Environmental Studies – Question Bank

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Unit I: Multidisciplinary Nature of Environmental Studies

Two Mark Questions

1. **Define environment?**
   The environment encompasses all living and non-living components that interact with each other to create a complex system.

2. **What is the scope of environmental studies?**
   The scope includes the study of ecosystems, biodiversity, climate change, pollution, and sustainable resource management.

3. **Why is biodiversity important?**
   Biodiversity is necessary for ecosystem stability and resilience, supporting functions like pollination, nutrient cycling, and climate regulation.

4. **How does the environment impact human health?**
   A healthy environment provides clean air, water, and food, essential for human health, while pollution can lead to health issues like respiratory diseases and cancer.

5. **What is the role of the Environment Protection Act (EPA)?**
   The EPA aims to protect and improve the environment and prevent and control environmental pollution.

6. **What is the significance of the Central Pollution Control Board (CPCB)?**
   The CPCB regulates and monitors environmental pollution, ensuring standards for air, water, and soil quality.

7. **What are biotic components of the environment?**
   Biotic components include living organisms such as plants, animals, and microorganisms.

8. **What are abiotic components of the environment?**
   Abiotic components include non-living factors like air, water, soil, and climate.

9. **Explain the term 'sustainable development'.**
   Sustainable development aims to meet present needs without compromising the ability of future generations to meet their own needs.

10. **What are the key issues in environmental ethics?**
    Key issues include biodiversity conservation, climate change, and pollution.

11. **What is deontological ethics in environmental ethics?**
    Deontological ethics focuses on the inherent rightness or wrongness of actions, advocating for the intrinsic value of nature and the duty to protect it.

12. **Describe the rights-based approach in environmental ethics.**
    This approach recognizes the rights of non-human entities and ecosystems, advocating for their protection as a matter of justice and fairness.

13. **What is the role of education and awareness in environmental protection?**
    Raising public awareness and promoting environmental education fosters a culture of respect and responsibility towards the environment.

14. **Why is community involvement important in environmental protection?**
    Engaging local communities ensures that solutions are culturally appropriate and sustainable, promoting environmental stewardship and resilience.

15. **What are the criticisms of the Environment Protection Act (EPA)?**
    Criticisms include enforcement issues, coordination problems, and the need for greater public participation in environmental decision-making processes.

Five Mark Questions

1. Explain the multidisciplinary nature of environmental studies.
2. Discuss the key issues in environmental ethics.
3. Describe the main objectives and key provisions of the Environment Protection Act (EPA) of India.
4. Explain the concept of sustainable development and its importance.
5. Discuss the different ethical theories and approaches in environmental ethics.
6. Describe the interactions between biotic and abiotic components and human impact on the environment.
7. Explain the role of various disciplines (such as ecology, geology, atmospheric science, etc.) in environmental studies.
8. Discuss the importance of community involvement and technological innovation in addressing environmental challenges.
9. Outline the challenges and solutions related to food security and malnutrition.
10. Describe the various alternate energy sources and their benefits.
11. Discuss the causes and effects of deforestation and propose solutions to mitigate it.

Essay Type Questions

1. Describe the multidisciplinary nature of environmental studies and its significance in addressing environmental issues.
2. Discuss the key issues in environmental ethics, including biodiversity conservation, climate change, and pollution.
3. Explain the concept of sustainable development and the challenges associated with balancing economic growth and environmental conservation.
4. Describe the main objectives and key provisions of the Environment Protection Act (EPA) of India, and provide examples of its implementation.

5. Discuss the different ethical theories and approaches in environmental ethics, such as consequentialism, deontology, virtue ethics, rights-based approach, and indigenous knowledge systems.
6. Describe the interactions between biotic and abiotic components of the environment and the impact of human activities on these components.
7. Explain the role of various disciplines (such as ecology, geology, atmospheric science, etc.) in environmental studies and how they contribute to understanding and solving environmental problems.
8. Discuss the importance of community involvement, technological innovation, and policy in addressing environmental challenges and promoting sustainability.

Unit II: Natural Resources, Renewable and Non-renewable Resources

Two Mark Questions

1. **What is deforestation?**

   Deforestation is the large-scale removal of forests, often resulting in damage to the quality of the land.

