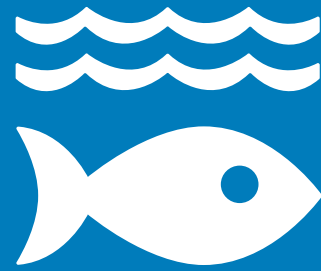EDAI
EDUCATION Ai

Conserve & use oceans, seas, marine resources sustainably

Artificial Intelligence for Life Below Water

SDG 14 faces significant challenges, with 4 out of 19 targets regressing and only one on track.

The ocean is at risk due to ocean warming, acidification, plastic pollution, over-fishing, and coastal eutrophication, endangering the livelihoods of three billion people who rely on the ocean for sustenance and income.

More than **17 million metric tons** of plastic entered the ocean in **2021**, a figure that is projected to **double or triple by 2040.**

The synergy between AI and SDG 14 is under-represented, with a limited number of documented UN use cases: 1 use case out of 40 in AI for Good: Innovate for Impact, and approximately 40 use cases out of 408 in the UN Activities on AI.

AI can be used to monitor and track the biodiversity underwater, giving scientists and governments a better understanding of the risks marine life is facing to protect it.

Additionally, AI can be used to develop new transporting solutions on water inspired by the mobility of life underwater. AI can be used to improve the monitoring of ships, which is beneficial given that approximately 80% of goods are transported by ships and could therefore benefit from new transportation approaches. Using AI to optimize routes while considering the environment, could provide important benefits for the waterways.

Similar to SDG 13, AI can be used to provide the government with new climate forecasting tools that could better plan for extreme weather events and help communities living in coastal areas to better prepare.

AI can also help robots clean the plastic from the ocean or support the discovery of oil spills.

Although there are numerous compelling use cases for SDG 14, it's important to acknowledge the potential negative impacts of AI on this goal. AI's significant water use, as shown in SDG 6, and its potential to increase the fishing industry's productivity, can exacerbate overfishing, are key concerns. However, AI can also be employed to monitor and limit overfishing, provided there is international collaboration to prevent actors from benefiting.

Key Considerations for Stakeholders

- **International collaboration:** Alignment of good practices around AI is important to make sure that all actors can collaborate.

- **Technology improvement:** Reducing energy consumption is imperative to support the development of SDG 14, hence technologies with less energy requirements should be prioritized.

Impact

AI could act as an (positive) enabler for 90% of the SDG 14 targets and act as an inhibitor (negative) for 30% of the targets.

Use case 1

Monitoring biodiversity underwater using AI to give governments and organizations a tool to better protect it.
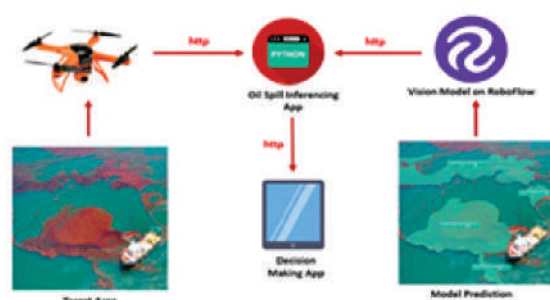

Use case 2

Leveraging AI to develop a new transporting approach inspired by underwater biodiversity.
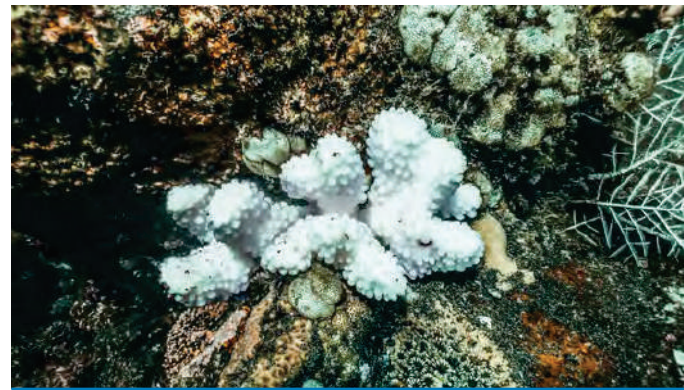

Use case 3

Using AI to identify oil spills or leakages early, to minimize the risks of a damaging oil spill.

14 LIFE BELOW WATER

Life below water

A group of bleached corals in a reef in Indonesia. Record high ocean temperatures have triggered a fourth global coral bleaching event.

- Oceans face significant challenges from eutrophication, worsening acidification, declining fish stocks, rising temperatures and widespread pollution. All these factors destroy habitats, diminish biodiversity and threaten coastal communities and the health of marine ecosystems, vital to over 3 billion people.

- Efforts to address these mounting concerns remain uneven. Key actions include implementing sustainable fishing practices, expanding marine protected areas to safeguard key biodiversity areas, increasing capacities to monitor ocean health and addressing the pollution that is choking waterways.

- Comprehensive global action is under way, yet it must accelerate. Priorities include ensuring that the Agreement on Fisheries Subsidies enters into force as soon as possible; increasing participation in the Agreement on Port State Measures to combat illegal, unreported and unregulated fishing; adopting a global plastic pollution instrument; and ensuring that the Agreement on Marine Biodiversity of Areas Beyond National Jurisdiction enters into force as soon as possible to ensure the long-term health and sustainability of oceans.

