Policy Brief: Climate-proofing Maldivian fisheries

Priority actions to strengthen fisheries and community resilience in a changing ocean

The issue

Climate change is already changing the ocean on which Maldivian fisheries depend. Rising sea temperatures, ocean acidification and declining oxygen levels affect coral reefs, fish habitats, food webs and the distribution of commercially important species. Repeated coral bleaching is reducing the complexity of reef habitats, with consequences for reef fish, baitfish and invertebrates.

These changes have implications far beyond biodiversity. Fisheries are an important source of livelihoods, food and export earnings for the Maldives. Changes in the abundance and distribution of tuna, baitfish and reef resources could increase fishing effort and costs, reduce the predictability of catches and place additional pressure on small-scale fishers and fishing communities.

Climate change is a global issue that needs universal action, however locally its impacts on Maldivian fisheries can be reduced. Healthy fish populations and intact marine habitats are better able to withstand and recover from climate-related disturbances. Fisheries management, habitat protection and ecosystem monitoring should therefore be treated as central components of climate adaptation.

What is changing?

TUNA MAY BECOME LESS PREDICTABLE

Warming and declining oxygen levels are expected to alter the vertical and horizontal distribution of tuna and other large pelagic species. Changes in prey availability may further influence where tuna occur. For Maldivian fishers, this could mean greater effort, fuel use and costs to locate schools, while changes in tuna distribution beyond the Maldives' EEZ could affect local catches.

BAITFISH FACE PRESSURES FROM BOTH CLIMATE CHANGE AND FISHING.

Coral bleaching reduces the complex reef habitat used by some baitfish, while changes in plankton productivity could affect their food supply. Howerer, research suggests that fishing pressure and changing fishing technologies may currently represent a greater immediate threat than climate change for some baitfish populations.

REEF FISHERIES FACE DOUBLE PRESSURES.

Repeated bleaching reduces reef complexity, shelter and habitat, while fishing removes important species from already stressed ecosystems. Large, commercially valuable reef fish may be particularly vulnerable as habitats deteriorate and fishing pressure increases.

INVERTEBRATE FISHERIES MAY ALSO BECOME INCREASINGLY VULNERABLE.

Ocean warming and acidification can affect the growth, reproduction and larval survival of species such as lobsters and sea cucumbers. Where adult populations are already depleted, climate impacts could further reduce their ability to recover.

What does this mean for Maldivians?

Climate-driven changes in fish distribution and abundance could require fishers to travel further, spend more time at sea and use more fuel to maintain catches. These impacts are likely to be particularly challenging for small-scale fishers with limited ability to relocate their fishing activities.

Declining or less predictable catches also have implications for food security. Greater reliance on reef fish at a time when reefs are becoming increasingly vulnerable could create a damaging cycle in which climate impacts increase fishing pressure on ecosystems already struggling to recover.

Five priorities to deliver climate resilient fisheries

1. **Keep fish populations healthy.** Strengthen implementation and enforcement of existing fisheries management measures, including catch and size restrictions where appropriate. Maintaining healthy adult spawning populations will give fisheries the greatest chance of adapting to climate-driven change.
2. **Protect critical habitats and spawning areas**. Expand effective marine protection, including no-take areas and protection of fish spawning aggregation sites, while safeguarding coral reefs, and interconnected seagrass and mangroves from avoidable local pressures. Evidence reviewed in the report indicates that well-managed reef fisheries and effective MPAs can help maintain fish biomass and recruitment following bleaching.
3. **Factor climate change into fisheries monitoring and management.** Monitor changes in catch, effort, species distribution, spawning and baitfish availability so emerging changes can be detected early. Fisheries management plans should be adaptive rather than assuming that historical patterns of abundance and distribution will continue.
4. **Strengthen the resilience of fishing communities.** Support fuel-efficient vessels, renewable energy, improved fish-finding and data systems, safer fishing practices and other innovations that can reduce the cost of adapting to changing fishing grounds. For tuna, adaptation should retain the sustainability advantages of the Maldives' traditional one-by-one fisheries.
5. **Strengthen regional cooperation on tuna.** Tuna do not remain within national boundaries. The Maldives should continue advocating through the Indian Ocean Tuna Commission for climate change to be incorporated into research, stock assessment and fisheries management, while maintaining healthy regional stocks and spawning biomass.

The policy message

The Maldives cannot prevent ocean warming, acidification or other global climate impacts through fisheries policy alone. **But it can determine how resilient its fisheries are when those impacts occur.**

Reducing overfishing, protecting critical habitats, maintaining healthy spawning populations and improving monitoring will give marine ecosystems and fishing communities greater capacity to respond to a changing ocean. Climate adaptation for fisheries should therefore not be treated as a separate agenda: **effective fisheries management and marine protection are themselves climate adaptation measures.** This reflects the literature review's conclusion that local management can strengthen resilience even though addressing the underlying drivers of climate change requires global action.

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