# Can the coral reefs still be saved?


„Even the achievement of emission reduction targets consistent with the ambitious 1.5°C global warming target under the Paris Accord will result in a further loss of 70-90% of reef-forming corals compared to today, while a warming of 2°C or more compared to pre-industrial levels will result in the loss of 99% of corals“.

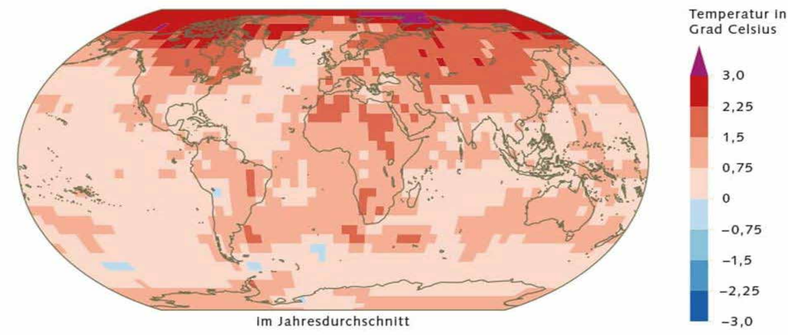
Source: IPCC SR1.5 (2018), Box 3.4, S. 230

„2014-2017 was an unprecedented period of consecutive years of record temperatures, with the most severe and prolonged global
coral bleaching event, coincided with the largest expansion ever recorded. The Global
Coral Bleaching Event (GCBE) 2014 2017 resulted in very high coral mortality on many reefs, accelerated dissolution of reef structures and other far-reaching environmental impacts“.

Source: Coral Reefs (2019) 38 : 539–545

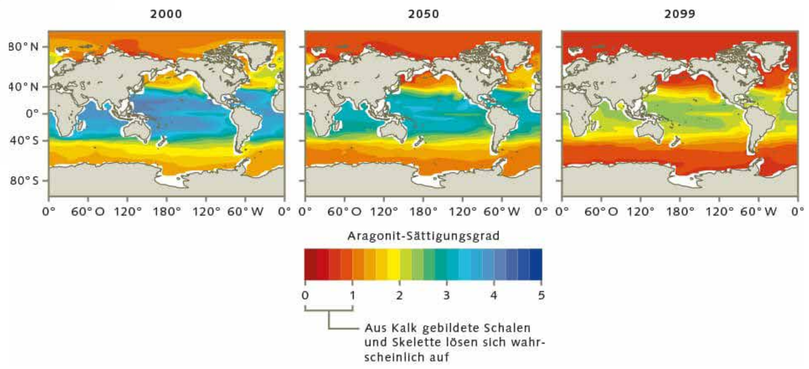
## Global warming

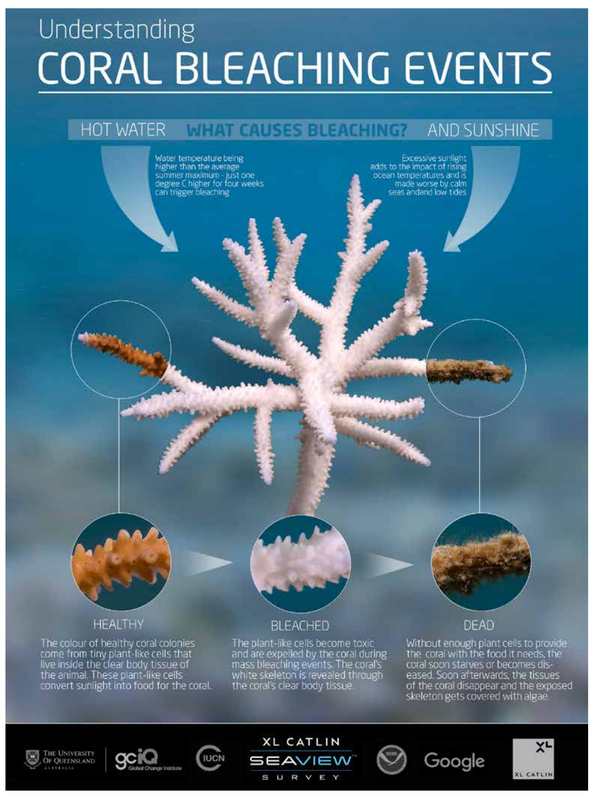
The ocean acts as a huge buffer in the Earth‘s climate system. It absorbs gases and also thermal energy from the atmosphere and thus slows down changes in the Earth‘s overall system. The oceans absorb 90 percent of the additional thermal energy that is generated in the atmosphere as a result of rising greenhouse concentrations.



