Alternative energy solutions

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With climate extremes dominating the global news cycle in 2023, from record heat both on land and at sea to devastating wildfires and floods around the world, the need to address climate change is more apparent and urgent than ever.

New research commissioned by the High Level Panel for a Sustainable Ocean Economy (Ocean Panel) shows that ocean-based climate solutions can deliver up to 35% of the annual greenhouse gas emission cuts needed in 2050 to limit global temperature rise to 1.5 degrees C (2.7 degrees F) -- the threshold scientists say is necessary to avert the worst outcomes from climate change. This represents a significant increase from previous estimates, which put the ocean"s potential emissions reductions at around 21% of the total needed by 2050.

This research is based on solutions that are ready to implement and economically viable today. But while investments in a sustainable ocean economy are seen to be profitable -- with data showing that investing $1 in key ocean actions can yield at least $5 in global benefits, often more, over the next 30 years -- finance for these solutions has largely been lacking to date. Countries must substantially increase investments in the necessary technology and infrastructure if we are to take full advantage of the ocean"s ability to help tackle the climate crisis.

Ocean-based renewable energy is a major area of opportunity with ready-to-implement solutions -- including offshore wind as well as floating solar and tidal power -- which could slash greenhouse gas emissions by up to 3.60 gigatonnes per year in 2050. That"s more than the total combined emissions for all 27 EU member states in 2021. Increasing deployment of renewables will also be critical to meeting global energy demand as the world works to phase out coal and other fossil-based energy sources.

Currently, the international shipping industry carries about 80% ?of the world"s trade between nations; if counted as a country, it would be among the world"s top-10 largest emitters. In a bid to align more closely with global climate goals, the International Maritime Organization (IMO) recently revised its emissions-reduction strategy, setting a target to reach net zero "by or around" 2050 according to "national circumstances."

While some progress has been made toward decarbonizing ocean-based transport over the last decade -- primarily through energy efficiency measures such as redesigning and refurbishing ships to reduce fuel use and lower emissions -- meeting the sector"s net-zero goals will require much more investment in both existing and emerging low-carbon shipping solutions.

Healthy "blue carbon" ecosystems such as mangrove forests, seagrass meadows and tidal marshes are powerful carbon sinks that can store up to 5 times more carbon per area than tropical forests and absorb it

from the atmosphere about 3 times as quickly. This makes them an important -- though often overlooked -- ally in tackling the climate crisis.

Beyond their ability to remove and store carbon from the atmosphere, these ecosystems also offer myriad co-benefits that can support sustainable development and climate resilience, particularly in vulnerable coastal areas. They sustain economies through fisheries and tourism, provide crucial habitat for diverse marine species and help enhance freshwater quality, all while buffering coastal communities from the impacts of increasingly extreme weather events like cyclones.

However, blue carbon ecosystems are disappearing at a rapid pace, driven by the "coastal squeeze" between climate-driven impacts (including sea level rise and extreme weather events) and development of coastal areas. Action to address and reverse this degradation has been woefully inadequate to date.

Enhanced efforts to conserve, restore and sustainably manage blue carbon ecosystems can contribute significantly to global climate targets -- removing greenhouse gas emissions equivalent to 76 coal-fired power plants per year in 2050 -- while also helping achieve the goals of the Convention on Biological Diversity (including 30 by 30) and the UN"s Sustainable Development Goals.

As the global population rises, so, too, will the need food and protein sources. The ocean can play a key role in meeting this need with a wide range of sustainable seafoods -- such as algae, fish and invertebrates like shellfish -- which are less land intensive and require fewer resources to produce than options like beef and lamb. Incorporating these "blue" foods into global diets not only diversifies protein choices but could also reduce global emissions by up to 1.47 gigatonnes per year in 2050, comparable to removing 393 coal fired power plants annually.

However, while these foods are common in some cultures, awareness and use of them remains limited at a global scale and prices are sometimes prohibitively high for consumers. More must be done by governments and industry to raise awareness, send clear policy signals (such as subsidizing these foods) and invest in an enabling environment to take advantage of this opportunity.

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