SYNTHETIC BIOLOGY: Restoring the Great Barrier Reef

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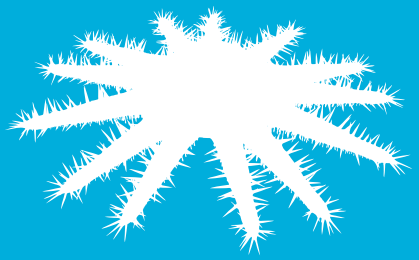
The Great Barrier Reef (GBR) in Australia is continuing to experience significant loss of coral, due to damage from:

Tropical cyclones



Crown-of-thorns starfish (which eat coral)

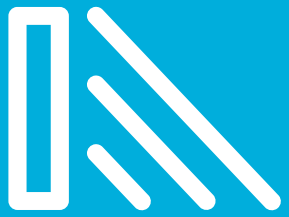
And high sea-surface temperatures (leading to recent mass coral bleaching events)

The loss of coral reef is a threat to fish and other marine animals that rely on coral for habitat and food.

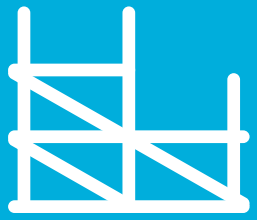
Damage to the Great Barrier Reef could also negatively impact fishers, tourist operators and others who depend on the reef for their livelihood.

Currently, manual methods are being used to protect the Reef from bleaching, such as:

Manually restoring corals (farming)



Shading and cooling techniques



Reef structures and stabilisation

Probiotics to enhance survival during bleaching events

But these methods are not keeping up with the rate or scale of coral reef loss.

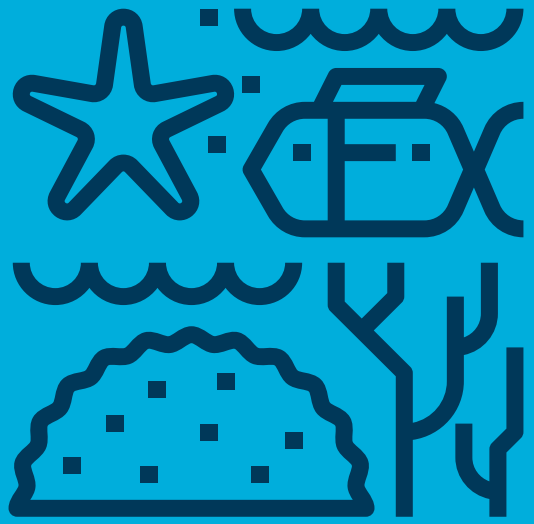
These methods are also labour-intensive, expensive and small-scale.

With new synthetic biology technology, it may be possible to genetically engineer existing coral species on the Great Barrier Reef to make them more tolerant to higher sea-surface temperatures.

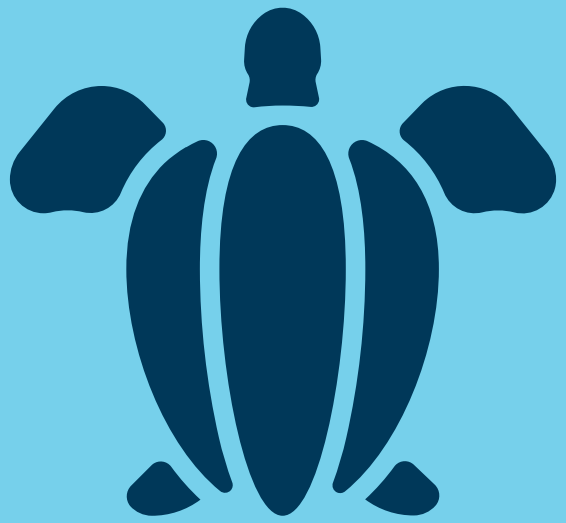
This would help reduce the likelihood of coral bleaching.

Lost or damaged coral in the Great Barrier Reef could be replaced with more resilient coral, potentially halting the rate of coral decline.

This could help to...

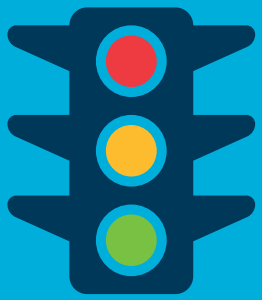


...restore coral habitat for fish...



...and other marine animals...

...and benefit local industries.



This technology would likely be approved and/or regulated by:

The **Office of the Gene Technology Regulator**

The **Environment Protection and Biodiversity Conservation Act**

The Great Barrier Reef Marine Park Authority

The State-based **Department of Fisheries**

Together these regulatory bodies and standards would ensure that:

- The research and development occurs under controlled laboratory conditions, and
- Any environmental, ecological and health risks or concerns are properly reviewed and addressed.

Australian residents like you may have the opportunity to ....

- Take part in public events where scientists share their research on the technology
- Participate in online or face-to-face discussions to ask questions and share your thoughts about the technology
- Sign up to receive regular updates on the technology development