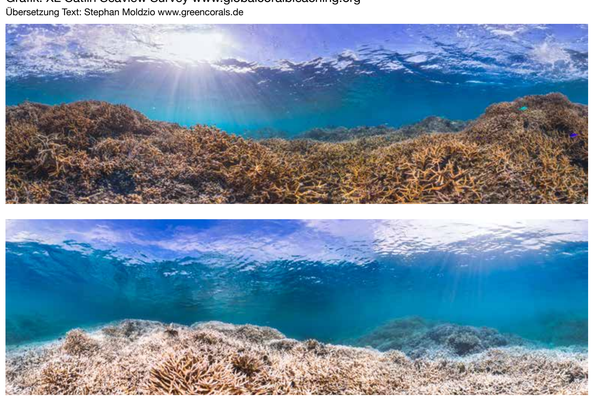

## Ocean Acidification

When CO2 reacts with water and forms carbonic acid, the pH value and thus the lime saturation drops - the sea becomes acidic. This makes it more difficult for calcifying marine organisms such as corals, winged snails or coccolithophores to build up their calcifying skeletons. Calcification decreases - on the other hand, erosion increases.




Grafik: XL Catlin Seaview Survey www.globalcoralbleaching.org
Übersetzung Text: Stephan Moldzio www.greencorals.de



Fotos: XL Catlin Seaview Survey www.globalcoralbleaching.org

In a severe coral bleaching event, most of the coral on a reef can bleach out and die within a few weeks.

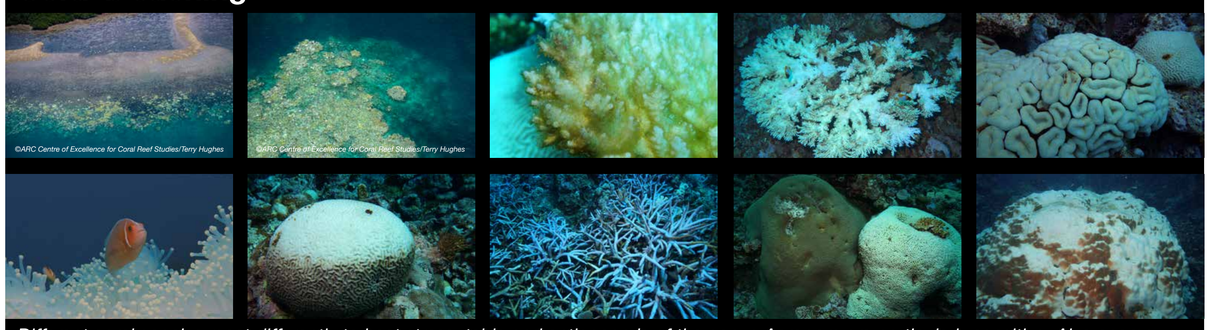
The coral reefs, one of the most species-rich and complex ecosystems on earth, are already being challenged in their existence by global warming and ocean acidification in this century. Already with today‘s global warming of about 1°C we are experiencing worldwide
Coral bleaching, widespread reef death, a dramatic decrease in coral cover and a decline in biodiversity. The coral bleaching events are becoming more severe and occur at shorter intervals - the time for regeneration is getting shorter and shorter.
Ocean acidification reduces calcification and increases erosion processes. Due to the combination of global warming and local influences such as overfishing, over-fertilization, pollution or mechanical destruction, 33% to 50% of coral reefs have already been largely or even completely degraded during the last decades.
Although coral reefs cover only about 0.15% of the area of the oceans, they are home to over 25% of marine biodiversity. Several hundred million people worldwide depend on coral reefs.
Already in October 2015, in the run-up to the Paris Climate Conference, the International Society for Reef Studies (ISRS) warned of the accelerated decline of coral reefs and of a biodiversity catastrophe. The community of states was called upon not to let the CO2 concentration in the atmosphere exceed 450 ppm and to reduce it again to 350 ppm in the long term.