Overfishing, pollution, climate change and poor management drive continued declines in fish stocks

The sustainability of global fishery resources declined from 90.0 per cent in 1974 to 64.6 per cent in 2019 and further to 62.3 per cent in 2021, due to overfishing, pollution, poor management and other factors. Fish stocks within biologically sustainable levels, however, comprised around 76.9 per cent of global marine fish landings in 2021. Averaging 80 million tons annually, global marine fish landings have remained relatively stable since 1995.
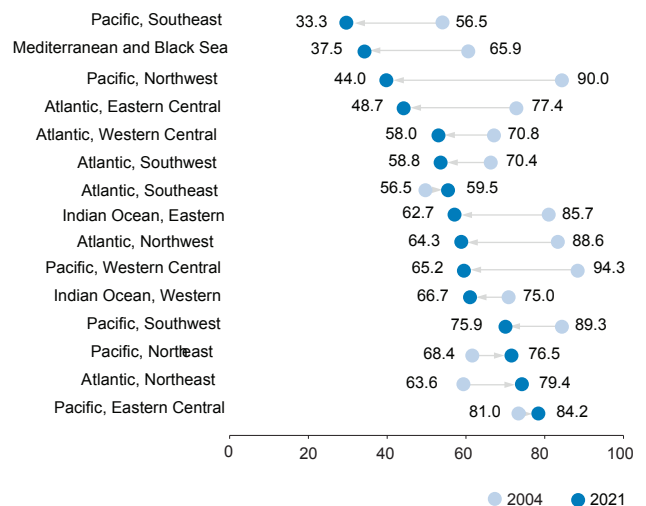
Overfishing can harm biodiversity, ecosystems and fisheries production, and imposes adverse social and economic costs. Effective fisheries management can possibly reverse these effects (if they are driven by overfishing and not factors such as habitat degradation, pollution or climate change) and lead to optimal stock levels while supporting global food security and coastal communities.

Proportion of fish stocks within biologically sustainable and biologically unsustainable levels, 1974–2021 (percentage)
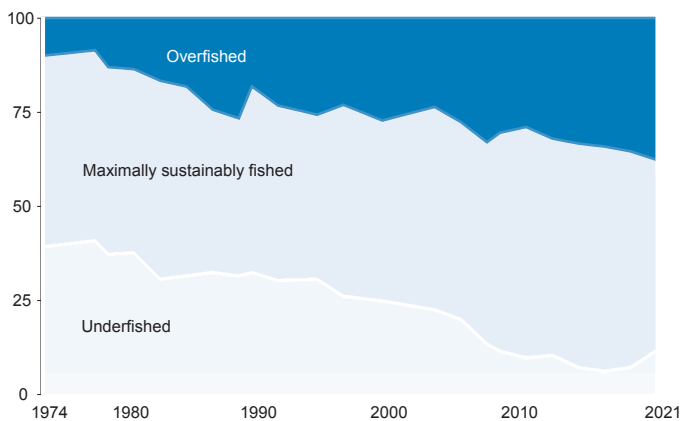
Note: Underfished and maximally sustainably fished stocks are considered within biologically sustainable levels. Overfished stocks are considered at biologically unsustainable levels.

Proportion of fish stocks within biologically sustainable levels, by marine region, 2004 and 2021 (percentage)

Marine region	2004	2021
Pacific, Southeast	33.3	56.5
Mediterranean and Black Sea	37.5	65.9
Pacific, Northwest	44.0	90.0
Atlantic, Eastern Central	48.7	77.4
Atlantic, Western Central	58.0	70.8
Atlantic, Southwest	58.8	70.4
Atlantic, Southeast	56.5	59.5
Indian Ocean, Eastern	62.7	85.7
Atlantic, Northwest	64.3	88.6
Pacific, Western Central	65.2	94.3
Indian Ocean, Western	66.7	75.0
Pacific, Southwest	75.9	89.3
Pacific, Northeast	68.4	76.5
Atlantic, Northeast	63.6	79.4
Pacific, Eastern Central	81.0	84.2

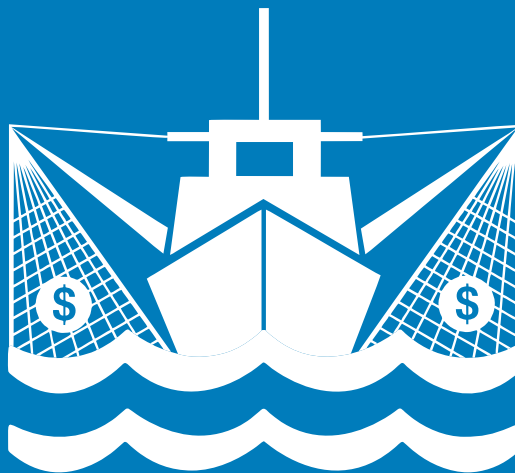## Record-high ocean temperatures have triggered a fourth global coral bleaching event

Rising ocean temperatures are raising new concerns for coral reefs, which support a quarter of marine species, provide resources for hundreds of millions of people in coastal communities and generate trillions of dollars in revenue annually. According to the World Meteorological Organization, as of April 2024, sea surface temperatures had reached record highs for 13 consecutive months. In 2023, ocean heat content soared to its highest level in 65 years; over 90 per cent of the ocean experienced heatwave conditions at some point during the year. The National Oceanic and Atmospheric Administration confirms the world is currently experiencing its fourth global coral bleaching event, the second in a decade. Bleaching has been observed in 53 countries and territories.

These included regions throughout the tropics, the Great Barrier Reef, large parts of the South Pacific, and the Atlantic and Indian ocean basins.

As oceans continue to warm amid rising global temperatures, the frequency and severity of coral bleaching will likely increase. The Intergovernmental Panel on Climate Change warns that up to 90 per cent of corals could be lost by 2050 at 1.5°C of warming and up to 99 per cent at 2°C.

The survival of coral reefs is vital for ocean health and humanity's well-being.

Global Youth AI Advisory Body