



RRB

Junior Engineers (JE)

Railway Recruitment Board

Volume - 5

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Basic Environment, Pollution Control & Computer



# Table of Content

| S No. | Chapter Title  | Page No. |
|-------|--|----------|
| 1     | Environment  | 1        |
| 2     | Pollution  | 19       |
| 3     | Solid Waste Management   | 59       |
| 4     | Global Warming & Climate Change                                    | 79       |
| 5     | Ozone Depletion  | 104      |
| 6     | Introduction to Computer   | 113      |
| 7     | Computer Working System, Input, Output and Storage                 | 116      |
| 8     | Computer System  | 121      |
| 9     | Computer Organization  | 124      |
| 10    | Computer Languages   | 127      |
| 11    | Computer Software  | 129      |
| 12    | Operating System   | 130      |
| 13    | Microsoft Windows, Its Different Versions and Its Basic Components | 132      |
| 14    | Word Processing Software (Microsoft Word)                          | 134      |
| 15    | Microsoft Power Point (M.S. Power Point)                           | 136      |
| 16    | Microsoft Excel (M.S. Excel) (Spreadsheet Software)                | 138      |
| 17    | Internet   | 144      |
| 18    | Computer Networking  | 148      |
| 19    | Network Topology   | 150      |
| 20    | Website  | 152      |
| 21    | Database   | 155      |
| 22    | Information and Communication Technology                           | 161      |
| 23    | Social Networking Sites  | 175      |

# Table of Content

| S No. | Chapter Title     | Page No. |
|-------|-------------------|----------|
| 24    | Word Abbreviation | 180      |

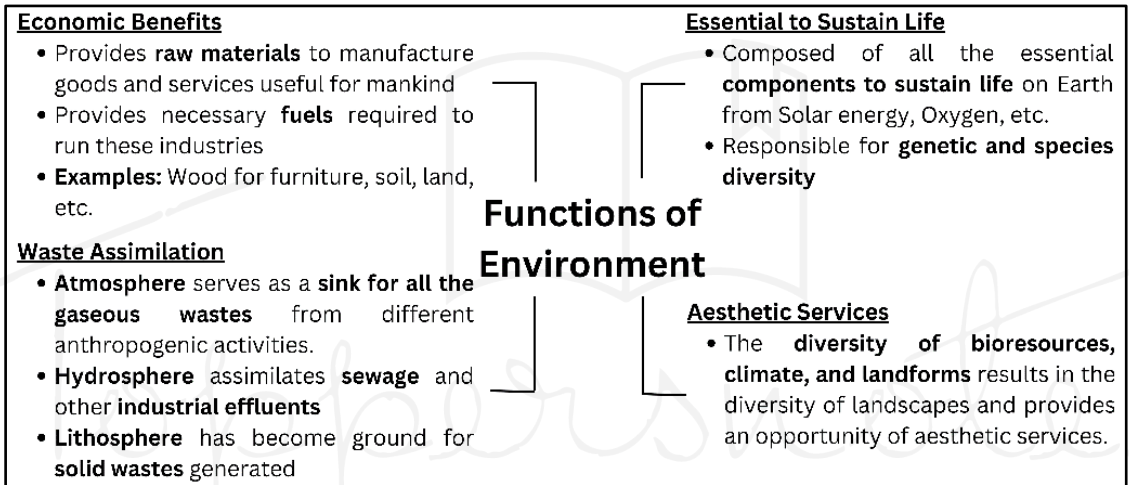
# 1 CHAPTER

# Environment

| Year |       | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Pre  | Mains | -    | -    | 1    | -    | 6    | -    | 2    | -    | 1    | -    | -    |
|      |       | -    | -    | 1    | -    | 6    | -    | 2    | -    | 1    | -    | 2    |

- **Definition:** sum total of living, non-living components; influences and events surrounding an organism.
  - **Non-static**, as both biotic and abiotic factors are in flux and keep changing continuously.
- **Scope of Environment:**
  - where life exists

- **Atmosphere:** Invisible envelope of gases
- **Hydrosphere:** Reserve of water in any form on the surface of Earth
- **Lithosphere:** Rigid outer covering/crust of Earth
- **Biosphere:** The region



**Note:**

**Carrying Capacity:**  
It implies that the extraction of resources is well within the limits of its regeneration rate, and waste generated is within the assimilating capacity of the environment.

**Absorptive Capacity:**  
It is the ability or capacity of the environment to absorb degradation.

- Environment can function well only within its Carrying Capacity.
- If it fails, it results in an Environmental Crisis.

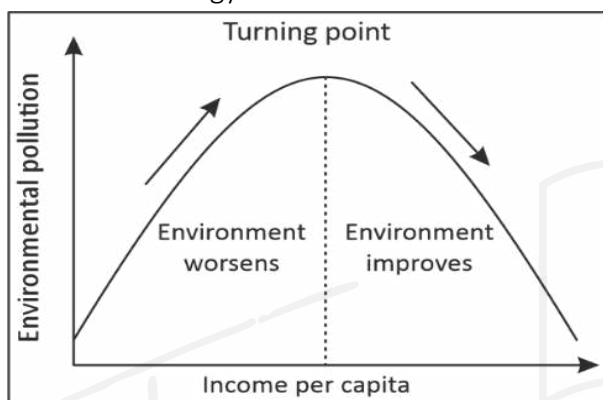
**Environmental Degradation**

- **Deterioration of the environment** through the consumption of assets, for example, air, water, soil, and **wildlife eradication**.

