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Biodiversity And Sustainable Development: A Global Call To Action

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Abstract

Biodiversity and sustainable development are deeply interrelated issues. In the modern world, especially in the 21st century, many countries — particularly developed nations and BRICS countries — are in pursuit of rare earth minerals for their developmental needs. However, this quest has often led to environmental degradation. Mountains, rivers, forests, oceans, and hills are being exploited relentlessly, leaving little regard for ecological balance.

For example, the United States has signed a **$500 billion agreement with Ukraine** for the extraction of rare earth minerals. Furthermore, the U.S. has **withdrawn from key global environmental agreements**, such as the **Paris Climate Accord**, undermining global climate action. Natural disasters are becoming increasingly frequent across the globe. **In Japan alone, over 1,000 earthquakes were recorded during June–July 2025**, and more tremors are expected. Scientists warn that a major earthquake in the region could trigger a devastating tsunami. The "Big and Beautiful Act" passed in the US in the coming days has rolled back subsidies for electric vehicles (EVs), further hindering progress towards sustainable development goals.

Meanwhile, the **ongoing conflict between Israel and Iran**, along with the **3.5-year-long Russia–Ukraine war**, is creating severe **economic, humanitarian, and environmental crises**. Global warming continues to accelerate at an alarming pace.

As per the **Glasgow Climate Pact**: **China** has pledged to reach **net-zero carbon emissions by 2060**, **India** by **2070**, and **The United States** by **2050**.

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However, the U.S. has indicated its intention to **withdraw from the climate agreement starting in 2025**, raising serious concerns about global cooperation on climate action.

Key Words: Biodiversity, **SDGs,** environmental degradation, **carbon emissions, Big and Beautiful Act,** Natural disasters

Introduction

Without biodiversity, human survival and civilization would be impossible for future generations. There are many areas on Earth that are areas of exceptional biodiversity. In our country, however, there are areas of biodiversity such as the Himalayas, the Western Ghats, the Eastern Ghats, the Sundarbans, amezon forests and the wetlands. Biodiversity refers to the variety and variety of life on Earth, including the diversity within species, between species, and within ecosystems. It is essential for ecosystem services that support life, such as pollination, water purification, climate regulation, and soil fertility. Sustainable development, defined by the United Nations as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," is deeply linked to the conservation of biodiversity.

India is one of the 17 most biodiverse countries in the world, accounting for about 8% of the world's known biodiversity. With ecosystems ranging from the Himalayas to coastal plains, deserts, wetlands, rainforests and islands, India's biodiversity plays a vital role in its economy, culture and sustainable development goals. Achieving a sustainable India by 2047 requires maintaining a balance between development and the environment.

There is an inextricable link between biodiversity and sustainable development.

1. Ecosystem Services

Biodiversity plays a role in supporting ecosystem services that are fundamental to human well-being.

- Provisioning services: food, fresh water, timber, fibre and genetic resources.
- Regulating services: climate regulation, disease control and water purification.
- Cultural services: spiritual, recreational and cultural benefits.
- Supporting services: nutrient cycling, soil formation and primary production.

The above services contribute to enhancing biodiversity.

2. Poverty reduction and livelihoods

Biodiverse ecosystems provide livelihoods for millions of people, especially rural and local communities. Fisheries, agriculture and ecotourism depend heavily on healthy, diverse ecosystems. Biodiversity increases employment opportunities. People’s living standards improve. Forests and community forestry

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increase oxygen levels and reduce carbon dioxide levels. Oxygen levels in water increase. The Amazon rainforest is known as the rainforest. These forests are oxygen factories.

3. Health and Medicine

Most modern medicines are derived from natural compounds found in plants, animals and microorganisms. Biodiversity is an important resource for current and future medical research. The Western Ghats and the Himalayas have contributed significantly to the natural resources needed for biodiversity in our century.

4. Resilience to climate change

Diverse ecosystems are more resilient to changes and shocks. Forests, wetlands and oceans act as carbon sinks and buffers against the effects of climate change.

Threats to biodiversity

• Habitat loss and fragmentation due to projects and large-scale construction

• Overexploitation of species

• Pollution

• Invasive species

• Climate change

These threats not only undermine biodiversity but also the potential for long-term sustainable development.

In our country, 70 percent of the population will live in cities by 2050 for employment opportunities. This will lead to major changes in the climate. Destruction of natural resources will increase. By 2060, India's population will reach 1.7 billion. The birth rate will fall. Life expectancy will increase.

Biodiversity in Sustainable Development Goals (SDGs)

Many SDGs are directly related to biodiversity:

• Goal 14: Life Below Water - Conserve marine ecosystems. However, the increase in ships used for logistics in shipping is causing pollution of the seas and oceans due to oil leaks. Biodiversity in the seas and oceans is disappearing. Pollutants released by industries are damaging the biodiversity of the oceans.

