AFTER US THE DELUGE

Kadir van Lohuizen

The Human Consequences of Rising Sea Levels

Lannoo

For my dad

THE SEA IS COMING

Kadir van Lohuizen

It was 2011, and for a visual survey on land migration, I had travelled from the southernmost tip of South America to Alaska. One of my stops was the beautiful San Blas Archipelago on the Caribbean side of Panama. Actually, it's just called 'Guna Yala', because it's the land of the Guna people, one of the original populations of Panama. I interviewed people there for my story, and to my surprise, they all talked about an upcoming evacuation. I didn't really understand what they meant. When I asked, they said, 'The sea is coming'. Still, the penny didn't drop. 'You know, the sea is coming, it destroys our houses and we can't grow crops anymore and our drinking water gets salty.' They spoke of rising sea levels.

Fortunately for the Guna people, their region also includes a higher coastal strip. This is where everyone is moving to. 'Next year', they assure me. When I return four years later, no one has moved, and only a school and a clinic have been built. Funding was committed by the Panamanian government in 2017, but there have since been delays due to additional budgetary requirements as well as COVID-19. It does seem that the relocation is finally happening.

Even though I'm Dutch and live below sea level myself, until then, I'd never suspected that rising sea levels were already threatening certain parts of the world. Several months earlier, I'd been in the Ganges-Brahmaputra-Meghna Delta of Bangladesh and had witnessed the vulnerability of the coastline. I had seen people doing everything they could to protect their country from the sea.

I decided to research areas of the world where rising sea levels are an urgent problem now, not just one for the next generation. But how do you visualize a problem that often isn't yet visible? My list gradually grew: Bangladesh, Guna Yala, Kiribati...

It takes a different way of working than the one I'm used to as a photographer. Normally I use the light as a guide, but now my guide is the tides. The first time I visited a family on the coast in Bangladesh, the man said, 'You should have been here two weeks ago, the water was in the house'. I looked at the sea, which was very far away ... and realised that if I wanted to show the impact of the sea, now and later, I had to time my visits to coincide with high tide or, rather, spring tide, which occurs once or twice every month. When you see the amount of rising water, it's easy to picture sea levels rising by another 2 m or 3 m.

My first time in Bangladesh, I travelled with the NGO Displacement Solutions. They help people in Bangladesh and other areas of the world who, as a result of the climate crisis, need to build a new life elsewhere. I photograph in black and white, as I do almost always. I realise that aerial photography often captures the issue of rising sea levels better, but the drones may be too big and too expensive. Someone in the Netherlands helps me set up a system to mount a small camera on a kite. I can't see what I'm doing, but I can programme the camera and use the wind direction to find the right angle. The disadvantage is that if there's too much or too little wind, it doesn't work. But in most cases, the results are satisfactory.

I am in Bangladesh two years after Cyclone Aila, and the delta still bears the traces of devastation. Sparing no effort - in other words, thousands of people - the dykes are being reinforced and rebuilt. But unlike previous cyclones when the water receded after the storm, in many places the water remains, turning the land saline and the drinking water brackish.

Research is always an important basis for my projects, especially for a topic like this. I'm aware that I'll need to do a thorough job, in part to avoid giving climate sceptics ammunition. Fortunately for me, the *New York Times* gets onboard at a fairly early stage. Based on my research, together we decide which regions I will visit. It is important that I look for a geographical spread and also look closer to home, with my own country, the Netherlands, as the last destination.

Until recently, the warming of the oceans was the main cause of rising sea levels. When water warms up, it expands, which causes a rise in the water level known as 'thermal expansion'. Meanwhile, the main reason for rising water levels is the melting of the Greenland and Antarctic ice sheets. If the entire Greenland ice cap melts, sea levels will rise by 7 m, and if Antarctica melts, by 86 m.

AFTER US THE DELUGE

< Pages 78-79: A new apartment building on Park Avenue.

Downtown Manhattan.

