CASE STUDY –

Australia's Great Barrier Reef

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The Great Barrier Reef

Australia's Great Barrier Reef is a World Heritage site

– the only natural wonder you can see from space.

– made up of more than 3000 coral reefs and 1000 islands.

– temperate weather all year round, clear blue, green, and turquoise ocean waters, white sandy beaches and lush rainforest islands are a big tourist attraction for scuba diving, snorkelling, swimming, surfing, sailing, bird watching, etc.

What is a coral reef?

Coral reefs form in shallow waters - upto 25 m deep, at temperatures of 20-28 ^{0}C.

Reefs grow faster in clear water that allows sunlight to penetrate.

A coral reef is made up of millions of coral polyps. These are tiny animals, but they contain plants called algae. The algae convert sunlight into energy for the reef and the reef derives its vibrant colours from the algae.

The coral polyps make hard calcium carbonate which builds up over thousands of years to form reefs.

Coral reefs are the most biodiverse habitats in the oceans, and like the trees of a rainforest, the coral structures provide the structure of the ecosystem, within which other plants and animals live.

Threat 1:

Climate Change

– Rising ocean temperatures, causes the delicate coral to experience “heat stress” and to discard the algae.

With the algae gone, the coral is deprived of its food source. The coral starves and its coloured tissue turns transparent – this is called “coral bleaching”. If the temperature, returns to normal within a couple of months, the coral can recover. If not, the coral starts to die.

Remedy:

Reduce global greenhouse gas emissions asap.

Threat 2:

Industry

– Bigger and bigger cargo and cruise ships have begun operating in the shallow channels. Port expansions are widening and deepening the channels.
The sediments released during port expansion projects, block out the sunlight that the algae depend on for photosynthesis. With less food being photosynthesised, the coral begins starving.

– Ships take shortcuts through the reef releasing exhausts and sometimes, leak oils into the water. The oils block the pores on the coral reefs choking them to death.

Remedy:

Develop strict standards for development in the Great Barrier Reef area
Prepare an Emergency Response Plan for shipping disasters
Assess environmental impacts of development
Introduce harsh penalties for breaching environmental standards

Threat 3:

Water Quality

– Rivers from Queensland release water around the reef

The river water brings

- agricultural run-off (containing fertilisers and pesticides)
- effluents from the coal mines and copper mines
- sediments from port expansions

This water pollution is toxic to the coral reef .

Fish - e.g. the crown-of-thorns starfish - that can tolerate the high levels of toxicity are now increasing in number. These deadly fish feed on the coral.

Remedy:

Monitor water quality regularly

Treat agricultural run-off and mining run-off before release into the rivers.

Get rid of the crown-of-thorns starfish.

What's being done:

The Australian Government has appointed the **Great Barrier Reef Marine Park Authority** to:

– run the Great Barrier Reef Marine Park
– begin work on a 25-year plan to restore and conserve the Great Barrier Reef