• Goal 15: Life on Land - Manage forests, combat desertification, and halt biodiversity loss. Social forestry for this

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• Indirectly, biodiversity supports Goal 2 (Zero Hunger), Goal 3 (Good Health and Well-being) and Goal 13 (Climate Action).

But developed countries have withdrawn from the Paris Agreement on Environment.

Development is accelerating in the world. With the help of modern technology, rare mineral resources are being mined indiscriminately. Finally, even areas with biodiversity are not being left behind. In the name of development, even environmental permits are being relaxed. Even alternative energy sources are being neglected due to high costs. China and India are building large-scale multi-purpose projects in the Himalayas. There is a possibility of large-scale earthquakes in the Himalayas in the future.

Strategies for integrating biodiversity into sustainable development

1. Mainstreaming biodiversity into policies, planning and development activities.

2. Promoting sustainable organic farming practices that conserve biodiversity.

3. Creating protected areas and conserving critical habitats.

4. Supporting indigenous and local knowledge systems that sustainably manage biodiversity.

5. Incentives and sustainable financing, such as payments for ecosystem services (PES) and green investment.

India's Biodiversity Profile

- It is home to 2 of the 36 global biodiversity hotspots: the Western Ghats and the Himalayas.
- More than 90,000 species of animals and nearly 46,000 species of plants have been recorded. India is one of the 17 most biodiverse regions.
- India is home to rich traditional knowledge systems among tribal and rural communities. .
- Critical ecosystems: Sundarbans Mangroves, Thar Desert, Western Ghats, Eastern Himalayas, Andaman & Nicobar Islands. These regions are known for their extraordinary biodiversity.

Role of Biodiversity in India’s Sustainable Development

1. We have been able to achieve sustainable development in agriculture & food security.

India’s biodiversity supports over 160 crops and 325 wild crop varieties.

Indigenous seed varieties help ensure climate resilience and food security.

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2. Medicinal resources

More than 7,000 plant species used in Ayurveda, Siddha, Unani and Homeopathy are a testament to biodiversity

The traditional medicine sector contributes to healthcare and the economy.

3. Livelihoods & Poverty Reduction

Millions of people depend on forests, fisheries and agriculture.

Ecotourism creates sustainable jobs in areas rich in biodiversity (e.g., Kerala, Kaziranga, Ranthambore).

4. Climate regulation

Forests like the Western Ghats act as carbon sinks, regulate rainfall and reduce disaster risks.

Threats to biodiversity in India

- Deforestation due to agriculture, mining, infrastructure.
- Pollution of rivers and air.
- Overexploitation of natural resources.
- Impacts of climate change such as glacial melting and changes in monsoons.
- Invasive alien species that disrupt local ecosystems.

Legal and Institutional Framework

1. Biodiversity Act, 2002

Regulates access to biological resources and promotes conservation.

Promotes local participation through Biodiversity Management Committees.

2. National Biodiversity Authority (NBA)

Monitors implementation of the Act and promotes conservation and sustainable use.

3. Protected Areas

106 National Parks, 567 Wildlife Sanctuaries, 18 Biosphere Reserves.

Community Reserves and Eco-Sensitive Zones are home to local communities.

4. Mission Life (Lifestyle for the Environment) - Promotes sustainable practices at the individual and community levels.

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Sustainable Development Goals (SDGs) and India

India has aligned its national targets with the SDGs:

- SDG 15: Life on land - through forest restoration, afforestation programmes.
- SDG 14: Life below water - through mangrove conservation, coastal zone management.
- SDG 13: Climate action - through renewable energy and natural resource conservation.

Challenges and the way forward

Challenges:

• Balancing rapid development with conservation. Promoting ecological balance along with development.

• Implementation of environmental laws is weak. Due to corruption in law enforcement

- Inadequate funding for environmental protection programmes.

The way forward:

- Promote nature-based solutions such as watershed management.
- Strengthen community-based conservation and traditional knowledge
- Integrate biodiversity in urban planning and infrastructure development.
- Promote green economic transitions with sustainable agriculture, forestry and fisheries.

1. Trump's key environmental decisions

a) Withdrawal from the Paris Agreement

- In 2017, President Trump announced the US withdrawal from the Paris Climate Agreement, stating that it was unfair to American interests.
- The US formally withdrew from the agreement in November 2020.

b) Environmental regulation rollbacks

- Weakened US laws on air and water pollution, fossil fuel use, and wildlife protection.
- Encouraged coal and oil exploration in sensitive natural areas.

c) Reduced focus on global climate cooperation

- The Trump administration has cut funding for UN climate programs and green technology in developing countries.

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3. India's response and independent action

Despite the US stance under Trump, India has maintained its commitment to climate and biodiversity goals:

• Reaffirmed support for the Paris Agreement.

• Launched ambitious renewable energy targets (for example, a target of 500 GW by 2030).

• Expanded forest-based initiatives under the Green India Mission and CAMPA.

• Promoted sustainable lifestyles and conservation awareness through Mission LIFE (Lifestyle for the Environment).

