

The first refugees of global warming

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Bangladesh watches in horror as much of the nation gives way to sea

ANTARPARA, Bangladesh -- Muhammad Ali, a wiry 65-year-old, has never driven a car, run an air conditioner or done much of anything that produces greenhouse gases. But on a warming planet, he is on the verge of becoming a climate refugee.

In the past 10 years the farmer has had to tear down and move his tin-and-bamboo house five times to escape the encroaching waters of the huge Jamuna River, swollen by severe monsoons that scientists believe are caused by global warming and greater glacier melt in the Himalayas.

Now the last of his land is gone, and Ali squats on a precarious piece of government-owned riverbank -- the only ground available -- knowing the river probably will take that as well once the monsoons start this month.

"Where we are standing, in five days it will be gone," he predicts. "Our future thinking is that if this problem is not taken care of, we will be swept away."

Bangladesh, which has 140 million people packed into an area a little smaller than Illinois, is one of the most vulnerable places to climate change. As the sea level slowly rises, this nation that is little more than a series of low-lying delta islands amid some of Asia's mightiest rivers -- the Ganges, Jamuna-Brahmaputra and Meghna -- is seeing saltwater creep into its coastal soils and drinking water. Farmers near the Bay of Bengal who once grew rice now are raising shrimp.

Notorious for its deadly cyclones, Bangladesh is likely to face increasingly violent storms as the weather warms and see surging seas carry saltwater farther and farther up the country's rivers, ruining soils, according to scientists.

On Bangladesh's southern coast, erosion driven in part by accelerating glacier melt and unusually intense rains already has scoured away half of Bhola Island, which once covered an area nearly 20 times the size of Chicago. Land disputes, many driven by erosion, now account for 77 percent of Bangladesh's legal suits. In the dry northwest of the country, droughts are getting more severe. And if sea level rises by 3 feet by the turn of the century, as some scientists predict, a fifth of the country will disappear.

"Bangladesh is nature's laboratory on disaster management," said Ainun Nishat, Bangladesh representative of the World Conservation Union and a government adviser on climate change. As temperatures rise and more severe weather takes hold worldwide, "this is one of the countries that is going to face the music most," he said.

Bangladesh is hardly the only low-lying nation facing tough times as the world warms. But scientists say it in many ways represents climate change's "perfect storm" of challenges because it is extremely poor, extremely populated and extremely susceptible.

"One island here has more people than all of the small island states put together," said Atiq Rahman, executive director of the Bangladesh Center for Advanced Studies and a top national climate change expert.

With so many huge rivers discharging into the ocean, the country couldn't build dikes to hold back the sea even if it had the money, Rahman said. And though it has created virtually none of the pollution driving global warming, it is unlikely to receive the international assistance it needs to adapt to conditions created by others.

What that might mean for big polluting nations such as the United States, China and India is that "for every hundred thousand tons of carbon you emit, you have to take a Bangladeshi family," Rahman said, only half joking. India already is building a fence along its border with Bangladesh.

The extent of Bangladesh's coming problem is evident in Antarpa, a village stuck between the Jamuna and Bangali rivers five hours northwest of Dhaka, the capital. In it and other low-lying villages nearby, more than half of the 3,300 families have lost their land to worsening river erosion. Some have moved their homes a dozen times and are running out of places to flee.

Antarpa's village head, who once owned 700 acres, is now penniless. The village's school has had to close for two to three months each time the community flees the intruding Jamuna. In the past year, the river has marched 300 feet toward the village's latest temporary homes on government land, and now the closest shack is just 30 feet from the roiling waters. Visitors are warned not to venture near the edge.

"Please protect this land, so we can stay here," begs Monwara Begum, 35, a mother of three. "We are wondering how we will live, how we will manage this river."

"Slowly, it has destroyed village after village," said Ali, the farmer, whose son operates a bicycle rickshaw in Dhaka.

Bangladesh's capital today is home to a growing sea of landless rural migrants like Jaha Nura Begum, 35, who lives in a rickety bamboo hut perched on stilts over a fetid backwater of the Turag River. Her family and 20 others fled Bhola Island three years ago when "the river took all our land, and there was nothing," she said. Now her husband breaks bricks as a day laborer at a nearby kiln and "we only eat if we can find work."

With climate migrants accounting for at least a third and perhaps as many as two-thirds of rural dwellers flooding to Dhaka, even that work is hard to get. "As more and more come, it is more chaotic here," Begum said.

Bangladesh's government is doing what it can to prepare for coming hard times. With the help of non-profit organizations, it is testing new salt-resistant crops, building thousands of raised shelters to protect those in the path of cyclones and trying to elevate roads and bridges above rising rivers. Leaders who once insisted that the West created the problem and should clean it up "now accept we should prepare," Nishat said.

The alternative could be ugly: insufficient food, a destabilized government, internal strife that could spread past the country's borders, a massive exodus of climate refugees and more extremism, Rahman said.

"A person victimized and displaced will not sit idle," he predicted. "There will be organized climate-

displaced groups saying, 'Why should you hang onto your place when I've lost mine and you're the one who did this?'

"That," he said, "is not a pleasant scenario."

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