- **United Nations International Strategy for Disaster Reduction** characterises environmental degradation as the **lessening of the limit of the earth to meet social and environmental destinations and needs**.
- Various forms of Environmental Degradation:
  - **Air Degradation** (air pollution)
  - **Water Degradation** (water pollution, eutrophication, etc.)
  - **Land Degradation** (solid waste, e-waste, landfills, soil erosion, soil degradation)
  - **Deforestation,**
  - **Rising sea levels,**
  - **Desertification**

### Environmental Kuznets Curve

- **Economic development** initially leads to **environmental deterioration**, but after a certain level of **economic growth**, a society begins to improve its relationship with the environment, and levels of **environmental degradation reduce**.
- With the **growth in per capita income**, the environmental impact reaches its maximum and thereafter declines.
  - **Initial Stage:** more resources → greater waste generated with more emissions.
  - **Later Stage:** economic development → pollution reduces, environment-friendly technology.



### **Latest Update**

#### Ecocide: Crime against Environment

##### Meaning of Ecocide:

- **Unlawful or wanton acts** committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term **damage to the environment** being caused by those acts.
- Ecocide means significant harm or destruction to ecosystems, often caused by humans.
- **Examples-** Deforestation during the Vietnam War, the destruction of the environment during the Russian invasion of Ukraine, deforestation in Indonesia and the Amazon rainforest, oil pollution in the Niger Delta and the Chernobyl disaster.

- **Legal restriction** – There is **currently no international law** prohibiting ecocide during peacetime; however, the **Rome Statute criminalizes** it.

#### **Status of India on Environment Related Offences:**

- As per the **National Crime Records Bureau (NCRB)'s report, 2022**, the total number of environmental crimes in India decreased by around 18% in 2022, compared to 2021.
- Environment-related offenses include violations under seven acts:
  - The Forest Act, 1927, Forest Conservation Act, 1980, The Wildlife Protection Act, 1972, The Environmental (Protection) Act, 1986, Air (Prevention and Control of Pollution) Act, 1981, Water (Prevention & Control of Pollution) Act, 1974, The Noise Pollution (Regulation and Control) Rules, 2000, National Green Tribunal Act, 2010.
- The cases registered for violating the **Air (Prevention and Control of Pollution) Act, 1981** and the **Water (Prevention & Control of Pollution) Act, 1974** have **increased by around 42%**.
- Violations registered under the **Environmental (Protection) Act, 1986** also have **increased by around 31%**.
- **Forest offences** increased in four states **Andhra Pradesh, Karnataka, Maharashtra and Haryana**.
- **Wildlife offences** increased in five states including **Bihar, Punjab, Mizoram, Rajasthan and Uttarakhand**.
- **Rajasthan, with the maximum number (30%) of wildlife crime cases** in the country, recorded a 50% increase in such offenses in 2022 compared to 2021.

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## Related Statistics

- To maintain our current way of life we need an equivalent of **1.6 Earths**. (UNEP)
- **One million** of the world's estimated 8 million species of plants and animals are **threatened with extinction**. (IPBES)
- **75 percent of the Earth's land surface** has been significantly **altered** by human actions, including 85 percent of wetland areas. (IPBES)
- **66 percent of ocean area is impacted** by human activities, including from fisheries and pollution. (IPBES)
- Close to **90% of the world's marine fish** stocks are fully exploited, overexploited or **depleted**. (UNCTAD)
- Our **global food system is the primary driver of biodiversity loss** with agriculture alone being the identified threat 24,000 of the 28,000 species at risk of extinction. (Chatham House and UNEP)
- **Agricultural expansion** is said to account for 70% of the projected **loss of terrestrial biodiversity**. (CBD)

## Consequences of Environment Degradation

- Around 3.2 billion people, or **40 percent of the global population**, are **adversely affected** by land degradation.
- Up to \$577 billion in annual **global crop production is at risk** from pollinator loss.
- 25 percent of **global greenhouse gas emissions** are generated by land clearing, crop production and fertilization.
- Development is putting animals and humans in closer contact **increasing the risk of diseases** like COVID-19 to spread. About 60 percent of human infections are estimated to have an animal origin.
- 100-300 million people are at **increased risk of floods** and hurricanes because of **coastal habitat loss**.
- Declines in nature and biodiversity at current trajectories will undermine progress toward 35 out of 44 of the targets of SDGs related to **poverty, hunger, health**, water cities, climate, oceans and land.

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## Measures to Control Environmental Degradation

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- **Sustainable Practices:**
  - Implement sustainable farming practices to reduce soil degradation.
  - Encourage organic farming methods to minimize the use of harmful chemicals.
- **Waste Management:**
  - Promote proper waste disposal and recycling programs.
  - Discourage illegal dumping and ensure the safe disposal of industrial waste.
- **Conservation Efforts:**
  - Establish and enforce strict regulations to protect ecosystems and prevent habitat destruction.
  - Implement conservation programs for endangered wildlife and their habitats.
- **Reducing Pollution:**
  - Implement measures to control air pollution from industrial activities and vehicles.
  - Enforce stricter regulations on water pollution, ensuring the protection of water bodies.
- **Renewable Energy:**
  - Promote the use of renewable energy sources to reduce reliance on fossil fuels.
  - Invest in research and development of clean energy technologies.
- **Environmental Education:**
  - Increase awareness through educational programs about the consequences of environmental degradation.
  - Encourage responsible behavior among individuals, communities, and industries.
- **International Collaboration:**
  - Foster international cooperation to address global environmental issues.
  - Collaborate on research, technology transfer, and sharing best practices for sustainable development.

