

Netherlands learns to go with the flow

The Netherlands throughout its history has had an ongoing struggle with the sea.

Even its mythology reflects this battle, with the story of the little boy who put his finger in a dyke to stop the land being flooded with seawater.

Now, it seems as the tension between land and water is set to reach a new level as rising sea levels and overflowing rivers leave this low-lying nation increasingly vulnerable.

"Just let it come; we can't hold it back anyway," farmer Fons Bergmans tells the Television Trust for the Environment's (TVE) Earth Report programme.

"If it does come, we'll try to make the best of it."

Mr Bergmans' family has farmed the land near Maastricht on the Dutch-Belgian border for generations.

The farm is located on an island in the River Maas, one of the nation's five major rivers.

Lessons from history

In 1993, Mr Bergmans recalls, heavy rainfall caused the river to flood with devastating results.

"It was just before Christmas. The house was full of fast flowing water. In one day, the water reached about 60cm (2ft)."

The flood wreaked havoc across the whole region, destroying homes and ruining livelihoods. Some areas were cut off for more than a week.

"Sometimes, we saw hovercrafts passing by outside," Mr Bergmans reflected. "It's the kind of experience that you could not imagine and we hope it will never happen again."

The Netherlands only exists as a result of the lowlands' extensive flood and sea defences because two thirds of the nation's population lives below sea level. For centuries, it has relied solely on defensive walls - called dykes - to defend them from flooding.

Windmills, an iconic image of the region, were not just for making flour, but



Areas of the Netherlands will be allowed to be flooded



Existing defences, like the Thames barrier, may not be enough

Sea rise 'to exceed projections'

for pumping water from the land.

In the devastating North Sea flood of 1953, which affected much of northern Europe, almost 2,000 people in the Netherlands lost their lives.

One of the lessons learned was that walls and dykes were not enough to tame the seas.

Over the following 30 years, the Dutch constructed huge barriers to protect coastal cities. But 50 years later, the predicted impacts of climate change have put the country's flood defences back under the spotlight.

Researcher Louise Fresco, a flood adviser to the Dutch government, says that the nation faces two main threats.

"One is rising sea level," she explained.

"The other is major discharges through the rivers, due to high rainfall in the future.

"The combination of rising sea level and water from the rivers poses a clear and present danger."

According to research recently presented at a key climate change science conference in Copenhagen, sea levels are rising much faster than predicted.

If widespread flooding was to hit the Netherlands, millions of people would have to be evacuated.

But if it happened tomorrow, the nation would not be able to cope, warns Professor Fresco.

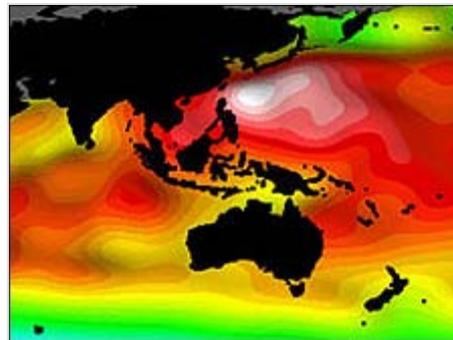
"Our system is not up to standard to deal with very large quantities of water - especially if they come suddenly."

The government's response is a National Water Plan, an overhaul of the country's defences costing billions of euros.

The initiative is designed also to raise public awareness of the dangers of climate change.

"Dutch people are not afraid of water; we live below sea level," says Tineke Huizinga, Deputy Minister for Transport and Water.

"Sometimes it would be better if the Dutch people were a little bit more afraid. Now, with climate change, it really is important to take measures and to really do things."



Sea level rise is not the same across the globe

The ebb and flow of sea level rise

Last year, the government staged a five-day mock evacuation to test the country's readiness for severe flooding.

The results were not reassuring. If it had been a real flood, an estimated 4,000 people would have lost their lives.

Going with the flow

To protect coastal communities and strengthen sand dunes and beaches,

millions of tonnes of sand are dredged from the sea bed and redistributed near to or on the shoreline.

However, as Tineke Huizinga explains, an even more radical project is underway for the Netherlands' rivers.

"We used to have these dykes to keep the water in place, but now we have learnt we have to make places where the water can flow in [floods].

"It is an enormous project through the whole country for more than 40 places where we have to 'make room for the river', as we call it."

One example of this work involves one thousand hectares (2,500 acres) that will become a flood zone, including 40 hectares owned by Fons Bergmans.

Professor Fresco says the Dutch have been complacent in recent decades about the threat posed by water.

"I think we are now moving into a situation where we're thinking again about water, not only as something to be controlled, but also something which is part of our environment, our habitat and something that we have to live with.

"We are very optimistic about the new creativity that is generated by thinking through how we live with water in the future."

One person with a vision of how the Dutch can adapt to the "living with water" lifestyle is architect Alexander Henny.



Current efforts to maintain defences need to be reconsidered

He is one of the country's top designers of floating houses, and calls his practice "Aquatecture".

"There's a concrete foundation that floats, which is hard to understand for most people, but because it is hollow it is lighter than the water," he told the programme.

"In the lower part of the house, which is submerged, are the sleeping quarters. On the top is the living room and kitchen." But living on the water is still only for a tiny proportion of the population. The government has stated that its emphasis is to protect those on land.

Professor Fresco said flood prevention policies should take an ecological approach.

"We should try to use the forces of nature to protect the country where possible," she explained.

"The main area where this is feasible is coastal protection, dragging up sands from the North Sea and have the currents actually deposit sand to extend the coastline, broaden the beaches and offer major protection."

The Television Trust for the Environment's (TVE) Earth Report - Going with the flow - will be broadcast on the BBC World News Channel on 13-19 March 2009. Please check schedules for further details



One solution is to build floating houses that rise and fall with the tide