2. **Explain carbon sequestration in forests.**

   Carbon sequestration in forests refers to the process by which trees and plants absorb carbon dioxide from the atmosphere and store it as carbon in biomass (trunks, branches, roots, and leaves) and soil.

3. **Define water regulation in the context of forests.**

   Water regulation in forests refers to the role of forests in maintaining the hydrological cycle, including the absorption, storage, and release of water, which helps regulate the availability and quality of water resources.

4. **What are non-timber forest products (NTFPs)?**

   Non-timber forest products (NTFPs) are goods obtained from forests that do not require harvesting trees, such as fruits, nuts, seeds, mushrooms, and medicinal plants.

5. **Mention two causes of deforestation.**

   Two causes of deforestation are agricultural expansion and logging for timber.

6. **What is the role of forests in climate regulation?**

   Forests play a crucial role in climate regulation by absorbing carbon dioxide, releasing oxygen, and influencing local and global climate patterns through transpiration and albedo effects.

7. **Explain the term "soil erosion."**

   Soil erosion is the removal of the topsoil layer by natural forces such as wind, water, or human activities, leading to a loss of soil fertility and degradation of land.

8. **Define groundwater.**

   Groundwater is the water present beneath the Earth's surface in soil pore spaces and in the fractures of rock formations, which is a major source of water for drinking, irrigation, and industrial use.

9. **What is selective logging?**

   Selective logging is a forestry practice where only certain trees are harvested while others are left standing, aiming to minimize environmental impact and promote sustainable forest management.

10. **What is the significance of water vapour released by trees?**

    The water vapour released by trees through transpiration contributes to cloud formation and precipitation, playing a vital role in the water cycle and climate regulation.

11. **What are the main uses of surface water?**

    The main uses of surface water include drinking water supply, irrigation, industrial processes, hydroelectric power generation, and recreation.

12. **Explain the term "land subsidence."**

    Land subsidence is the gradual sinking or settling of the Earth's surface due to natural processes such as the removal of groundwater or mineral resources, or due to human activities like mining.

13. **What is agroforestry?**

    Agroforestry is a land-use management system where trees or shrubs are grown around or among crops or pastureland, integrating agricultural and forestry practices for sustainable production.

14. **Mention one effect of over-utilization of groundwater.**

    One effect of over-utilization of groundwater is the depletion of aquifers, leading to a reduction in water availability for drinking, irrigation, and other uses.

15. **Define Sustainable Forest Management (SFM).**

    Sustainable forest management (SFM) is the practice of managing forests to maintain their biodiversity, productivity, regeneration capacity, and vitality, ensuring they continue to provide ecological, economic, and social benefits.

16. **What is the role of forests in biodiversity conservation?**

    Forests provide habitat for a vast array of plant and animal species, playing a critical role in conserving biodiversity and maintaining ecological balance.

17. **Explain the importance of community-based forest management.**

    Community-based forest management involves local communities in the stewardship of forest resources, promoting sustainable practices, and enhancing livelihoods through active participation and benefit-sharing.

18. **What are the main causes of water scarcity?**

    Main causes of water scarcity include over-extraction of water resources, pollution, climate change, and inefficient water management practices.

19. **Define the term "overgrazing."**

    Overgrazing occurs when livestock graze vegetation faster than it can naturally regrow, leading to land degradation, soil erosion, and loss of biodiversity.

20. **What is the importance of reforestation?**

    Reforestation is important for restoring degraded lands, enhancing carbon sequestration, conserving biodiversity, and improving water and soil quality.

Five Mark Questions

1. Explain the sustainable management of food resources.
2. Discuss the key aspects of world food problems.
3. Describe the different types of alternate energy sources.
4. Outline the benefits of alternate energy sources.
5. Identify the challenges and solutions associated with renewable energy.
6. Explain the causes, effects, and solutions of deforestation.
7. Explain the role of forests in carbon sequestration and climate regulation.
8. Discuss the benefits and challenges of using nuclear energy as a non-renewable energy source.
9. Describe the environmental impacts of non-renewable energy sources such as fossil fuels.
10. Explain the principles and benefits of sustainable land management.
11. Discuss the causes and effects of land degradation, including deforestation and overgrazing.
12. Describe the environmental, economic, and social impacts of modern agriculture.
13. Outline the key features of sustainable agriculture practices.
14. Explain the importance of policy measures in supporting sustainable land management and agriculture.
15. Discuss the environmental benefits and challenges of renewable energy sources such as solar and wind energy.
16. Explain the impact of urbanization and infrastructure development on land resources and soil quality.