- **Policy Reforms:**
  - Advocate for and implement policies that prioritize environmental conservation.
  - Integrate environmental considerations into urban planning and infrastructure development.

### Environmentalism

- Political and Ethical movements **to improve and protect the quality of the natural environment** by discouraging environmentally harmful practices and promoting socio-economic and political organizations to establish a sustainable human-nature relationship.
- Also known as **Green Movement** or **Conservation Movement**.

## Environment Protection Efforts in India

### Environment (Protection) Act of 1986

- Enacted after Bhopal Gas tragedy. UPSC Pre - 2022
- **Objective:** To implement the decisions of the United Nations Conference on the Human Environment of 1972.
- **Defines Environment-** Including water, air and land and the inter-relationships which exist among water, air and land and human beings and other living creatures, plants, micro-organisms and property.
- **“Environmental pollution”** - presence of pollutant, defined as any solid, liquid or gaseous substance present in such a concentration as may be or may tend to be injurious to the environment.
- **“Hazardous substances”** includes any substance or preparation, which may cause harm to human beings, other living creatures, plants, microorganisms, property or the environment.
- **Provisions:**
  - Central Government has the following powers:**
    - coordination** of action by state,
    - planning and execution** of programmes,
    - Prescribing **environmental quality standards**

- authority to issue direct orders to close, prohibit or regulate any industry.**
- power of entry** for examination, testing of equipment, soil, air and water of any industry or place.
- Prohibits discharges of environmental pollutants** more than prescribed regulatory standards.
- Prohibition against handling hazardous substances** without compliance with regulatory standards.
- Provision for penalties** including imprisonment, fine or both.

### Benefits of the Environment Protection Act

- **Protection of public health:** Ensures availability of healthy environment by restricting and checking pollution.
- **Promotes sustainable development:** Prevents the exploitation of natural resources and preserves them for future generations.
- **Positively empowers the central government:** The Central Government has been given immense powers to not only appoint authorities to carry out various functions but also to take all the possible measures to further the objectives of the Act.
- **Strict penal provisions:** Penalises for the breach of its provisions and lays down the liability of companies and government departments for polluting the environment.
- **Protecting ecological integrity:** Preserves the ecological integrity by maintaining it in its unpolluted and natural form.

### Drawbacks of the Environment Protection Act

- **Too general in nature:** It covers only the broad aspects and leaves out the details.
- **Conflicting jurisdiction:** If an offence is punishable by both this Act and some other legislation, then the offender is to be punished under the other law and not this. This provision lessens the effectiveness of this Act.
- **Flexible penalty:** The penal provisions are not adequately stringent and deterrent. In most of the provisions, there is no minimum penalty provided. Also, the offenders have been provided with a room to escape liability.

- **Weak citizens' suit provision:** Common citizens are not allowed to file a suit against the environmental offenders unless 60 days prior notice is given. Those 60 days could be easily utilised by the offender to wipe out the evidence of his fault.
- **Not at par with the changing needs:** The ambit of environment pollution has widened with technological advancements. But the definitions under the Act have not kept up with the pace. Specifically, the definition of 'pollutant' covers only the particulate aspects.

#### Important case laws regarding the Environment Protection Act

##### 1. Vellore Citizens' Welfare Forum v. Union of India (1996)

- **River Palar in Tamil Nadu** is one of the main water sources for the surrounding people, was facing **excessive pollution caused by tanneries** and other industries and nearby agricultural land had also turned unsuitable for cultivation.
- The **Court directed the Central Government to appoint an authority** within one month under Environment (Protection) Act, 1986 and confer on it all the adequate powers required to deal with the situation created by tanneries and other polluting industries in Tamil Nadu.
- It also directed the authority to implement the **'precautionary principle' and 'polluter pays principle'**.
- A fund called **'Environment Protection Fund'** was also to be constituted.

##### 2. Narula Dyeing and Printing Works v. Union of India (1995)

- The Narula Dyeing and Printing Works were allegedly **discharging untreated pollutants into an irrigation canal** resulting in significant water pollution.
- The State Government as well as **Gujarat State Pollution Control Board issued directions** under Section 5 of the Environment Protection Act **to close down the factory.**

- The Petitioners challenged this order citing that no personal hearing was provided to them and no time was granted to comply with the said directions.
- The Gujarat High Court held that in cases where there is a **grave injury caused to the environment**, the **government is empowered to dispense** with the opportunity of hearing.

##### 3. M.C. Mehta v. Union of India (The Ganga Pollution Case) (1988)

- **Kanpur tannery industries** discharging their waste in the river Ganga since very long due to which in 1985, **a massive fire occurred in the river** because of the presence of a **toxic layer of chemicals** formed on its surface.
- The Court directed each tannery to at least **install primary treatment plants.**
- **Also laid down the following guidelines:**
  - Central Government must ensure **mandatory Environment Education** in schools.
  - Also, the Central Government must **publish environment textbooks.**

##### 4. M.C. Mehta v. Union of India (The Vehicular Pollution Case) (1991)

- A petition was filed to highlight the **plight of the capital due to vehicular pollution** and suggest practical solutions to the problem.
- The Court held that:
  - It is the **duty of the state under the DPSPs** and also as mentioned in **article 51A as a fundamental duty**, to protect the environment, life, flora, and fauna.
  - Also directed to **increase awareness** in this regard.
  - **A committee was formed** to look into vehicular pollution in the capital and suggest practical solutions to prevent it.



