Geography · GS - I

Assess the impact of global warming on the coral life system with examples.

EXAM YEAR	PAPER	SUBJECT
2019	GS - I	Geography

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Rising sea temperatures; coral bleaching; ocean acidification; marine biodiversity; reef degradation; coastal livelihoods; extreme weather; adaptation and conservation

Model Answer

Introduction

Coral reefs are highly diverse marine ecosystems that provide habitats for numerous species, protect coastlines and support fisheries and tourism. Global warming threatens their survival through rising ocean temperatures, acidification and increasingly severe marine heatwaves.

Impacts of Global Warming

- **Coral bleaching:** Elevated sea temperatures cause corals to expel symbiotic algae called zooxanthellae, turning them white and depriving them of an important source of energy. Prolonged bleaching can cause mortality.
- **Ocean acidification:** Oceans absorb atmospheric carbon dioxide, lowering seawater pH and reducing carbonate availability. This makes it harder for corals to build and maintain calcium carbonate skeletons.
- **Biodiversity loss:** Coral mortality destroys habitats and disrupts food webs, threatening reef-associated fish, molluscs and other organisms.
- **Coastal vulnerability:** Degraded reefs lose their capacity to dissipate wave energy, increasing coastal erosion and exposure to storms.

- **Livelihood impacts:** Fishing communities and tourism-dependent economies suffer from declining fish populations and damaged reef attractions.

Examples

The Great Barrier Reef in Australia has experienced repeated mass bleaching events. India's coral ecosystems in the Gulf of Mannar, Gulf of Kachchh and Lakshadweep are also vulnerable to warming and other environmental pressures.

Conclusion

Coral conservation requires rapid reductions in greenhouse-gas emissions, protection of reef habitats, control of pollution and sustainable fisheries. Local conservation can improve resilience, but long-term survival ultimately depends on limiting global warming.

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