KAGZI · ORIGINAL STUDY SERIES

STUDY BOOK 06 · ENGLISH EDITION

Environment and Ecology

Ecosystems, Biodiversity and Climate

Initial English Edition · 7 November 2026

Initial edition · Chapter-wise expansion in progress

For UPPSC / UPSSSC, UPSC, SSC and Railway examination preparation.
This is an initial, chapter-wise edition. It does not claim to cover the complete syllabus. Check changing administrative and current-affairs facts against official sources before an examination.

About this book

Environmental studies examine relationships among organisms, their physical surroundings, energy flow and the conservation of natural resources.

Chapter 01 · Basic Concepts of an Ecosystem

Learning objective: *Understand basic concepts, identify key terms and answer factual as well as conceptual examination questions.*

1. Ecosystem

An ecosystem is a functional unit formed by interactions between a community of organisms and its abiotic environment. Biotic components include producers, consumers and decomposers. Abiotic components include light, water, air, soil and temperature.

2. Food Chains and Food Webs

A food chain transfers energy from one trophic level to another. Multiple interconnected food chains form a food web. Energy flow is generally unidirectional, and the amount of available energy decreases at each successive trophic level.

3. Biodiversity

Biodiversity includes diversity at genetic, species and ecosystem levels. Major threats include habitat destruction, pollution, overexploitation, invasive alien species and climate change. Conservation approaches include national parks, wildlife sanctuaries, biosphere reserves and community-based conservation.

4. Climate Change

Greenhouse gases absorb part of the outgoing infrared radiation from Earth and influence the planet's heat balance. When human activities increase the concentration of these gases, global warming and climate risks increase. Mitigation concerns reducing emissions, while adaptation concerns preparing for and responding to impacts.

Quick Revision

- Biotic components: producers, consumers and decomposers
- Biodiversity: genetic, species and ecosystem diversity
- Mitigation: reducing emissions; adaptation: preparing for impacts

Practice and Self-Assessment

What are the main biotic components of an ecosystem?

Answer and explanation: Producers, consumers and decomposers.

Name three levels of biodiversity.

Answer and explanation: Genetic diversity, species diversity and ecosystem diversity.

What is the difference between mitigation and adaptation?

Answer and explanation: Mitigation reduces emissions or the causes of climate change; adaptation prepares for and responds to its impacts.

Sources and further study

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