## National Green Tribunal Act, 2010

- **Established a National Green Tribunal** for the effective and expeditious resolution of cases involving environmental protection and conservation of forests and other natural resources.
- About **National Green Tribunal (NGT)**
  - **Specialised body** established under the National Green Tribunal Act (2010)
  - **Facilitates effective and timely resolution of matters involving environmental protection** and forest and other natural resource conservation.
  - **India - third country - after Australia and New Zealand**, to establish a specialised environmental tribunal.
  - Required to **resolve petitions within six months** of their submission.
  - Guided by the **principle of natural justice**.
  - While passing any order/decision/ award, it shall apply the **principles of sustainable development, the precautionary principle and the polluter pays principle**.
- **Composition**
  - **10 experts+ 10 Judicial members** appointed for a **five-year term (Strength ≤ 20)**
  - **Not eligible for re-appointment**.
  - **Appointed by Central Government** in consultation with Chief Justice of India
- **Jurisdiction & Powers**
  - All civil proceedings involving significant environmental issues.
  - Also possesses **appellate jurisdiction to hear appeals as a Court (Tribunal)**.
  - NGT, by order, may provide
    - **Relief and compensation** to Victims of pollution and other environmental degradation
    - **restitution of destroyed property**, and
    - **environmental restitution** in such area(s) as it may think fit
  - Judgement **enforced as a civil court decree**.
- **Penalty** for non-compliance
  - **Imprisonment** upto three years
  - A **fine** of up to ten crore rupees
  - **Both** fine and imprisonment.
- **Supreme Court can hear appeals from the NGT's orders ≤ ninety days** after the date of communication.
- The NGT deals with civil cases under the **seven laws** related to the environment
  - The Water (Prevention and Control of Pollution) Act, 1974
  - The Water (Prevention and Control of Pollution) Cess Act, 1977
  - The Air (Prevention and Control of Pollution) Act, 1981
  - The Forest (Conservation) Act, 1980
  - The Environment (Protection) Act, 1986
  - The Public Liability Insurance Act, 1991
  - The Biological Diversity Act, 2002
- **Challenges**
  - **No jurisdiction over two acts - Wildlife (Protection) Act of 1972 and Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act of 2006**
  - NGT's judgements are being challenged in various High Courts under Article 226 (authority of High Courts to issue certain writs).
  - NGT decisions have been criticised and questioned because of their impacts on economic aspects.
  - Also criticised for the lack of a formula-based system for assessing compensation.
  - Stakeholders and the government do not fully implement the NGT's decisions on grounds of being impractical to implement within a specified timeframe.
  - Shortage of personnel and financial resources - pending cases.
  - Small number of regional benches - impedes the delivery of justice

## Major Conservation Movements of India

| Bishnoi Movement  | Chipko Movement  |
|---|--|
| <ul style="list-style-type: none"> <li>• <b>Year:</b> 1700s</li> <li>• <b>Place:</b> Khejarli, Marwar region, Rajasthan state.</li> <li>• <b>Leaders:</b> Amrita Devi and Bishnoi villagers in Khejarli and surrounding villages.</li> <li>• <b>Aim:</b> Save sacred Khejri <b>trees</b> from being cut down by the king's soldiers for a new palace.</li> <li>• <b>About the Movement:</b> <ul style="list-style-type: none"> <li>○ Inspired by the teachings of <b>Guru Jambaji</b> (forbidding harm to trees and animals), Amrita Devi, along with other villagers, hugged the trees to check the logging operation and sacrificed their lives.</li> <li>○ 363 Bishnoi villagers were killed in this movement.</li> <li>○ As the king became aware of the incident, apologized, and designated the Bishnoi state as a protected area, forbidding harm to trees and animals.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Year:</b> 1973</li> <li>• <b>Place:</b> In Chamoli district and later in Tehri-Garhwal district of Uttarakhand.</li> <li>• <b>Leaders:</b> Sundarlal Bahuguna, Gaura Devi, Suresha Devi, Bachni Devi, Chandi Prasad Bhatt, Govind Singh Rawat, Dhoom Singh Negi, Shamsher Singh Bisht, and Ghanshyam Raturi.</li> <li>• <b>Aim:</b> Protect forests on the Himalayan slopes</li> <li>• <b>About the Movement:</b> <ul style="list-style-type: none"> <li>○ Sundarlal Bahuguna aware villager about the importance of trees</li> <li>○ Women of Advani village of Tehri-Garhwal tied the sacred thread around the trunks of trees and hugged the trees</li> <li>○ The movement gathered momentum in 1978, and the then-state Chief Minister, set up a committee to look into the matter, eventually ruling in favour of the villagers.</li> </ul> </li> </ul> |
| Silent Valley Movement  | Jungle Bachao Andolan  |
| <ul style="list-style-type: none"> <li>• <b>Year:</b> 1978</li> <li>• <b>Place:</b> Silent Valley, Palakkad district of Kerala</li> <li>• <b>Leaders:</b> Kerala Sastra Sahitya Parishad (KSSP) an NGO, and the poet-activist Sughathakumari</li> <li>• <b>Aim:</b> To protect the Silent Valley forest from being destroyed by a hydroelectric project.</li> <li>• <b>About the Movement:</b> <ul style="list-style-type: none"> <li>○ Kerala State Electricity Board proposed a hydroelectric dam across <b>Kunthipuzha River</b>. In 1983, the Silent Valley Hydroelectric Project was called off, and in 1985, the <b>Silent Valley National Park</b> was inaugurated.</li> </ul> </li> </ul>   | <ul style="list-style-type: none"> <li>• <b>Year:</b> 1982</li> <li>• <b>Place:</b> Singhbhum district of <b>Bihar</b></li> <li>• <b>Leaders:</b> tribals of Singhbhum.</li> <li>• <b>Aim:</b> to reverse the government's decision to replace the natural sal forest with Teak.</li> <li>• <b>About the Movement:</b> <ul style="list-style-type: none"> <li>○ Tribals of the Singhbhum district of <b>Bihar</b> protested against the government's decision to replace the natural sal forests with the highly-priced teak.</li> <li>○ The movement spread to Jharkhand and Odisha.</li> </ul> </li> </ul>   |
| Appiko Movement   | Narmada Bachao Andolan   |
| <ul style="list-style-type: none"> <li>• <b>Year:</b> 1983</li> <li>• <b>Place:</b> Uttara Kannada and Shimoga districts of <b>Karnataka State</b></li> <li>• <b>Leaders:</b> No specific leader. However, Pandurang Hegde served as the facilitator</li> <li>• <b>Aim:</b> to protect natural forests against felling and commercialization</li> <li>• <b>About the Movement:</b></li> </ul>   | <ul style="list-style-type: none"> <li>• <b>Year:</b> 1985</li> <li>• <b>Place:</b> Narmada River, flowing through <b>Gujarat, Madhya Pradesh, and Maharashtra.</b></li> <li>• <b>Leaders:</b> Medha Patkar, Baba Amte, Adivasis, farmers, environmentalists, and human rights activists.</li> <li>• <b>Aim:</b> against the construction of large dams across the Narmada River.</li> </ul>   |