Essay Type Questions

1. Discuss the use and over-exploitation of forest resources and the consequences of deforestation and timber extraction.
2. Analyze the impact of water resource over-utilization, including issues related to surface and groundwater, floods, droughts, and the benefits and problems associated with dams.
3. Examine the world food problems, the changes caused by agriculture and overgrazing, and the effects of modern agriculture on the environment.
4. Evaluate the importance of renewable and non-renewable energy sources, and the use of alternative energy sources in addressing global energy demands.
5. Discuss land resources, including land degradation, soil erosion, and desertification, and propose solutions to these challenges.
6. Explain the effects of modern agriculture on the environment, economy, and society, including soil degradation, water resource depletion, biodiversity loss, and climate change.

7. Describe the benefits and challenges of renewable energy sources, focusing on solar, wind, hydropower, and geothermal energy.
8. Discuss the use of alternate energy sources, such as solar energy, wind energy, hydropower, and geothermal energy, including their types, benefits, and challenges.
9. Analyze the environmental, economic, and social impacts of modern agricultural practices, emphasizing the balance between increased productivity and sustainability.
10. Evaluate the measures for sustainable agricultural practices and land management to reduce negative impacts and ensure productive land use for future generations.

Unit III: Ecosystems

Two Mark Questions

1. **What are the main components of an ecosystem?**

   An ecosystem consists of biotic (living organisms like plants and animals) and abiotic (non-living elements like soil, air, water, and sunlight) components.

2. **Define a food chain.**

   A food chain is a linear sequence of organisms where each one is eaten by the next member in the chain, representing different trophic levels starting with producers and moving up to various levels of consumers.

3. **What is the role of decomposers in an ecosystem?**

   Decomposers, such as fungi and bacteria, break down dead plants and animals into simpler compounds, recycling nutrients back into the ecosystem.

4. **What are the primary producers in grassland ecosystems?**

   The primary producers in grassland ecosystems are grasses and other herbaceous plants.

5. **How do desert plants adapt to conserve water?**

   Desert plants, such as cacti, have developed adaptations like deep roots, succulent stems, and spines to conserve water.

6. **What is an ecological pyramid?**

   An ecological pyramid graphically represents the structure of an ecosystem, showing the number of organisms, biomass, or energy at each trophic level.

7. **What defines a desert ecosystem?**

   Desert ecosystems are defined by their arid climate, receiving less than 250 mm of rainfall annually, with high temperatures during the day and significant temperature drops at night.

8. **Name two types of deserts and provide examples.**

   Hot deserts (e.g., Thar Desert in India) and cold deserts (e.g., Gobi Desert in China).

9. **What is the main source of energy for most ecosystems?**

   The sun is the primary source of energy for most ecosystems, driving processes like photosynthesis in producers.

10. **Explain the role of primary consumers in an ecosystem.**

    Primary consumers are herbivores that feed on producers (plants) and form the second trophic level in a food chain.

11. **What is an ecological pyramid?**

    An ecological pyramid graphically represents the relative amount of energy, biomass, or number of organisms at each trophic level in an ecosystem.

12. **Describe one adaptation of desert plants.**

    Desert plants, such as cacti, have developed deep roots and succulent stems to store and conserve water.

13. **Name two types of aquatic ecosystems.**

    Freshwater ecosystems (lakes, rivers) and marine ecosystems (oceans, coral reefs).

14. **What is the function of decomposers in an ecosystem?**

    Decomposers break down dead organic matter, recycling nutrients back into the soil, which supports plant growth.

15. **Define biodiversity.**

    Biodiversity refers to the variety of life in an ecosystem, including the diversity of species, genetic variation, and ecosystem diversity.

16. **What are the main threats to desert ecosystems?**

    Desert ecosystems face threats from climate change, habitat destruction, and overexploitation of resources.

17. **How do grasslands contribute to carbon storage?**

    Grasslands act as carbon sinks, absorbing carbon dioxide from the atmosphere and storing it in plant biomass and soil.