PACIFIC: KIRIBATI

Anote Tong

Kiribati is on the front line of the climate crisis. The impact of storm surges and coastal erosion is already very visible across the land, and the sea level is rising. Much of the land is not more than 1.5 m above sea level. Other islands in the Pacific, among them the Carteret Islands (Papua New Guinea) and the Marshall Islands, seem to await the same fate. A few Pacific nations and others will cease to exist, and where they will move to is unknown.

MIGRATION WITH DIGNITY

On coming into office as president of Kiribati in the middle of 2003, my first task was to consolidate my domestic political agenda, and I therefore decided not to attend the United Nations General Assembly (UNGA) meeting in September of that year. Later, as I turned my attention to foreign policy, I noted that much of the international focus, as reflected in the UNGA leaders' statements, was on terrorism, and of course the usual developmental issues that feature in every UNGA debate.

GAINING AWARENESS

In the course of my briefings, I had also become aware of the ongoing discussions on the United Nations Framework Convention on Climate Change (UNFCCC) and, previously, the Kyoto Protocol. However, what immediately caught my attention were the successive reports of the Intergovernmental Panel on Climate Change (IPCC). I noted that the scenarios the IPCC was predicting would have very serious implications for low-lying atoll island countries. I was aware of the concerns the former prime minister of Tuvalu, The Right Honourable Bikenibeu Paeniu, had expressed on this issue when speaking on behalf of the smaller Pacific Island nations at the Fourth session of the Conference of the Parties (COP 4) to the UNFCCC in November 1998 in Buenos Aires, Argentina. Unfortunately, he did not stay in office long enough to maintain the momentum of his campaign. I was also well aware of the ongoing controversy regarding the validity of the science on climate change, which we now know was orchestrated by the energy corporations, who saw this emerging concern as a threat to their interests. I firmly believed, however, that even if there was no consensus on the science of climate change, the threat posed by the impacts being predicted, even if only a remote possibility, were far too serious for low-lying atoll island countries like Kiribati, Tuvalu, and the Marshall Islands to be ignored and far more relevant to us than the threat of terrorism.

TAKING ACTION

In my first statement at the UNGA in 2004, I made my first attempt at drawing international attention to the human dimension of the climate crisis, what it will mean for those people and countries on the front line of the impacts. Until then, the focus had been on the fascination with the science and the impacts on the environment, and of course what it would mean for the polar bears. By my recollection, there was hardly ever any mention at the highest international political level of the likely implications for those people whose home islands would be destroyed. Ever since then, I have taken every opportunity at every international forum to emphasize the existential threat posed by the climate crisis to countries on the front line. No doubt also realizing their own vulnerabilities, other Pacific Island countries and the Maldives in the Indian Ocean soon picked up the campaign and added momentum to the call for action on the climate crisis.

IMPACTS IN KIRIBATI

What has been our experience of the climate crisis in Kiribati? For anyone to truly understand why we should be concerned, one needs to have lived on an atoll island. An atoll island is simply a solid coral formation (usually below the high-water mark) and an accumulation of coral sand (gathered by constant wave action) atop a submerged seamount. The narrow strips of land surround an almost enclosed lagoon and are on average about 2 m above sea level. Kiribati straddles both the equator and the International Date Line, and, being in the doldrums, is not prone to cyclonic storms.

Throughout my own lifetime, I have seen storms (gale-force winds of around 30 km/hour), the occasional flood, waves overtopping the land and erosion of the coastal areas, sometimes resulting in the destruction of homes and food crops. These events are not new experiences to those living on such fragile atoll islands. I am often asked what I consider to be a somewhat silly question: 'Have you seen any rise in sea level?' I don't believe anyone can see a rise in sea level as one may see a rise in a cup or a tank. Perhaps a more relevant question would have been 'Have you experienced any changes in the severity of these impacts?' And the answer to that is definitely yes.