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>○ Southern version of the <b>Chipko movement</b>.<br/>Locally known as <b>Appiko Chaluvali</b></li> <li>○ Locals embraced the trees to be cut by contractors of the forest department using techniques to raise awareness, such as foot marches in the interior forest, slide shows, folk dances, street plays, etc.</li> </ul> | <ul style="list-style-type: none"> <li>● <b>About the Movement:</b> <ul style="list-style-type: none"> <li>○ A protest to ensure proper rehabilitation and resettlement for displaced people due to the Sardar Sarovar Dam.</li> <li>○ Later focused on the preservation of the environment and the ecosystem of the valley. In 2000, SC approved the construction of the Sardar Sarovar Dam.</li> </ul> </li> </ul> |
|--|--|

#### Tehri Dam Conflict

|   |
|---|
| <ul style="list-style-type: none"> <li>● <b>Year:</b> 1990's</li> <li>● <b>Place:</b> Bhagirathi River near Tehri in Uttarakhand.</li> <li>● <b>Leaders:</b> Sundarlal Bahuguna</li> <li>● <b>Aim:</b> To check the displacement of inhabitants and the environmental consequence of the weak ecosystem.</li> <li>● <b>About the Movement:</b> <ul style="list-style-type: none"> <li>○ Raised the issues of high seismic sensitivity of the region, submergence of forest areas along with Tehri town, etc.</li> <li>○ The movement has failed to gather enough popular support at the national and international levels.</li> </ul> </li> </ul> |
|---|

## International Efforts for Environment Protection

### United Nations Conference on Human Development (1972)

- Marked the **beginning of international environmental law**.
- Also led to the establishment of the **United Nations Environment Programme (UNEP)**.
- **1st Conference** - Stockholm, Sweden, in 1972.
- Also known as "**The Declaration on the Human Environment**".
- Set out principles for **addressing various environmental issues and the relationship between environment and development**.

### United Nations Environment Programme (UNEP)

- **Formation:** 5 June 1972,
- **Headquarters** at **Nairobi, Kenya**
- Coordinates the organization's environmental activities and assists developing countries in implementing environmentally sound policies and practices.

- The **World Meteorological Organization** and **UNEP** established the **Intergovernmental Panel on Climate Change (IPCC)** in 1988.
- **One of the several Implementing Agencies for the Global Environment Facility (GEF)** and the **Multilateral Fund for the Implementation of the Montreal Protocol**, and it is also a member of the **United Nations Development Group**.
- **UNEP publishes:**
  - **Actions on Air Quality**
  - **Emissions Gap Report**
  - **Adaptation Gap Report**
  - **Global Environment Outlook**
  - **Invest into Healthy Planet**
  - **Frontiers**

### Regional Seas Program

- Established in **1974** to protect **the oceans and seas at the regional level**.

### UN Environment Inquiry

- A **leading international platform for advancing national and international efforts to shift the trillions required for delivering an inclusive, green economy** through transforming the global financial system.

- Launched in **2014**
- Its landmark **2015 report “The Financial System We Need”** revealed for the first time the ‘**quiet revolution**’ already taking place, led particularly by some developing countries, and its potential to renew the purpose of the financial system in the context of sustainable development.

