

**THE GREAT BARRIER REEF: VULNERABILITIES AND SOLUTIONS
FOR FUTURE EXISTENCE**

The Great Barrier Reef is Australia's unique living icon. This ecosystem has been World Heritage-listed for 40 years due to its "enormous scientific and intrinsic importance". Stretching over 2,300 km off Australia's north-east coast, it is made up of about 3,000 individual reefs and is home to over 400 types of coral, about 1,500 species of fish, and endangered creatures. Yet, everything is not as perfect as it looks like. Global warming has already led to the reef losing half its coral since 1995. Since the backbone of the reef is highly sensitive to sea temperatures, the reefs can die if waters get too warm. Scientists warn the Great Barrier Reef is on the brink of breaking down. In 2019, Australia downgraded the reef's long-term outlook to "very poor".

Nowadays scientists discuss the potential economic consequences of losses to coral reef fisheries, coastal protection and tourism. For instance, reef users could also turn to other ecosystems that could provide similar services. Regions like the GBR where most people do not rely on the reef as primary source of food, and where there are more options to adapt, would tend to be less vulnerable and more resilient to change.

Several studies have tried to assess the economic contribution of coral reefs to tourism. As with the economic contribution of GBR fisheries, not all tourism to the GBR region can be attributed to coral reefs. Some tourists may come simply to enjoy beach or water features that would occur regardless of coral reef existence. Studies and reports have indeed attempted to isolate estimates of reef-related tourist expenditures from the broader category of GBR tourism expenditures. Annual reef-related expenditure estimates range from AU \$480 million (2012) to over US \$2 billion (2013).

Australia's government has already taken measures including efforts to kill crown-of-thorns starfish and paying farmers to reduce their agricultural run-off. But critics said this package did nothing to address the main threat of climate change. Australians want their children and future generations to be able to visit the GBR and enjoy it. This desire is supported by a sense of the morality in guaranteeing the future health of the GBR and an acknowledgement of the GBR's importance to the planet and biodiversity.

While the evidence for adverse effects of climate change on corals and coral reef ecosystems grows, the challenge remains to project what these effects will mean for human communities depending on the reefs. The estimation of future losses in economic and societal value of coral reefs is complicated by the

uncertainty associated with projections of human behaviour in response to degradation of coral reefs. Climate change remains the greatest threat for one of the most biodiverse ecosystems in the world. People have to move away from using fossil fuels. As one of the world's largest fossil fuel exporters, Australia continues to champion the use of coal, gas and oil. It lobbied against UNESCO listing the reef as “in danger”. And Queensland – the reef's home – has one of the world's most intensive coal-mining industries. So Australia’s government should really reconsider its policy on such a problematic issue and contribute to finding other possible solutions for the future existence of the Reef.