It is not too late and we can still stop the decline. To see the fascinating
To preserve coral reefs for future generations, fossil energy production in the
will be terminated in the next few years and converted to 100% renewable energies and a sustainable, resource-saving recycling economy. Coal, oil and gas must remain in the ground!

## Healthy coral reef

*An intact coral reef has a high coral cover, productivity and biodiversity. The large number of interactions between the different organisms makes them highly resistant to natural disturbances, such as storms. Large fish and top predators are numerous and have a high biomass.*

## Coral bleaching




*Different coral species react differently to heat stress, table and antler corals of the genus Acropora are particularly sensitive. Also anemones can bleach out. Zooxanthellae are first ejected at the upper, light-exposed areas, shaded areas may survive.*

## Recovery after coral bleaching



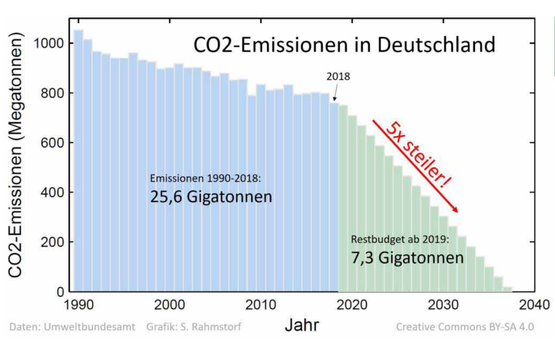
*After a coral bleaching the reef can recover: Only moderately or partially bleached corals can partially survive, recover their zooxanthellae and „grow back“ from the more shady areas. Coral larvae can settle and after a few years form new coral colonies..*

## Erosion

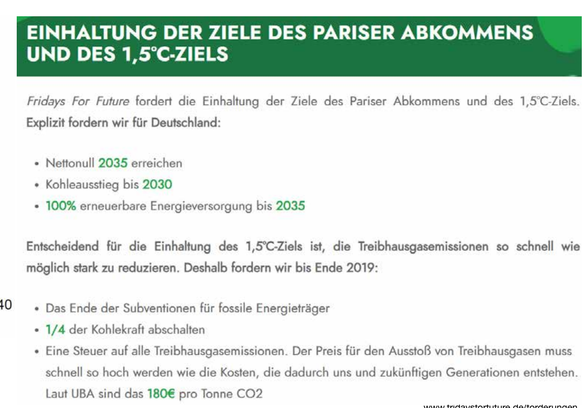
*When mechanical and biological erosion processes exceed the calcification of corals and other calcifying organisms, one speaks of „negative reef growth“ - the existing coral rock is eroded over time.*

## Degraded coral reef

*The decrease in coral cover and biodiversity is accompanied by the dissolution of the 3-dimensional reef structures. The species-rich, pulsating coral reef loses its ecosystem functions and turns into a „rocky coast ecosystem“ with a much lower valence.*




*The German government is slowing down the expansion of renewable energies and failing to meet its own inadequate climate targets.*





*With more pressure on politics and business, the urgently needed, rapid energy turnaround can still succeed.*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