#### Adaptation Gap Report 2023

- published annually by the **United Nations Environment Programme (UNEP)**
- **Key Findings**
  - Adaptation costs will increase significantly by 2050 for most sectors, especially under high-warming scenarios.
  - The adaptation finance needs **are 10-18 times** as high as the current international public adaptation fund flows.
  - In 2021, funding from developed countries for adaptation projects was 15% lower than in previous years.
  - Out of the international public finance allocated for adaptation, only 2% is assessed as gender-responsive
  - It identifies seven ways to bridge the adaptation gap.
    - This includes an increase in international finance flows and greater domestic mobilisation of resources.

UPSC Pre - 2021

#### Brundtland Commission

- Formerly known as the **World Commission on Environment and Development (WCED)**
- Established to unite countries to work towards **sustainable development**.
- The commission was officially dissolved in December 1987 after it released a report called “**Our Common Future**” also known as the **Brundtland Report**, in October 1987.
- This report defined and **popularized the term “sustainable development”**.

#### Brundtland Report, 1987

- **Title:** Our Common Future: Report of the World Commission on Environment and Development
- **Aim:** to discuss environment and development as a single unit
- **Objective:** to find strategies to **promote economic and social development to avoid environmental degradation, over-exploitation, or pollution**.
- **Sustainable Development:**
  - development that **meets the needs** of the present **without compromising the ability of future generations** to meet their own needs.
  - **Fundamental Components of Sustainable Development:**
    - **Environmental Protection:** conserve and enhance the resource base and gradually **change the technologies and their usage**
    - **Social Inclusion:** Developing nations get the opportunity to ensure employment, food, energy, water, and sanitation by aiming for a **sustainable population**
    - **Economic Growth:** revive economic growth by ensuring equality of qualitative growth for developing nations as developed nations
  - **Parameters of Sustainable Development:**
    - **Economic:** sustainable population, sustainable productivity, and profitability of environment and natural resources
    - **Ecological:** Protect and conserve the environment through policy interventions
    - **Technological:** Environment-friendly technologies and proper waste management
    - **Political:** Empowering the population and maintaining peace and order

- **Socio-Cultural:** Resource access and property rights, environmental awareness, and inculcating environmental ethics
- **Institutional:** Increase institutional capacity for sustainable development

UPSC Pre - 2016

### Rio Summit /United Nations Conference on Environment and Development (UNCED)/ Rio de Janeiro Earth Summit/ Rio Conference/ Earth Summit (1992)

- Held in Rio de Janeiro (Brazil) in June 1992.
- **Outcomes**
  - **Rio Declaration on Environment and Development** - 27 principles to guide countries in future sustainable development.

### ○ Agenda 21

- A non-binding action plan for sustainable development.
- Action agenda for the UN, other multilateral organizations, and individual governments around the world that can be executed at local, national, and global levels.
- The "21" in Agenda 21 refers to the 21st Century.
- **Objective-** every local government should draw its own local agenda 21.
- **Forest Principles**
  - Makes recommendations for conservation and sustainable development in forestry.
- Two **legally binding** documents
  - Convention on Biological Diversity (**CBD**)
  - Framework Convention on Climate Change (**UNFCCC**)

### RIO+5 (1997)

- A special session of UNGA to appraise the status of Agenda 21.
- UNGA recognized progress as "uneven" and identified issues like increasing globalization, widening inequalities in income, and continued deterioration of the global environment.

### RIO+10 (2002)

- Held in Johannesburg
- 10-year assessment of the Rio outcomes
- Affirmed UN commitment to "full implementation" of Agenda 21, alongside the achievement of the Millennium Development Goals and other international agreements.

### Agenda 2021 for Culture (2002)

- 1st World Public Meeting on Culture (Porto Alegre, Brazil)
- Came up with the idea to establish guidelines for local cultural policies.
- Included in various subsections of Agenda 21 and carried out through a wide range of sub-programs beginning with G8 countries.

### RIO+20 /United Nations Conference on Sustainable Development (2012),

UPSC Pre - 2015

- A 20-year follow-up to the Earth Summit 1992 and a 10-year follow-up to the Earth Summit 2002.
- aka Rio 2012 or Earth Summit 2012.
- Hosted by Brazil in Rio de Janeiro in 2012.
- Reaffirmed the commitment to Agenda 21.
- 3rd international conference on sustainable development.

### Sustainable Development Summit (2015)

UPSC Pre - 2016

- Decided upon Agenda 2030 /Sustainable Development Goals.
- 17 goals have been decided along the lines of Agenda 21.



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### Global Environment Facility

UPSC Pre  
- 2014

- **Founded:** October 1992
- **Location - Washington,** District of Columbia, United States of America
- Established on the eve of the 1992 Rio Earth Summit.
- **Unites 183 countries** in partnership with international institutions, civil society organizations (CSOs), and the private sector.
- **Addresses global environmental issues** while supporting national sustainable development initiatives.
- **Independently operating financial organization.**
- Provides grants for projects related to biodiversity, climate change, international waters, land degradation, the ozone layer, persistent organic pollutants (POPs), mercury, sustainable forest management, food security, and sustainable cities.
- **Serves as a financial mechanism for the following conventions:**
  - United Nation Convention on Biological Diversity (CBD)
  - United Nation Framework Convention on Climate Change (UNFCCC)

- United Nation Convention to Combat Desertification (UNCCD)
- Stockholm Convention on Persistent Organic Pollutants (POPs)
- **Minamata Convention** on Mercury
- Also supports the implementation of the Protocol in countries with economies in transition.