18. **What are the characteristics of temperate forests?**

    Temperate forests experience distinct seasons and include both deciduous and coniferous trees.

Five Mark Questions

1. Describe the characteristic features, structure, and function of desert ecosystems.
2. Explain the role and importance of producers, consumers, and decomposers in an ecosystem.
3. Discuss the functions and benefits of forest ecosystems.
4. Describe the characteristic features, structure, and function of grassland ecosystems.
5. Explain food chains, food webs, and ecological pyramids with examples.
6. Discuss the ecosystem services and their importance to human well-being.
7. Explain the flow of energy in an ecosystem and its significance.
8. Describe the major threats to forest ecosystems and suggest conservation strategies.
9. Explain the adaptations of plants and animals in desert ecosystems.

10. Discuss the structure and functions of aquatic ecosystems with examples
11. Discuss the human impact on ecosystems and the resulting consequences.
12. Explain the concept and importance of ecological succession.
13. Describe the structure and functions of forest ecosystems.
14. Discuss the various types of aquatic ecosystems with examples from India.
15. Explain the role of nutrient cycling in maintaining ecosystem balance.
16. Describe the major threats to aquatic ecosystems and suggest conservation strategies.
17. Explain the importance of carbon sequestration in ecosystems.
18. Discuss the role of wetlands in the environment and their ecological significance.
19. Explain the concept of energy flow in ecosystems and its importance.
20. Describe the major types of terrestrial ecosystems and their characteristics.

Essay Type Questions

1. Discuss the characteristic features, structure, and function of desert ecosystems with examples from Indian deserts.
2. Explain the structure and functions of forest ecosystems, including examples of tropical rain forests, temperate forests, and boreal forests.
3. Describe the characteristic features, structure, and function of grassland ecosystems, focusing on examples from India.
4. Discuss food chains, food webs, and ecological pyramids with examples.
5. Explain the various types of aquatic ecosystems, including ponds, lakes, rivers, streams, and marine ecosystems, with examples from India.
6. Discuss the role and importance of producers, consumers, and decomposers in an ecosystem.
7. Explain the concept of ecological succession and its types with examples.
8. Describe the structure and functions of various types of aquatic ecosystems, including ponds, lakes, rivers, streams, and marine ecosystems.
9. Discuss the major threats to ecosystems and suggest comprehensive conservation strategies.
10. Explain the importance of nutrient cycling in ecosystems and describe the nitrogen and carbon cycles in detail.

Unit IV: Biodiversity and its Conservation

Two Mark Questions

1. **What is an ecosystem?**

   An ecosystem is a community of living organisms interacting with each other and their physical environment.

2. **What are the main components of an ecosystem?**

   The main components are biotic (living) components like plants, animals, and microorganisms, and abiotic (non-living) components like sunlight, air, water, and soil.

3. **Define ecological footprint.**

   The ecological footprint measures the impact of a person or community on the environment in terms of the amount of land required to sustain their use of natural resources.

4. **What is sustainable development?**

   Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

5. **What is biodiversity?**

   Biodiversity is the variety of life in the world or in a particular habitat or ecosystem.

6. **What is the greenhouse effect?**

   The greenhouse effect is the trapping of the sun's heat in the Earth's atmosphere, leading to an increase in global temperatures.

7. **What is global warming?**

   Global warming is the long-term rise in the average temperature of the Earth's climate system.

8. **Define pollution.**

   Pollution is the introduction of contaminants into the natural environment, causing adverse change.

9. **What are renewable resources?**

   Renewable resources are natural resources that can be replenished naturally with the passage of time, such as solar energy, wind energy, and biomass.

10. **What is deforestation?**

    Deforestation is the clearing or thinning of forests by humans.

11. **What are the effects of deforestation?**

    The effects include loss of biodiversity, disruption of water cycles, soil erosion, and contributing to climate change.

12. **What is climate change?**

    Climate change refers to significant changes in global temperatures and weather patterns over time.

13. **What are non-renewable resources?**

    Non-renewable resources are natural resources that cannot be replenished within a short period, such as coal, oil, and natural gas.

14. **What is the importance of water conservation?**

    Water conservation is crucial to ensure the availability of water for future generations and to maintain the health of the environment.

15. **Define waste management.**

    Waste management involves the collection, transportation, and disposal of garbage, sewage, and other waste products in a way that minimizes their impact on the environment.