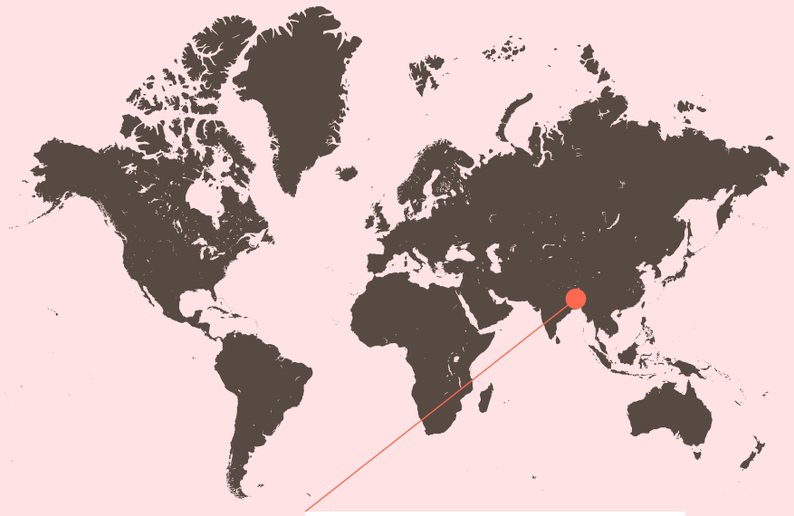
GOVERNMENT ASSISTANCE

During my almost 13 years in office, as a government, we were inundated by requests for assistance from communities seeking protection against erosion that was threatening their homes, their community infrastructure and the source of their livelihoods. Some village communities also needed assistance relocating from their once-thriving community. As a government, we also had to dedicate huge amounts of resources building sea walls to protect public infrastructure. Due to the limited resources available for sea defences, the government did not provide assistance for protecting private property.

Within the last two decades, there have been occasions when a state of emergency had to be declared and assistance provided for communities on islands which had experienced severe floods resulting in unprecedented damage to homes, food crops and