#### Latest Update

- Recently, a report summarizing the **first phase** of implementation of the **Inclusive Conservation Initiative (ICI)** was released.
- **Key Findings**
  - Although there has been an increase in funding commitments for Indigenous Peoples and local communities (IP and LC) to enhance conservation efforts, the **overall funding landscape** for them **remains largely unchanged.**
  - Donors have allocated **less than 1% of climate change mitigation and adaptation funding** to them.

### Inclusive Conservation Initiative (ICI)

- **Aim:** To enhance Indigenous Peoples' and Local Communities' (IPs and LCs) efforts to protect land, waters and natural resources.
- It will support enhanced Indigenous and community stewardship across 7.5 million hectares of landscapes, seascapes, and territories with high biodiversity and irreplaceable ecosystems.
- Endorsed by **Global Environment Facility (GEF)** in 2022.
- Implemented by Conservation International (CI) and IUCN
- **Four Components**
  - Local Action to deliver Global Environmental Benefits
  - Global IPLC Capacity Building
  - Global Policy Influence
  - Global Knowledge Management and Learning

### International Renewable Energy Agency

- **Formation:** 26 January 2009
- **Headquarters:** Masdar City, UAE
- **Membership:** 160 states and the European Union
- An intergovernmental organization mandated to facilitate cooperation, advance knowledge, and promote the adoption and sustainable use of renewable energy.
- First international organization to focus exclusively on renewable energy, addressing needs in industrialized and developing countries.

### International Energy Agency,

UPSC Pre - 2022

- **Secretariat-** Paris, France
- **Establishment - 1974**
- A Paris-based autonomous intergovernmental organization established in the framework of the Organisation for Economic Co-operation and Development (OECD) in 1974 in the wake of the 1973 oil crisis.

- Acts as a policy adviser to its member states
- It also works with non-member countries, especially China, India, and Russia.
- Focus on the "3Es" of effective energy policy: energy security, economic development, and environmental protection.
- IEA member countries are required to maintain total oil stock levels equivalent to at least 90 days of the previous year's net imports.

### Indian Efforts to Protect Environment

#### Centre for Science and Environment

- A not-for-profit public interest research and advocacy organization based in New Delhi, India.
- Established in 1980
- Works as a think tank on environment-development issues in India.
- Uses knowledge-based activism to create awareness about problems and propose sustainable solutions.
- In 2018 awarded with the Indira Gandhi Prize for Peace, Disarmament, and Development.

#### Green Skill Development Programme

- By MoEFCC.
- A skill development initiative in the environment and forest sector designed to help India's youth find gainful work and/or self-employment.
- Aims to train green-skilled individuals with technical expertise and a commitment to long-term sustainability.
- Encompass the skills, talents, beliefs, and attitudes required to live in, develop, and promote a resource-efficient and sustainable society.
- **Importance**
  - By 2022, India will require about 10.4 crore new workers across various industries; therefore, skill development will be critical to meet demand.

- Trainees may also be exposed to expertise in wildlife conservation, nurseries, horticulture, and other fields and may be absorbed by state governments' Departments of Environment and Forests.
- Aims to educate young people who have been unable to complete their education due to financial or societal restraints but who desire to learn new skills and contribute to society.
- The achievement of SDGs, INDCs, and National Biodiversity Targets will be aided by a green-skilled workforce with technical expertise and a dedication to sustainable development.
- Transitioning from an energy and emission-intensive economy to cleaner and greener production and service patterns necessitates green skills.

#### Gross Environment Product

- The concept of gross environment product (GEP) was introduced in 2011 and Uttarakhand Government accepted it in 2021.
- GEP quantifies and assess human efforts to improve the environment alongside economic growth and development.
- It is an assessment system to measure ecological status.
- It is considered as the product and service value that the ecosystem provides for human welfare and economic and social sustainable development, including provisioning, regulating and cultural ecosystem services.
- Overall, GEP accounts for the economic value of the ecosystem in providing products and services, and it is one of the components of green GDP.

#### Green GDP

- Green GDP is an indicator of economic growth with environmental factors taken into consideration along with the standard GDP of a country. It factors biodiversity losses and costs attributed to climate change.

#### National Green Corps 'Ecoclub'

- National Green Corps (NGC), also known as "a programme of Eco Clubs"
- A statewide effort of the MoEFCC launched under the Environment Education Awareness and Training (EEAT).
- Objectives
  - Teaching school children about the environment.
  - Develop the necessary abilities of observation, experimentation, survey, recording, analysis, and reasoning for environmental conservation.
  - Attitudinal correction in the community
  - Educate youngsters about environmental and development issues through field trips and demonstrations.
  - Encourage children to think logically and independently to make the best decisions possible in a spirit of scientific inquiry.
  - Motivate and stimulate young brains by immersing them in environmental conservation action programs.

#### The Energy and Resources Institute

- Specializes in the fields of energy, environment, and sustainable development.
- Established in 1974
- Formerly k/a Tata Energy Research Institute.
- 2016-17 - TERI set up the world's biggest facility for Mycorrhiza production in Gaul Pahari, Gurugram, Haryana.
- Scope- climate change, energy efficiency, renewable energy, biotechnology, and social transformation.
- Organises:
  - World Sustainable Development Summit (WSDS) - An annual summit that facilitates the exchange of knowledge on diverse aspects of global sustainable development.
  - LaBL (Lighting a Billion Lives) - An initiative to provide clean lighting access to bottom-of-the-pyramid communities.