16. **What is the role of decomposers in an ecosystem?**

    Decomposers break down dead plants and animals into simpler compounds, recycling nutrients back into the ecosystem.

17. **Define Environment.**

    The environment is the sum total of all living and non-living things that surround an organism, influencing its life.

Five Mark Questions

1. Discuss the aesthetic values of biodiversity.
2. Explain the causes and consequences of habitat loss.
3. Describe the various types of inter-species conflicts and their impacts.
4. What are the major strategies to mitigate man-wildlife conflicts?
5. Explain the role of international collaboration in combating poaching.
6. Discuss the importance of environmental justice in biodiversity conservation.
7. Describe the concept of inter-generational equity and its relevance to biodiversity conservation.
8. What are the key components of a holistic approach to biodiversity conservation?
9. Explain the significance of community involvement in conservation efforts.
10. Discuss the impacts of poaching on biodiversity and suggest measures to combat it.
11. Discuss the ethical values of biodiversity.
12. What are the impacts of climate change on biodiversity?
13. Explain the concept of environmental justice in the context of biodiversity conservation.
14. Describe the role of traditional knowledge in biodiversity conservation.
15. Discuss the economic values of biodiversity.
16. Explain the significance of genetic diversity in ecosystems.
17. What are the consequences of deforestation on biodiversity?

18. Describe the importance of ecosystem services provided by biodiversity.
19. Discuss the role of national parks and wildlife reserves in biodiversity conservation.
20. Explain how urban planning can contribute to biodiversity preservation.

Essay Type Questions

1. Discuss the various biogeographical zones of India and their significance in biodiversity conservation.
2. Explain the factors affecting ecosystem diversity and the importance of maintaining it.
3. Discuss the major strategies for the conservation of biodiversity, including in situ and ex situ methods.
4. Describe the impacts of habitat loss on biodiversity and suggest measures to mitigate it.
5. Explore the ethical, aesthetic, and cultural values of biodiversity and their implications for conservation efforts.
6. Discuss the concept of sustainable land use practices and their role in biodiversity conservation.
7. Explain the impacts of climate change on biodiversity and the strategies to address these impacts.
8. Discuss the role of public awareness and education in promoting biodiversity conservation.
9. Describe the threats to biodiversity from poaching and the measures needed to combat this issue.
10. Explain the importance of ecosystem services provided by biodiversity and the consequences of their loss.

Unit V: Environmental Pollution

Two Mark Questions

1. **Define air pollution.**

   Air pollution refers to the presence of harmful substances in the atmosphere, which can have adverse effects on human health and the environment.

2. **What are the main sources of water pollution?**

   The main sources of water pollution include industrial discharge, agricultural runoff, sewage and wastewater, oil spills, and plastic waste.

3. **List the effects of soil pollution on human health.**

   Effects include skin rashes, respiratory issues, neurological disorders, and an increased risk of cancer due to exposure to toxic chemicals in contaminated soil.

4. **What is noise pollution and its primary cause?**

   Noise pollution is unwanted or harmful sound that disrupts normal activities or harms health. Primary causes include industrial activity, traffic, and construction.

5. **Explain thermal pollution.**

   Thermal pollution occurs when water bodies receive heat from industrial processes, leading to elevated temperatures that can disrupt aquatic ecosystems.

6. **What are nuclear hazards?**

   Nuclear hazards refer to risks associated with the release of radioactive materials, which can cause health issues like cancer and genetic damage, and environmental contamination.

7. **Describe the impact of agricultural runoff on water pollution.**

   Agricultural runoff carries fertilizers, pesticides, and other chemicals into water bodies, leading to nutrient pollution and harmful algal blooms.

8. **What is solid waste management?**

   Solid waste management involves the collection, treatment, and disposal of solid materials that are discarded as waste, aiming to reduce their impact on health and the environment.

9. **How does deforestation contribute to environmental pollution?**

   Deforestation leads to soil erosion, loss of biodiversity, and increased greenhouse gas emissions, contributing to air and water pollution.

10. **What are the economic costs associated with pollution?**

    Economic costs include healthcare expenses, clean-up costs, loss of productivity, and impacts on tourism and fisheries.

11. **Define acid rain.**

    Acid rain is precipitation containing harmful amounts of sulfuric and nitric acids, formed from sulfur dioxide and nitrogen oxides released into the atmosphere.

