

West Africa's falling fish stocks: Illegal Chinese trawlers, climate change and artisanal fishing fleets to blame

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Average fish catches by traditional fishing communities along the west African coast have declined significantly over the past three decades.

Along the Gulf of Guinea, stretching from Côte d'Ivoire to Nigeria, fishers launch their wooden canoes from the beach to catch small pelagic fish, like sardines and anchovies, which they sell into local informal markets to make a living. They have done this for generations, but since the 1990s, a decline in the catch has put their livelihoods at risk.

In Ghana, total landings of small pelagic fish [fell by 59%](#) between 1993 and 2019, despite increased fishing efforts. Landings of *Sardinella aurita*, a favored species, [declined](#) from 119,000 metric tons in 1992 to just 11,834 metric tons in 2019.

Côte d'Ivoire has experienced a parallel fisheries decline, with its catch [plummeting nearly 40%](#) between 2003 and 2020.

The continuing decline in [fish catches](#) has serious implications for some of the poorest families in the region. Ghana, for example, has more than [200,000 active fishers](#). More than [two million others](#) along the value chain, including thousands of women who process and sell fish at markets along the coast, are now at risk as well. Already living at or below the international poverty line (US\$2.15 per person per day), these communities now face further income loss. In essence, they are falling deeper into poverty.

I have [researched](#) food and [agricultural policy](#) in a dozen African countries over the past three decades, but the current west African coastal fishing crisis in the Gulf of Guinea is complex because it has multiple and reinforcing origins: [climate change](#), [illegal fishing](#) by China, and too many African canoes in the water.

My work on this crisis is part of a [three-year study](#) (2023-2025) funded by the [Salata Institute at Harvard University](#). To pursue this work I spent three weeks in 2023 visiting coastal communities in Ghana, Côte d'Ivoire and Nigeria. On a return trip to Ghana in 2024, I will share the

preliminary findings with local stakeholders, including fishing community leaders, local advocates and government officials. Meanwhile I set out the main findings below.

Climate

Among the multiple threats from climate change, [ocean warming](#) is probably the least appreciated. Plenty of warming is experienced on land, but roughly 90% of the extra heat trapped by greenhouse gas is absorbed into the ocean. This helps contain warming on land in the short run, but in the long run it brings a cascade of larger climate threats.

When ocean waters warm they expand in volume, and this thermal expansion is now the source of almost half of all sea-level rise. Warmer ocean waters also hold less oxygen, creating a threat to all marine life. But for human populations that catch fish for a living, [ocean warming](#) becomes an acute threat when it results in fish stock migrations.

Fish are cold-blooded, so if the water becomes too warm the only means they have to regulate their body temperature is to move away. This is what they have [been doing](#) along the warming equatorial currents in the Gulf of Guinea, and it accounts for some of the [fish catch decline](#).

[Dynamic bioclimate models](#) allow us to project what continued ocean warming of this kind will do to Africa's fish stocks. The models are widely used to forecast range shifts of organisms due to climate change and predict the eventual ranges of invasive species, among others.

One [study](#) found that the maximum catch potential for Ghana, Côte d'Ivoire and Nigeria would be reduced 50% by mid-century, compared to a zero ocean warming scenario. Another [study](#) published in 2018 was in rough agreement. It projected that climate change alone would reduce maximum catch potential in the Guinea Current System by 30% or more

by 2050, even if the fisheries were well managed.

Unfortunately, Africa's coastal fisheries are not being well managed.

Chinese trawlers

Lax regulation of international fishing trawlers is a second source of the recent fish catch decline.

Countries like [Ghana](#), Nigeria and Côte' d'Ivoire have laws that prevent foreign trawlers from getting a license to fish within national exclusive economic zones, which extend 200 nautical miles beyond territorial seas. However, Chinese trawlers get around this barrier by using local companies as legal "fronts." Chinese companies, thinly disguised as Ghanaian companies, currently own over [90%](#) of Ghana's licensed bottom trawlers. The Chinese vessels are [damaging](#) fish stocks by using illegal nets to catch too many undersized fish, including juveniles that have not yet had a chance to reproduce.

Chinese trawlers are occasionally fined for illegal practices in Ghana, but some fail to pay the fines and still do not lose their license. This damaging non-enforcement of fishing laws is hard to understand, since the foreigners pay minimal taxes and license fees, and most of the fish they catch are exported, adding almost nothing to national food supplies.

Too many canoes

Traditional fisherfolk in west Africa like to blame Chinese trawlers for diminished stocks of fish, but the increased fishing activities of their own canoes have been at least as damaging.

In west Africa there are now [seven times](#) as many canoes engaged in

ocean fishing as there were in 1950. Today's canoes have larger nets and bigger crews, and many have powerful outboard engines.

This expansion of the region's artisanal fishing fleet has been driven by powerful demographic trends, including rapid rates of population growth plus steady human migrations towards the coast to escape impoverished rural farming.

This is why, between 1960 and 2023, the leading coastal cities in Ghana, Nigeria and Côte d'Ivoire saw population increases of at least [seven-fold](#) (Accra) and in [some cases 30-fold](#) (Abidjan). Having more people on the coast increases commercial demand for fish consumption while providing the added labor needed to catch, process and market the fish.

Despite the recent fish catch decline, canoe numbers have continued to increase; in [Ghana](#) there were 8,000 canoes in 1990, but by 2017 there were 13,650.

New livelihoods

Most traditional fishing communities will have to find new sources of income to survive. This won't be easy since roughly [40% of coastal fishermen](#) in Ghana and Nigeria have no formal education. Non-fishing jobs will increase in the fast-growing coastal economy. If the children of today's fishing families stay in school long enough to complete a secondary education, most will be able to make the shift.

One policy measure to keep them in school would be to provide monthly cash transfers conditioned on school enrollment and attendance. Such conditional cash transfers have been producing results in other low- and middle-income regions. [Data](#) from 75 reports drawing on 35 studies show that conditional cash transfer policies can lead to a 60% increase in school enrollment.

Cash transfer policies are already in use in west Africa. Since 2008 Ghana has operated the [Livelihood Empowerment against Poverty](#) program, providing cash and health insurance to the elderly poor, the disabled, pregnant women and infants. Expanding this program to poor coastal fishing families with school-aged children could promote education. For fishing communities threatened by falling fish stocks, this might be a path to future livelihood protection.

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