

Newsletter June 2026

The ocean produces roughly half of the Earth's oxygen

By Space Daily Editorial Team – 22 June 2026



The ocean, not the rainforest, is responsible for roughly half of the planet's oxygen production, thanks to photosynthesis by vast populations of phytoplankton. These microscopic organisms — often more than a million per teaspoon of seawater — form an “invisible forest” across the sunlit ocean surface. Among them, *Prochlorococcus*, the smallest known photosynthetic organism, is so abundant it may generate up to a fifth of all oxygen produced on Earth, outpacing even the world's tropical rainforests.

But the familiar claim that ecosystems like the Amazon act as the “lungs of the Earth” is misleading. Mature forests consume nearly all the oxygen they produce through plant, animal, and microbial respiration. Their net contribution to atmospheric oxygen is close to zero. The same is true for the ocean: while marine photosynthesis produces enormous amounts of oxygen, marine life consumes almost the same amount. The oxygen we breathe today is not freshly made — it accumulated over hundreds of millions of years as small amounts of carbon were buried rather than respired back into the atmosphere.

This distinction matters. If phytoplankton disappeared tomorrow, the immediate catastrophe would be the collapse of marine food webs and the carbon cycle, not a sudden loss of breathable air. Earth's atmospheric oxygen reservoir would persist for a very long time. What scientists track instead is how phytoplankton communities shift, bloom, and decline — patterns that shape global carbon flows and marine ecosystems.

Because the ocean cannot be sampled directly at global scale, scientists rely on satellites to monitor this “invisible forest.” Instruments such as NASA's new PACE mission can distinguish different phytoplankton communities from orbit, revealing how species composition and productivity change as the ocean warms. These insights not only refine our understanding of Earth's oxygen cycle but also inform how we might interpret oxygen as a biosignature on distant planets — a reminder that even a seemingly simple metric can hide a complex story.

To read unedited original version of this article go to:

<https://spacedaily.com/t-the-ocean-produces-roughly-half-of-earths-oxygen-not-the-rainforest-which-uses-up-most-of-what-it-makes-through-photosynthesis-by-phytoplankton-microscopic-marine-organi/>

None of 17 UN SDGs on Track to Be Achieved By 2030, Report Finds



2026 marks 11 years since the adoption of the United Nations Sustainable Development Goals (SDGs), 17 goals and 169 targets to ensure human well-being, economic prosperity and environmental protection simultaneously.

More than a decade after world nations agreed on a set of goals to guide global sustainable development, progress remains “significantly off track,” according to a new analysis.

Compiled by the Sustainable Development Solutions Network (SDSN) and now in its eleventh edition, the report found that none of the Sustainable Development Goals (SDGs) is on track to be achieved by 2030, with only 16% of targets on course and 16% worsening.

Globally, SDG 11 (Sustainable Cities and Communities), SDG 14 (Life Below Water), SDG 15 (Life on Land) and SDG 16 (Peace, Justice and Strong Institutions) are particularly off track, with major challenges and stagnation in progress since 2015.

Adopted by all UN member states in 2015, the SDGs comprise 17 goals and 169 targets providing a footprint for a global partnership between developed and developing countries to achieve economic prosperity, environmental protections and to safeguard the well-being of people around the world.

Figure 2.1
World SDG Dashboard 2026



Source: Authors

The report, which tracks and ranks the performance of all UN member states on the SDGs, found that global averages mask stark disparities across regions and countries. Structural vulnerabilities as well as limited financing and investments are hindering progress, particularly in emerging and developing economies.

19 of the top 20 countries leading in SDG progress are European, with Nordic countries – Finland, followed by Sweden and Denmark – topping the ranking, in line with previous years. But even among the top performers, challenges are hindering the achievement of goals related to responsible consumption and production, climate action and the environment.

East and South Asian countries have recorded the strongest SDG progress since 2015, while India and China were among the major economies showing the largest rank improvements, according to the report.

Barbados once again topped an index tracking commitment to UN multilateralism, followed by Antigua and Barbuda, then Uruguay, Trinidad and Tobago, the Maldives, Jamaica, Mauritius, Chile, the Philippines, and Malaysia. The US ranked last for the third year in a row.

Under President Donald Trump, [the US withdrew from 66 international bodies, conventions and treaties](#), including key climate treaties like [the Paris Agreement](#) and the [Intergovernmental Panel on Climate Change](#). The administration also [openly opposed](#) the SDGs and the 2030 Agenda. Last year, then US representative to the UN Edward Heartney said during a UN General Assembly plenary meeting that the 2030 Agenda “advance[s] a program of soft global governance that is inconsistent with US sovereignty and adverse to the rights and interests of Americans.”

The report assesses over 100 indicators – from neonatal mortality to literacy rates, traffic deaths and daily smokers – using a blend of data sources. Two-thirds come from rigorous international bodies like the World Bank, the OECD, and the UN. The

remaining third is pulled from household surveys, civil society datasets such as Oxfam and Reporters Without Borders, peer-reviewed journals, and GIS tracking. Due to insufficient data, 24 countries were excluded from this year's index.

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