Bangladesh's frequent flooding and cyclones are widely known and have long featured as leading news when they hit particularly hard. What is different now is that instead of flood waters receding followed by people returning to their homes and lands, in today's Bangladesh, all too often, the water simply doesn't recede.

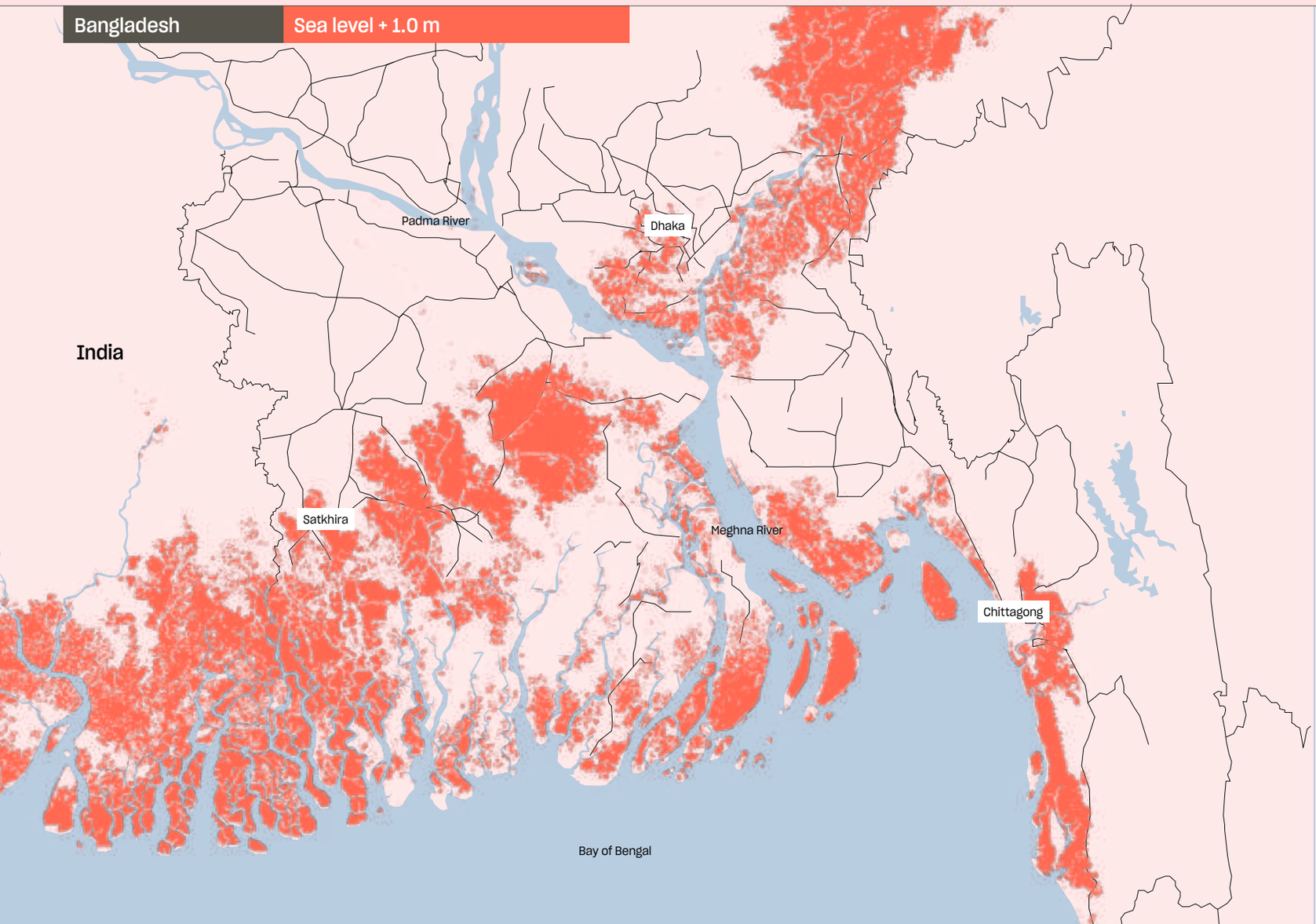
But Bangladesh is not waiting for future disasters to happen, adopting the US$40 billion *Bangladesh Delta Plan 2100* in September 2018 to protect many of its coastal areas. Whether there will be enough time to implement the plan remains to be seen, but at least Bangladesh is one of the very few countries in the world which is really acting.