- **Green Olympiad** - Conducted in association with MoEF, it is an international environment examination that is annually organized for middle and high-school students.

#### Green Rating for Integrated Habitat Assessment (GRIHA)

- It was conceived by **TERI** and developed with the **Ministry of New and Renewable Energy**
- It is a **national rating system** for green buildings in India.

### Global and Indian Environment Funds

#### 1. Adaptation for Smallholder Agriculture Programme (ASAP)

- Proposed: 2001, Operational: **2012**.
- **Administered by IFAD** (International Fund For Agricultural Development).
- **Objectives:**
  - To **channel climate and environmental finance** to smallholder farmers,
  - **Scale up climate change adaptation** in rural development programs
  - **Mainstream climate adaptation** into IFAD's work.

#### 2. Adaptation Fund

- Proposed: 2001, Operational: **2009**
- Financial instrument **under the UNFCCC and its Kyoto Protocol (KP)**.
- **Established to finance concrete adaptation projects and programmes** in developing country Parties to the KP, in an effort to reduce the adverse effects of climate change facing communities, countries and sectors.
- **Financed from Clean Development Mechanism (CDM) project activities** as well as through **voluntary pledges** of donor governments.
- **World Bank - Trustee** on an interim basis.
- Aims to **support concrete adaptation activities** that reduce the adverse effects of climate change facing communities, countries, and sectors.

#### 3. Amazon Fund

- **Proposed:** 1st August 2008, Operational: 1st March **2009**.
- To **raise donations so that investments can be made to prevent, monitor, and combat deforestation**, as well as to promote the conservation and **sustainable use of forests in the Amazon Biome**.
- A **private fund**.
- **Managed by** the Brazilian Development Bank

#### 4. Bio Carbon Fund

- Operational in **2004**.
- **Administering Organisation: The World Bank**
- **Objective-** To work alongside private firms that can provide capital, innovation, operational resources, and technical expertise to accelerate the greening and securing of their supply chains."
- **Activities Supported** -environmental restoration, reforestation for fuel wood, REDD+ activities, sustainable agricultural land management, fast-growing tree plantations for timber.

#### 5. Forest Carbon Partnership Facility

- A **World Bank** program consists of a **Readiness Fund and a Carbon Fund**. UPSC Pre - 2015
- Created to **assist developing countries in reducing emissions** from deforestation and forest degradation, enhance and conserve forest carbon stocks, and sustainably manage forests (REDD+).
- Fund proposed: 2007. Operational: 25 June **2008**.
- **Administering Organisation-** The World Bank.
- **Objectives** - To provide **financial and technical assistance to:**
  - Assist eligible REDD Countries to achieve emission reductions from deforestation and/or forest degradation

- Build recipient country capacity for benefitting from possible future systems with positive incentives for REDD

## 6. Global Energy Efficiency and Renewable Energy Fund

- A **Public-Private Partnership (PPP)**.
- **Designed to maximize the private finance** leveraged through public funds funded by the European Commission and managed by the European Investment Bank.
- GEEREF is structured as a fund of funds and invests in private equity sub-funds that specialize in financing small and medium-sized project developers and enterprises (SMEs) to implement energy efficiency and renewable energy projects in developing countries and economies in transition.
- Proposed: 2006, Operational: **2008**

## 7. Green Climate Fund

UPSC Pre - 2015

- **Established under UNFCCC** as an operating entity of the Financial Mechanism to assist developing countries in adaptation and mitigation practices to counter climate change.
- Proposed: December 2009. Established: December 2010. Adopted in 2011. Operational: in **2015**.
- The GCF is based in Incheon, South Korea.
- Governed by a Board of 24 members and supported by a Secretariat.

### Objective:

- Support projects, programs, policies, and other activities in developing country parties using thematic funding windows.
- To become the main multilateral financing mechanism to support climate action in developing countries.
- To make an ambitious contribution to attaining the mitigation and adaptation goals of the international community.
- The World Bank serves as the interim trustee of the GCF, and the Fund functions under the guidance of and remains accountable to the UNFCCC Conference of Parties.

### Latest Update

#### Sub National Climate Resilient Green Fund

- Recently, **Goa** became the **1st state to get the World Bank backed** Sub National Climate Resilient Green Fund.
- **Stakeholders:** Department of Environment, Government of Goa, NABARD, SIDBI, and the Power Finance Corporation (PFC).
- The announcement was made during the World Bank's India Climate and Development Partners' Meet, 2024 held in Panaji.
  - The fund is being set up **as an outcome of 100% renewable energy plan for Goa**, which was announced at the G20 Summit.

## 8. Least Developed Countries Fund

- Proposed: 2001, Operational: **2002**
- Established to meet the **adaptation needs of least developed countries (LDCs)**.
- Finances the **preparation and implementation of the National Adaptation Programme of Action (NAPAs)** to identify priority adaptation actions for a country based on existing information.
- **Administered by the Global Environment Facility** with the **World Bank** as a **Trustee**.
- **Aims to address the needs of the 48 LDCs**, which are particularly vulnerable to the adverse impacts of climate change.

## 9. Pilot Program for Climate Resilience

- A **targeted program of the Strategic Climate Fund (SCF)**, one of two funds within the Climate Investment Funds (CIF) framework.
- Aims to **pilot and demonstrate how climate risk and resilience may be integrated into core development planning and implementation** by providing incentives for scaled-up action and initiating transformational change.