12. **What are the health impacts of contaminated water?**

    Contaminated water can spread diseases like cholera and dysentery and expose people to toxic substances causing long-term health issues.

13. **Describe the effects of plastic waste on the environment.**

    Plastic waste leads to pollution in oceans and rivers, harms marine life, and contributes to the accumulation of microplastics in the food chain.

14. **What is sustainable agriculture?**

    Sustainable agriculture involves farming practices that protect the environment, public health, human communities, and animal welfare, ensuring long-term agricultural productivity.

15. **Explain the concept of renewable energy in pollution control.**

    Renewable energy sources, like wind and solar, reduce reliance on fossil fuels, thereby decreasing emissions of pollutants and greenhouse gases.

16. **What are the consequences of global warming?**

    Consequences include rising sea levels, extreme weather events, loss of biodiversity, and impacts on agriculture and water resources.

17. **How does public awareness contribute to environmental protection?**

    Public awareness leads to better environmental practices, increased support for policies and regulations, and community involvement in conservation efforts.

18. **What is the role of legislation in controlling pollution?**

    Legislation sets standards and regulations to limit emissions, manage waste, and protect natural resources, ensuring compliance through monitoring and enforcement.

19. **Describe the impact of mining activities on soil pollution.**

    Mining releases heavy metals and toxic chemicals into the soil, causing long-term contamination and affecting soil fertility and health.

20. **Explain the importance of wastewater treatment.**

    Wastewater treatment removes contaminants from sewage and industrial effluents, protecting water bodies from pollution and safeguarding public health.

Five Mark Questions

1. Explain the causes of urban and industrial wastes.
2. Describe the effects of urban and industrial wastes.
3. What are the control measures for urban and industrial wastes?
4. Discuss the role of international cooperation in nuclear safety.
5. Explain the various biogeographical zones of India and their characteristics.
6. Describe the biogeographical classification of India with examples.
7. Define air pollution and explain its causes.
8. Describe the effects of air pollution on human health and the environment.
9. What are the control measures for air pollution?
10. Define water pollution and discuss its sources.
11. Explain the effects of water pollution on ecosystems and human health.
12. What are the control measures for water pollution?
13. Define soil pollution and describe its causes.
14. Discuss the effects of soil pollution on agriculture and human health.
15. What are the control measures for soil pollution?
16. Define noise pollution and explain its sources.
17. Discuss the effects of noise pollution on human health.
18. What are the control measures for noise pollution?
19. Define thermal pollution and describe its causes.
20. Explain the effects of thermal pollution on aquatic ecosystems.
21. What are the control measures for thermal pollution?
22. Define nuclear hazards and discuss their sources.
23. Explain the effects of nuclear hazards on human health and the environment.
24. What are the control measures for nuclear hazards?
25. Discuss the causes of solid waste generation in urban areas.

26. Explain the effects of solid waste on the environment and human health.
27. What are the control measures for managing urban solid waste?
28. Discuss the causes of industrial waste generation.
29. Explain the effects of industrial waste on the environment and human health.
30. What are the control measures for managing industrial waste?
31. Describe the process and importance of solid waste management.
32. Explain the role of legislation in controlling environmental pollution.
33. Discuss the importance of public awareness and education in managing environmental pollution.

Essay Type Questions

1. Discuss the major causes and impacts of habitat loss on biodiversity. Suggest potential solutions to mitigate habitat loss.
2. Explain the concept of sustainable land use practices and how they contribute to biodiversity conservation.
3. Describe the biogeographical classification of India and its significance in biodiversity conservation.
4. Examine the effects of climate change on biodiversity and propose strategies to address these effects.
5. Evaluate the role of public awareness and education in biodiversity conservation.
6. Discuss the various methods of in situ and ex situ conservation of biodiversity. Provide examples to support your discussion.
7. Explain the significance of ecological, economic, and cultural benefits provided by biodiversity.
8. Analyze the impacts of poaching on biodiversity and suggest measures to combat poaching effectively.
9. Describe the importance of reforestation and restoration in maintaining biodiversity. Discuss the benefits and challenges associated with these practices.
10. Examine the role of legislation and policies in controlling environmental pollution and promoting biodiversity conservation.