4. Post-Trump Change: Rejoining Under Biden

- In 2021, President Joe Biden reversed Trump's decision and rejoined the Paris Agreement.
- This helped restore global momentum and revive climate cooperation with India.
- The US-India Climate and Clean Energy Agenda 2030 was launched for joint action on clean energy and conservation.

1. Paris Agreement and its role in India

- An international agreement under the United Nations Framework Convention on Climate Change (UNFCCC).
- Goal: To limit global warming to well below 2°C, and preferably well below 1.5°C above pre-industrial levels.

India's commitments under the Paris Agreement:

- Reduce the emission intensity of its GDP by 33–35% by 2030 (from 2005 levels).
- Achieve about 40% of its installed capacity from non-fossil fuel sources by 2030.
- Create an additional carbon sink of 2.5–3 billion tonnes through forest and tree cover.

Impact on biodiversity and sustainable development:

- Forestation and reforestation programmes promoted through the Green India Mission.
- Promote renewable energy projects, reducing pressure on forest-based fuels.

2. Glasgow Climate Agreement (Glasgow Agreement) and its Impact

- Outcome of COP26 (2021) held in Glasgow, UK.
- Reinforced the need to keep global warming below 1.5°C.

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- Called for a phase-out of coal use and an end to deforestation by 2030.

India's position at COP26 (Glasgow):

1. Reduce carbon emissions by 1 billion tonnes by 2030.

2. Reduce the emission intensity of GDP by 45% by 2030.

3. Achieve net zero emissions by 2070.

Impact on biodiversity and sustainability:

- Strong incentives for forest conservation and restoration as carbon sinks decrease.
- Incentives for nature-based solutions such as conservation of mangroves and wetlands.
- Emphasis on sustainable lifestyles (Mission LifeFE) to reduce environmental stress.
- Shifting away from coal will reduce deforestation and pollution, benefiting ecosystems.

Challenges facing India

- Balancing economic growth and environmental protection.

Forests and Biodiversity in India

India's forests cover around 21.7% of its land area, acting as a reservoir of biological diversity.

Key Roles of Forests:

Habitat for wildlife and plants.

Regulate climate, conserve water, and reduce disaster risks.

Provide timber, fuelwood, and non-timber forest products.

Support tribal and rural livelihoods.

Aid carbon sequestration, crucial for climate action (SDG 13).

Western Ghats: A Biodiversity Hotspot

Spread across six Indian states (Maharashtra to Kerala).

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One of the world's eight "hottest hotspots" of biodiversity.

Houses over 7,400 species of plants and animals, many endemic (found nowhere else).

Rich in medicinal plants, reptiles, amphibians, and ancient forests.

Provides key ecosystem services: monsoon regulation, soil fertility, and water catchment for peninsular rivers.

Sustainable Development in the Western Ghats:

Promoting eco-tourism and organic farming.

Agro forestry and community forest management initiatives.

Government schemes like Western Ghats Development Programme (WGDP).

Threats include deforestation, mining, monoculture plantations, and climate change.

Himalayas: India's "water dome"

- Home to the largest number of glaciers outside the polar region. It is the key to the Ganges, Brahmaputra and Indus river systems. These are called perennial rivers. It supports over 10,000 plant species and hundreds of mammals, birds and insects.

Sustainable development in the Himalayas:

- Promotion of sustainable mountain farming and terrace farming.
- Watershed management and climate-resilient agriculture.
- Conservation of sacred groves and traditional knowledge.
- Threats: Glacial melting, landslides, tourist pressure, deforestation.

Forest conservation and policy initiatives

Biodiversity Act (2002)

National Forest Policy

• National Mission for Green India Conclusion

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Conclusion

Biodiversity is the backbone of India's environment and economy. Sustainable development cannot be achieved without conserving India's rich biodiversity. A balanced approach – linking conservation with inclusive development – is needed to protect nature and the well-being of future generations.

Forests, particularly in the Western Ghats and Himalayas, are key to India's biodiversity and sustainable development journey. Conserving these areas will ensure environmental sustainability, water security and improved livelihoods for millions.

The Paris Agreement and the Glasgow Climate Agreement have significantly influenced India's climate and biodiversity policies. By aligning with these global frameworks, India is taking steps towards low-carbon, biodiversity-friendly and sustainable development. Continued efforts in conservation, green energy and inclusive development are crucial to securing a healthy environment for future generations. India is on track to reach net-zero carbon by 2070. For this, India should take steps towards renewable energy sources

America environmental policies have temporarily weakened the global climate and biodiversity action. Indirectly affect India's sustainable development pace. Most notably, the US has abolished subsidies for electric cars under the Big and Beautiful Act. It has withdrawn from the Paris Climate Agreement. It has focused on rare earth mining. India and China are constructing huge projects along the Brahmaputra. India has undertaken exploration in Jammu and Kashmir for rare earth minerals.

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