New data finds coral reefs from Arabian Gulf to western Arabian Sea have declined faster than any other global region, under increasingly frequent and extreme marine heatwaves

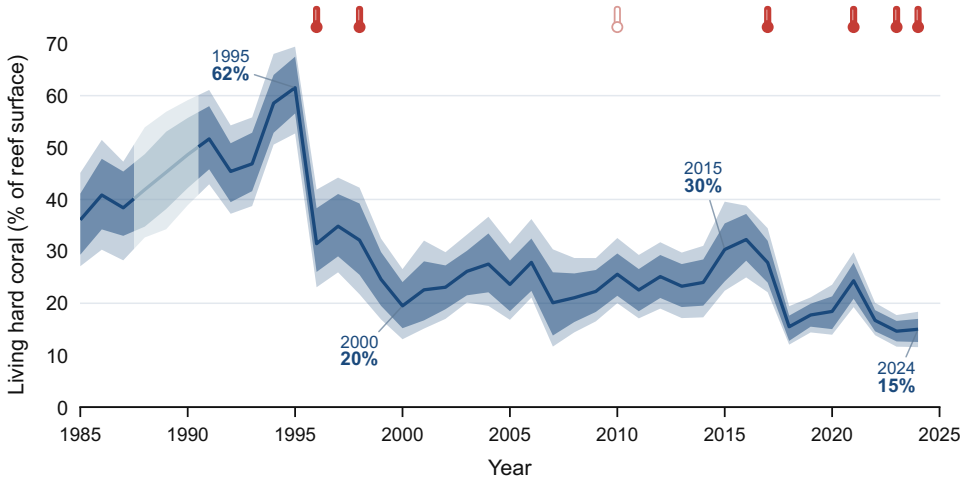
Policymakers should prioritise protecting reefs that recover more readily, along with the fish and sea urchins protecting them against algae, and limit nearby dredging and shoreline development

Private briefing prepared for regional policymakers, August 2026 by Prof. John A. Burt, Regional Reef Monitoring Coordinator for the Global Goral Reef Monitoring Program and Director of Mubadala Arabian Center for Climate and Environmental Sciences, New York University Abu Dhabi. John.Burt@nyu.edu The full report is available here.

Summary

- **Coral reefs across the Arabian Gulf, Gulf of Oman, and western Arabian Sea are at their lowest recorded level and declining faster than any other global region assessed.** Living hard coral occupied just 15% of reef surfaces across the ROPME Sea Area region in 2024, halving over the four decades since records began.
- **The decline was primarily associated with increasingly frequent and extreme marine heatwaves.** Heatwaves in the late 1990s led to severe coral bleaching and mortality, which was followed by a period of recovery. However, repeated damaging heatwaves over the past decade have left little time for recovery between disturbances.
- **Despite substantial coral loss, seaweeds are uncommon and have not yet replaced coral.** However, turf algal mats have expanded regionally, reducing opportunities for reef recovery, and many reef communities are now structurally simpler, with fewer heat-sensitive branching corals.
- **Reefs provide important socioeconomic benefits across the region – and policymakers should now prioritize protection of better performing reefs in naturally cooler locations.** Maintaining fish and sea urchins in these areas can manage algal growth and support coral recovery. Limiting dredging and shoreline development in reef adjacent areas will also help, combined with expanded data collection.

Living hard coral across the region has fallen to its lowest level in four decades



The dark line shows the regional average, while the shaded bands show the range of modelled uncertainty, with light grey shading that indicates periods with limited field observations. Thermometer symbols indicate the timing of past bleaching events (dark: severe; light: moderate).

Context

- **The Regional Organisation for the Protection of the Marine Environment (ROPME) Sea Area contains 1,808 km^2 of coral reefs** and represents the most biodiverse ecosystem in this arid region.
- **Reefs provide habitat for fishes and other marine life, support fishing and reef-based recreation** and in some areas help reduce the effects of waves on shorelines. Reefs support commercially important fish species at various stages of their life cycle.
- **These functions matter more as coastal populations, infrastructure and marine industries expand.** In 2020, approximately 3.4 million people lived within 5 km of regional reefs, more than three times the number in 2000.
- **The region's corals also have international scientific value**, because some populations are resilient to temperatures that would cause severe stress on most tropical reefs.

Key Findings & Data

- **Regional live coral has almost halved to the lowest level in the four-decade record.**
  - Average coral cover in 2020 to 2024 was almost half of what it was in 1980 to 2009 (a 48.7 per cent decline), the largest proportional decline among the ten regions assessed globally.
  - Live coral cover reached a low of 15 per cent in 2024, with no evidence of recovery.
  - The regional reef assessment draws on 862 surveys conducted between 1985 and 2024 at 379 sites in seven countries bordering the ROPME Sea Area.
- **Marine heatwaves were associated with cycles of damage and incomplete recovery.**
  - Living hard coral cover fell from 61 per cent in 1995 to 23 per cent in 2000, after marine heatwaves caused severe coral bleaching and mortality in 1996 and 1998.
  - Living coral gradually recovered above 30 per cent by 2015. Losses resumed after severe bleaching in 2017 and continued following repeated damaging heat in 2021, 2023 and 2024.
  - Damaging heat has affected parts of the region every year since 2020, which shortens the time available for reef recovery; average sea surface temperature over reefs has risen by 0.5°C since 1985.
- **Surviving reefs are structurally simpler and algae now occupy space that corals need.**
  - The recovering communities often contained more slower growing, heat-tolerant corals and fewer heat-sensitive branching corals, which left reefs structurally simpler.
  - Structurally simpler reefs provide less of the habitat that fishes and other marine life depend on.
  - Seaweeds have not replaced coral across the region, but short algal mats have expanded since 2010 and now occupy space needed by young or recovering corals.
- **The decline is concentrated in the Arabian Gulf, but some reefs continue to perform better than others.**
  - The Arabian Gulf contains 73.2% of the region's reef area and therefore largely determines the regional trend. Repeated heat stress reduced living hard coral cover in the Arabian Gulf to ~10% in 2024, the lowest of the three sub-regions.
  - By contrast, reefs in the northern Arabian Gulf and the Strait of Hormuz fared better during recent bleaching events, likely benefiting from local cooling effects from winds and water mixing.
  - The Gulf of Oman followed a different trajectory: major losses from 2007 to 2009 from cyclones and algal blooms, recovery during the 2010s, and renewed decline after bleaching in 2021. Living hard coral cover remained ~30% in 2024.
  - Southern Oman remains a major evidence gap, with insufficient monitoring to establish a reliable long-term trend.

Policy Recommendations

- Regional governments in the ROPME area should prioritise:
  1. **Identification and protection of reefs that retain more living coral, recover more readily, or benefit from natural cooling.** This includes reefs in the northern Arabian Gulf and Strait of Hormuz, where localised winds and water mixing provide some cooling.
  2. **Monitoring and maintenance of the fish and sea urchin populations that restrict algal growth.** This is critical to protecting the space that young or recovering corals need.
  3. **Reinforcing limits on dredging and shoreline development in reef-adjacent areas.** This can help reduce human activity-related drivers of coral reef decline.
  4. **Investment in expanded data collection and regional data-sharing to measure reef condition.** Long-term funding for repeated surveys at the same locations - and new measurement of fishes, sea urchins, reef structure, temperature, water quality, and people's dependence on reefs - can enhance protection across the region.