

They're 'World Champions' of Banishing Water. Now, the Dutch Need to Keep It.

As climate change dries out Europe, the Netherlands, a country long shaped by its overabundance of water, is suddenly confronting drought.



By Raymond Zhong

Raymond Zhong crisscrossed the Netherlands to see how the famously threatened country is re-engineering itself for new threats.

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ENSCHDEDE, the Netherlands — The story of the Netherlands' centuries of struggle against water is written all over its boggy, low-lying landscape. Windmills pumped water out of sodden farmland and canals whisked it away. Dikes stopped more from flooding in.

Now, climate change is drying out great stretches of Europe, and, once again, the Dutch are hoping to engineer their way to safety — only this time, by figuring out how to hold onto more water instead of flushing it out.

From California and Texas to India and China, many parts of the world are grappling with widening swings between very wet conditions and very dry ones. The extra heat near the earth's surface from global warming is, in many regions, increasing the chances of both punishing droughts and violent rainstorms. Societies like the Netherlands must now plan for both extremes, even though the best preparations for one can be at odds with the best preparations for the other.

"We are world champions in making land dry," said Peter van Dijk, a blueberry grower based in the country's south. "Now we are trying to turn that system around, because we overshot."

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Even in a rich and ambitious country like the Netherlands, it's a huge challenge. The Dutch government has tiptoed around raising prices for heavy water users, wary of a backlash. Tighter rules on construction in vulnerable areas could deepen a housing shortage. Curbs on water-use risk exacerbating tensions with farmers, who have staged furious protests against a plan to cut nitrogen emissions.



Farmers worked to dam a ditch to capture water in Meijel, the Netherlands, in May. Rob Engelaar/EPA, via Shutterstock

When it comes to drought, a major problem is that the Netherlands, one of the world's most densely populated countries, just doesn't have the space for big new reservoirs. Plus, it is pancake flat: Without gravity's help, pumping water around takes lots of energy.

If the Netherlands can gird itself for a drier future, "then we can show the world that this is possible," said Henk Ovink, the country's globe-trotting envoy for water issues. "It demands upping our game."

This year, during Europe's hottest summer on record, extraordinary heat fueled wildfires, imperiled crops and strained hydropower supplies around the continent. A recent study found that soil conditions as parched as those this summer in Europe were now at least three times as likely as they would be in a world without global warming.

In the Netherlands, hot and dry summers have reduced flows from the Rhine River, which is fed by Alpine snowmelt and provides much of the country's fresh water. In August, the Rhine's discharge where it enters the Netherlands from Germany ebbed to a record low.

In Enschede, an inland city of 159,000 people, water has at times been so scarce that farmers have resorted to siphoning illegally, at night, from ponds and other water sources. After a rash of such episodes in 2018, the local water board began issuing warnings and fines, said Stefan Kuks, the board's chairman. It assigned employees to patrol water sources and is looking into installing cameras and sensors.

One repeat offender? A grower of ornamental trees.

"There are a few farmers that are really persistent," said Stefan Nijwening, a board adviser.



Farmland reclaimed from the sea and protected by dikes near Rotterdam in May. The Netherlands is the world's No. 2 exporter of farm products, after the United States. Jeffrey Groeneweg/ANP, via Agence France-Presse — Getty Images

To help more water stay put, kept in reserve for droughts, officials, farmers and scientists across the Netherlands are remaking the land from the bottom up.

City planners in Enschede (pronounced EN-skeh-day) are carving gentle undulations into grassy areas to catch rainwater that would otherwise be flushed away in the sewers. They are tearing out concrete tiles and other paved surfaces to expose more permeable earth, a concept that has morphed into a yearly tile-ripping competition between Dutch cities. The water board is adding bends to brooks and streams so water doesn't run off as quickly.

Dutch farmers are making drainage ditches shallower so they remove less water from the ground — a reversal after centuries of seeking to banish every extra drop from the waterlogged land so it could sustain crops and cows.

The Netherlands' water boards have been helping growers dry out their fields since the Middle Ages. Now, some of them are trying to encourage farmers to keep the land wet and to conserve water — for instance, by using drip irrigation instead of inefficient spray cannons.

Changing farmers' minds can be delicate work, said Mr. van Dijk, the blueberry grower, who also helps lead his local water board. "Dutch people don't like to be told what to do."

The Netherlands' success at getting rid of excess water helped it become an agricultural powerhouse — the world's No. 2 exporter of farm products after the United States. This year, though, drought and energy concerns caused by Russia's war in Ukraine have prompted anguished debate about whether it is sustainable for the Netherlands to produce so many of its famous tulips, plus so much cheese, meat, fruits and vegetables.

Jeroen Geurts, an ecologist at the Dutch water research institute KWR, wants the country to embrace its natural swampiness. He is conducting experiments on "re-wetted" marshlands, which could be used for growing cattails for building materials, or as pastures for water buffaloes.



A nature reserve in Schijf, the Netherlands, in August after a wildfire. Remko De Waal/EPA, via Shutterstock

Heat and drought are also hindering the Netherlands in its Sisyphean battle against rising seas. As less fresh water flows down the Rhine and other rivers and toward the North Sea, more seawater creeps up them instead, threatening water supplies for homes and farms. Heat waves are also causing more algae blooms in the rivers, harming water quality.

Gertjan Zwolsman, a policy adviser and researcher at Dunea, a drinking-water company that supplies 1.3 million people around The Hague, and his colleagues are exploring methods for pumping up and treating the brackish water beneath the Netherlands' sandy coastal dunes. The process is energy intensive. But so is transporting river water across great distances to cities, said Franca Kramer, a researcher at Dunea.

"There is nothing natural about the Netherlands," Dr. Zwolsman said, laughing.

So far, the country's adaptations to drought haven't involved anything as grand as its massive storm barriers or other flood-control projects. But if the planet becomes much hotter — in the coming decades, it is projected to be more than 3.6 degrees Fahrenheit (2 degrees Celsius) warmer than it was in preindustrial times, even if nations deliver on their climate pledges — then Dutch leaders might need to consider bolder, and potentially riskier, steps.

One concerns the fate of Rotterdam, Europe's largest port. Today, the city has an open channel to the North Sea so cargo ships can move in and out easily. But the channel also lets seawater in, forcing the Dutch government to send huge amounts of fresh water down the rivers to push it back.

As sea levels rise, "you're going to need more and more water to keep that sea out," said Niko Wanders, a water expert at Utrecht University. At some point, he said, the government might want to close off the Port of Rotterdam with locks, as it has done with the Port of Amsterdam. This would hinder shipping traffic but free up water for other purposes. (It wouldn't solve the problem completely: During this summer's drought, the Dutch government restricted how often the locks near Amsterdam could be opened each day to limit saltwater intrusion.)

Some have floated an even more drastic solution: a gigantic new sea dike that walls off much of the Dutch coast. It wouldn't be cheap. But the alternative, which could cost even more, is to keep adapting and re-adapting water infrastructure for progressively tougher conditions, said Stefan Nieuwenhuis, a senior adviser for the Dutch water ministry.

“Or to move on,” he said — to retreat from the soggy shoulder of Europe that the Dutch have turned, through ingenuity and force of will, into one of the world’s most prosperous societies. “But that’s not our plan.”

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