Bangladesh
Population: 165,000,000

It is estimated that up to 50 million people will need to be evacuated to higher ground in the near future. An estimated 6.5 million people have already been displaced due to the climate crisis.

Source: Climate Central (www.climatecentral.org)

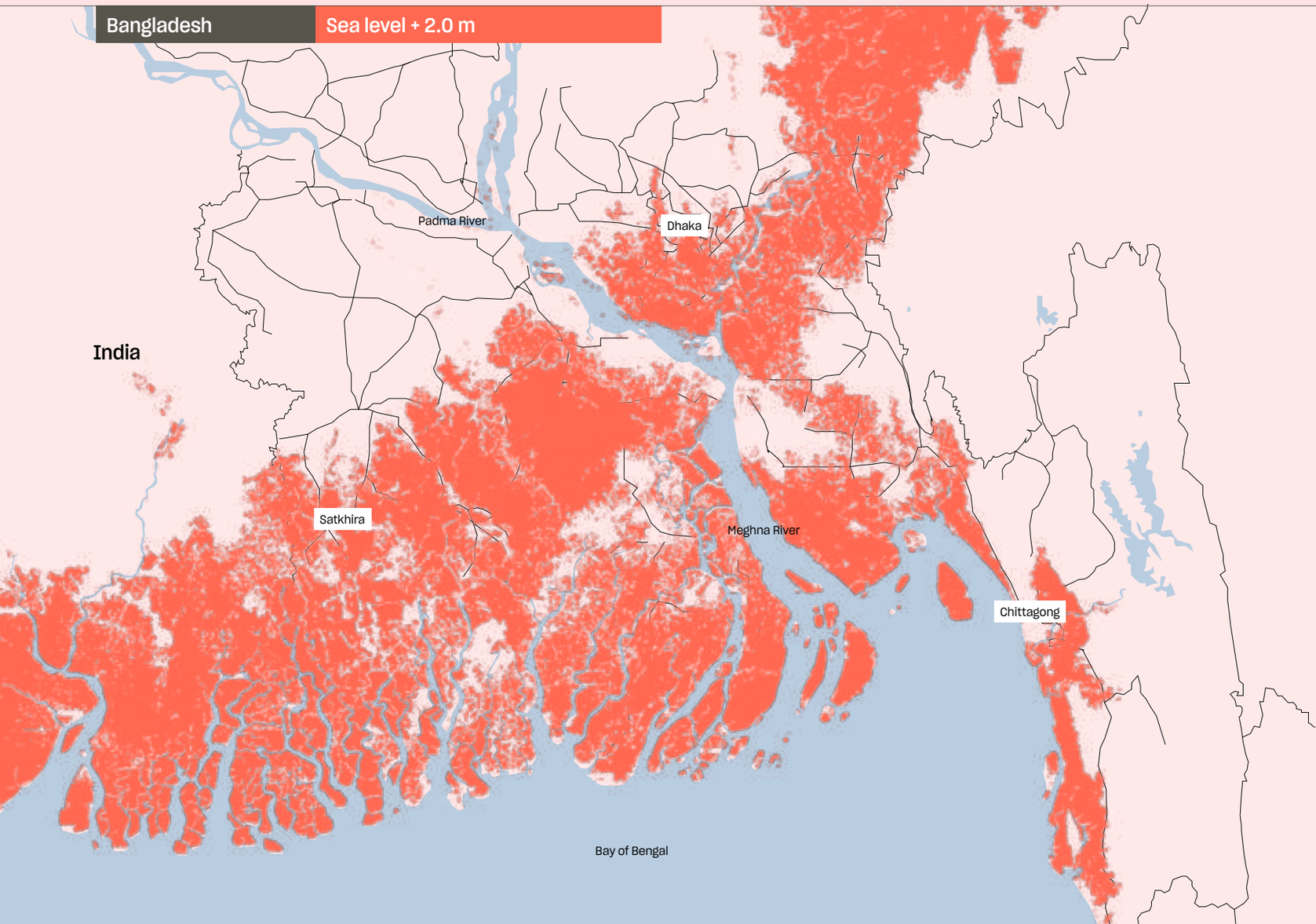


2020, the entire coastal belt became submerged when unusually high tides coincided with high rainfall. More than 100,000 people were marooned, even though there were no extreme weather events in the Bay of Bengal. Azad Kabir, the in-charge officer of the Karamjol Wildlife Rescue Center in Sundarban, said that he never had seen water at that level in the 10 years he had been working there.

Climate refugees in Bangladesh are on the rise as well, even though Bangladesh has taken several initiatives to protect its coastal population from the risks of natural hazards. According to World Bank Group (2013), Bangladesh has continued investment to reduce vulnerability since the 1960s. So far, the country has established 2,130 cyclone shelters, 139 polders (areas of low-lying land that have been reclaimed from bodies of water and are protected by dykes), 2,900 water control structures for drainage and improved early warning systems. Many polders were constructed along the coastal belt to provide protection to the country's infrastructure and food production system. But the polders and embankments were not built high enough to hold back ever-larger flood events and storm surges. When saline water overtopped the polders and submerged the land, roads and communities they were designed to protect, the water was difficult to drain. It caused prolonged waterlogging, which made it miserable for the entire community and hard to source drinking water. It severely impacted agricultural and livestock resources. People became homeless and lost their livelihoods because they could no longer farm the salt-laden soil or access potable drinking water. The prolonged waterlogging behind polders and embankments led to a large number of migrations, particularly after Cyclone Aila on 26 May 2009.

COASTAL ZONES AND DISTRICTS

During monsoon season, upstream operators open flood gates in hydroelectric projects and barrages across the mighty Ganga-Brahmaputra-Barak Basin. The rising waters converge on the low-lying delta of Bangladesh, making life much harder in general. Bangladesh is geomorphologically dominated by the Ganges-Brahmaputra-Meghna River System, which flows into the Bay of Bengal, forming



The Wierschuur at the east of Terschelling is inaccessible due to flooding.

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