# A warmer ocean is a growing risk to India's blue economy





**Clockwise from the left :**
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**FOR GENERATIONS**, India's coastal economy has treated the sea as a constant. It supplied fish, livelihoods and export earnings, and the only real variable was the effort fishers put in. A warming ocean is changing that. The sea itself is now the variable, and the El Niño that set in during this year's monsoon is likely to keep it that way long after the rains have passed. In June, the Indian National Centre for Ocean Information Services (INCOIS) warned that sea surface temperatures in the Indian Ocean could remain above normal as late as April–May 2027, putting marine life under thermal stress. Warmer water can shift where fish gather, how large they grow and when they arrive, and each such shift is soon felt at the auction hall, the processing unit and the coastal household. For the economy, an unpredictable catch may prove costlier than a smaller one. That makes El Niño a concern for markets, infrastructure and public policy as much as for marine science.

The current pattern suggests a shift in fish availability, not a uniform fall in output. The INCOIS's 2026 El Niño bulletin names Indian oil sardine and mackerel among the species whose catches could suffer in warmer waters. Ocean temperature shapes how fish move, grow, mature and reproduce. Yet the link between El Niño and fish landings is relatively weak and varies by region, so the effects will differ along the coast. The real risk is that fishers and seafood businesses may struggle to predict where, when and in what numbers fish will appear.

National totals often hide the regional swings. The Central Marine Fisheries Research Institute (CMFRI) estimates that India's marine fish catch rose three per cent in 2025 but fell 15 per cent in Gujarat and jumped 44 per cent in Karnataka. The CMFRI linked Gujarat's fall mainly to storms and longer fishing bans. A warmer ocean could make such swings sharper. Predictability matters because fish gain value after they leave the boat. The CMFRI valued the 2025 catch at Rs 69,254 crore at the harbour and Rs 97,702 crore at retail. The difference, over Rs 28,000 crore, supports auctioneers, transporters, cold-storage operators, processors and retailers, each planning around how much fish will arrive, and when. A late or unexpected catch forces costly changes along this chain, so losses can mount even when national output holds steady.

The costs are unevenly distributed. Fishers may face erratic earnings, longer trips, and higher fuel expenses. Consumers could face higher prices or reduced availability of affordable fish

such as sardines and mackerel. Traders and transporters may need to change routes and schedules, while processors risk inconsistent supplies and underused capacity. For small-scale fishers with limited savings, even temporary disruptions can threaten household income.

The damage would not stop at the household level. Many of India's roughly 12 lakh marine fishing families borrow from traders against future catches, and a string of unpredictable seasons can deepen that debt, cut spending in coastal towns and raise the government's relief bill. Fish also moves across the country: West Bengal, a major producer, still brought in 1.22 lakh tonnes from other states in 2024-25, so a poor season in one region can lift prices in another. After an El Niño-hit monsoon that ended nearly 13 per cent below normal, the weakest since 2015, costlier fish can also add to food inflation.

Seafood exports need to be read separately. Exports reached Rs 73,890 crore in 2025-26, with frozen shrimp contributing Rs 49,038 crore, or 66.5 per cent of export earnings in dollar terms. Since shrimp is farmed, fluctuations in wild catches do not directly imply shrimp export losses. An indirect link is possible through aquaculture feed: small pelagic fish, including oil sardines and mackerel, can be used in fishmeal production. Changes in their availability or price could affect feed costs, although this remains a potential link rather than a demonstrated effect of El Niño.

India already has monitoring and support mechanisms. The INCOIS provides ocean information and advisories, CMFRI monitors marine landings, the Fisheries Market Price Information System tracks market prices, and FishWatch reports landings and auction prices at fishing harbours. The government has also introduced a programme for 100 Climate-Resilient Coastal Fishing Villages with an outlay of Rs 200 crores. The challenge is to connect scientific warnings, market information, and local support before disruptions become costly.



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Reducing these risks begins with turning seasonal El Niño outlooks into regional projections of where fishing grounds are likely to move, when catches may arrive and which species may become scarcer, presented with an honest account of the uncertainty involved, since a forecast that overstates its precision can do as much harm as no forecast at all.

Such projections are useful only if they reach fishing harbours, cold chain operators, transporters and processors early enough for them to adjust procurement, storage and transport before losses occur. Small-scale fishers, who have the least room to absorb a bad season, will bear the heaviest burden, and forecast-linked insurance and targeted relief would allow support to reach them as catches are disrupted and operating costs rise, instead of long after their households have exhausted their savings.

India's ambitions for its Blue Economy have so far been framed largely in terms of scale. The NITI Aayog's 2025 strategy points to an 11,098-kilometre coastline and an Exclusive Economic Zone of more than two million square kilometres as the foundation of its maritime economy. The same reach, however, exposes a growing share of coastal livelihoods, food supply and export earnings to an ocean that is becoming harder to read.

Success will therefore be measured less by how much more the sea can be made to yield than by how well the economy built around it adjusts when the catch moves, arrives late or falls short. A sea that can no longer be treated as a constant calls for markets, infrastructure and public institutions designed for variability, and this year's El Niño offers India an early test of whether its own are ready. BW

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