Committee's report has already led to the appointment of a Delta Commissioner in 2010.

"Wim Kuijken, yes, he's well suited to take the lead, because he is intimately familiar with the politics in The Hague. In 2014, the Delta Commissioner will issue proposals to the government regarding several issues that the Delta Committee has already highlighted. For example, tightening safety standards: how can you minimize the chances that the Netherlands will be hit by another flood? It's a complicated subject, and a political hot potato. The more you want to reduce the risk, the more it will cost.

Kuijken is also looking at how, in future, we can continue to provide agriculture and industry with fresh water throughout the year – the concept of providing nearly free water for everyone may cease to be a given."

Speaking of fresh-water reservoirs: the Delta Committee recommended allowing the IJsselmeer to rise along with the Wadden Sea in the decades to come. It's a controversial idea, as it would involve increasing the height of the dikes, which would come at the expense of nature and the beautiful views.

"Kuijken would like the politicians to take a decision in principle on this in 2015. The same applies to the idea of making the Rijnmond area an open system that can be closed when needed. This is a possible solution to a pressing problem: should a very violent storm occur in the North Sea at the same time as a large volume of meltwater is flowing through the rivers,

cities like Rotterdam would be threatened from two sides. Movable dams would allow us to close open river mouths and estuaries temporarily under such extreme conditions. Civil engineering and architecture have already investigated the possibilities of this type of 'open/closed' Rijnmond. If you walk along the Merwede in Dordrecht or the Nieuwe Maas in Rotterdam, you can see how vulnerable it is there. A little extra water can present major problems. We don't have to build the new dams tomorrow, but it's a huge project, involving work for the next 50 to 100 years."

In September 2011, State Secretary Joop Atsma (Infrastructure and the Environment) stated, "Large-scale coastal expansion for 2050 isn't really necessary". Is that bad news for coastal protection?

"At the time, the Delta Committee said that if you wanted to do something extra, you could use additional coast expansion to stimulate spatial development. That has nothing to do with safety. Atsma has a point; nevertheless, he'll probably be opening the second sand engine soon, near the Hondsbossche Dam. So he is working on additional coastal expansion after all. The second sand engine will also contribute to coastal protection, as the Hondsbossche Dam is a weak link in our coastline."

You are the creator of the original sand engine, the sand island between Ter Heijde and Kijkduin, which is intended to broaden the coastline in a natural way. How does it feel to see your own idea take shape?

"It's incredible to see how this island attracts people like a magnet. It's ... dynamic, constantly changing. It adds another dimension to the coastal system."

And wind and water will eventually reduce the island to about a third of its current size?

"No. In theory, it should disappear completely. In 20 or 30 years, it should be completely absorbed into the ecosystem – if we don't do anything. But ... (he laughs) I'll bet my hat that there will be discussion about that."

Save the island!

"Exactly."

And that would be possible?

"It could be."

Will there be more examples of this kind of 'building with nature' in order to expand and protect the coast?

"I think there will be. We're already carrying out minor explorations, for example in the Oosterschelde. And then there's the Marsdiep, where the sediment is reaching a dangerously low volume."

What would happen if the sediment were to disappear?

"Then the whole thing would slip out of control. It would require tremendous effort to hold onto the coastline, as our entire coastal system depends on the Marsdiep. I'm already telling The Hague: 'You should be worrying about this'."

You'll be using the research grant that you were awarded by the European Research Council (ERC) in 2011 to map the development of coast near The Hague over the next five years.

"In order to maintain the coastal system as well as possible, you have to intervene from time

to time. It's important to know whether these interventions occur economically and ecologically. You can watch how the coast is developing, and adjust your approach, if necessary. It's a sort of feedback."

In June 2012, a conference will be held at TU Delft on the topic of 'Water and the City', with a special focus on Asia. Are the problems of mega-cities in Asian deltas so huge that they've not yet reached the point at which they can start determining 'acceptable risk'?

"No, they haven't got that far yet, but they will. They are catching up. You can see it everywhere. Jakarta is considering the possibility of constructing a polder. Ho Chi Minh City is exploring how to protect the city from flooding without stifling nature. And in Shanghai, they've been working for some time on a stunning multi-functional barrier for the Huangpu River that runs through the inner city."

Is TU Delft playing a role in the design and construction of the barrier?

"Not at all. We get to come and watch! The Chinese have built a four-layer multifunctional barrier, in three years! It would have taken us 15 years."

Would you say that the greatest challenges for coastal engineering today are in Asia?

"Absolutely. Vietnam is inundated by consultants. What's more, Prime Minister Rutte has established a new Delta Committee, at the request of his Vietnamese colleague, Nguyen Tang Dong. Cees Veerman is the chair once again and Louise Fresco is also serving on it, with Pavai Kabat, myself ... and several new members, including scientist and water board council chairman, Stefan Kuks, and my colleague, Professor Han Vrijling. We're returning to Vietnam in March 2012. We're trying to support the Vietnamese in creating a plan for the Greater Mekong Delta, which is close to Ho Chi Minh City (formerly Saigon). At spring tide, the water flows upstream from the East China Sea, causing flooding in Ho Chi Minh City every 14 days."

Since time immemorial?

"No, only in recent years, because Ho Chi Minh City is sinking a few centimetres each year. Just like Jakarta. In Vietnam, we're cooperating with a Deputy Minister. His original plan was to build a 32km-wide enclosure dam to prevent further flooding in Ho Chi Minh City. It's basically a clever idea, but we pointed out one major drawback: the dike would be located right in front of a large mangrove forest, which also acts as a spawning ground for fish and as a buffer for tsunamis. The dike would cut off this nature reserve from the sea and the tides, and this would have many consequences. We devised a variant that would leave the wetland untouched. The Deputy Minister has now accepted this idea."

How did you convince him?

"You can't play any tricks – you can't have a hidden agenda. You also need to understand how the Vietnamese look at the issue. Dutch people tend to think, 'We'll just go there and tell them how it ought to be done'. That's not how it works. We still have to convince the Deputy Minister that he shouldn't be too quick to push the revised plan through the system (he'll be retiring soon, and he's in a hurry) and that he should consider the big picture first: the plan for the entire Mekong Delta. Cees Veerman loves this diplomatic game. He has a good feel for the nuances."

Why are cities like Ho Chi Minh City and Jakarta sinking at such an alarming pace? As you have already established, it's occurring much more rapidly than the rise in sea level.

"Using groundwater - for industrial and domestic use, and sometimes for agriculture - is

usually the main reason. That's hardly surprising: Jakarta is a city of nearly nine million inhabitants, and industrial development is proceeding at an incredible pace. Settling due to drainage also plays a role."

In a word, progress. What can you do about it?

"You could try to wean the area off the use of groundwater. They have plenty of water there, thanks to the Mekong. There are major problems, but there are also practical, affordable solutions."

Are you optimistic?

"Yes, because nature always lends a hand. At some point, the problem will become so urgent that people will understand that something must be done. You just hope that no disasters occur before we get to that point."