Coral reefs around the world have suffered from 3 years of coral bleaching, following three decades of record high temperatures. It is now clear that coral reefs cannot survive, unchanged, under climate change. Their final state will depend not only on societal conviction to restore coral health but also on the ability to sustain investments and action that support this commitment.

For the past 50 years, warnings of anthropogenic climate change and evidence of the impacts of increasing populations, resource consumption, and energy use worldwide went largely unheeded. During this time, local impacts were transformed into global ones. But in the past 2 years, world leaders signaled a sea change by signing the Paris Agreement and by adopting the United Nations Sustainable Development Goals (SDGs). The Paris Agreement’s target of less than 2°C increase in global temperatures provides the only chance for coral reef survival. If the agreement is fully implemented, temperatures will eventually decline, improving conditions for surviving reef corals and for reef rescue.

But although the Paris Agreement and the environmental and social SDGs build on existing conventions and commitments, the economic SDGs run against mainstream trade, finance, and corporate interests. Most businesses implement linear rather than circular economy practices, the waste emitted (carbon dioxide and other pollution) being among the prime drivers behind reef decline. Therefore, transforming economic systems to become sustainable and circular, such as in the new European Union policy, is the top priority, because this will minimize waste and bring micro- to macroeconomic practices and policies in line with the economic SDGs.

To motivate this change, a necessary but not sufficient step is to measure the many benefits that humanity receives from coral reefs: coastal protection, food security, and alleviation of poverty for more than 500 million people. For tropical countries, reefs may be the prime national asset for the biggest global economic sector, tourism. These benefits are not formally recognized, so we have been paying only a fraction of the bill for the services that coral reefs provide. It is time to invest in sustaining and restoring reefs as major assets. Adapting financial instruments to support this investment is a vital first step and would signal the transformation in awareness of the value of reefs.

In addition, reef protection requires action on an unprecedented scale. Grassroots and large-scale conservation initiatives throughout the tropics are aligning community interests, businesses, and governments to preserve reef health as an asset. These are necessarily long-term efforts, but they are at constant threat from short-term business and political interests. More often than not, the latter have won. Research at the frontiers of biology—such as accelerating genetic selection toward heat-resistant corals and exploring mesophotic reef systems as potential refuges from warming—will hopefully lead to effective restoration solutions. But any benefits will likely only apply to some coral species and some locations.

Support and expansion of conservation efforts in all ocean basins are urgently needed, but they may only succeed if temperatures stabilize under low greenhouse gas emission scenarios. Two things will eliminate any chance for coral reef survival: not dealing with nonclimate stresses that erode reef resilience, and runaway warming above 2°C. If these occur, it is virtually certain that major reef systems will not survive in the Anthropocene.

The condition of coral reefs in coming years will be a clear indicator of our ability to transform the policy and practices highlighted above. These transformations will be good for planetary health and sustainability as a whole, so the benefits from collective action to save coral reefs will be shared across the planet.

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Refilling the coral reef glass
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