

Chapter 11

Development and industrial bloom along with environment empowering

Kalpana Suman^{1*} and Shweta Shree²

¹University Department of Botany, Ranchi University, Ranchi, Jharkhand, India

²Department of Biotechnology, Jharkhand Rai University, Ranchi, Jharkhand, India

*Corresponding author email: sumankalpana582@gmail.com

DOI- <https://10.5281/zenodo.10019008>

<https://orcid.org/0009-0002-0372-6133>

Co-author: <https://orcid.org/0009-0002-5401-3504>

Received:-

05th September, 2023

Accepted:-

07th October, 2023

Published:-

(online)


27th October, 2023

ABSTRACT:- With the changing eras, humans, their requirements, and way of living have evolved. From cave dwellers to skyscraper dwellers, from the first invention of fire to the contemporary invention of nuclear energy, from necessities to luxury, and so on. But these all must be done with harmony, without disturbing and damaging any aspect of the environment. For this purpose, development; majorly known for industrialization must work and grow parallel with the environment. Scientists, researchers, politicians, philosophers, environmentalists, etc. must come along for the protection, preservation, and conservation of the Environment.

Keywords: Built environment, Environmental law, environmental justice, environmental rights

1. INTRODUCTION

Environmental science is the knowledge gateway to understanding the environment in its natural setup (natural environment) and with the human invasion/intervention (built environment) by making even, conscientious, organized studies for

 Citation: Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering. *Advances in Bioscience: Exploring Frontiers of Discovery, Vol. 1*, ISBN: 978-93-5913-645-5. pp. 135-166. <https://10.5281/zenodo.10019008>
Editor: Dr. Anand Kumar Thakur, Email id: fnruanand@gmail.com

scientific resolution, conclusive description, and prognostication of the events. Modern research must involve the participation of educational institutions, government agencies, and stakeholders. This participation influences the making of regulatory policies, commercialization of products, health care management, social infrastructures, and environment conservation.

Over the centuries, technological advancement and innovations have invented heavy machinery and mega structures to access things in vast quantities and in less time. Chemical insecticides and fertilizers have increased crop production undoubtedly but have dire consequences on the environment. Similarly, mega structures like dams and industries have tremendously increased the economic status but in their construction, landscapes have been shattered and habitats of many organisms have been disturbed. With an alarmingly increasing population, there is a need for industrial development and intensive farming, which require exploitation of natural resources but that, must not be done by compromising the future.

More human invasion and intervention cause disaster and inevitable effects like pollution, soil erosion, radiation, forest fire, etc. All the elements of the environment turn to mineral deposits over time. Extraction, utilization, mishandling, and disposal of minerals and waste generated cause pollution. These minerals are utilized as fuels for electricity, transportation, heating; construction materials (gravel, brick, clay, and concrete, etc.); manufacturing of chemicals, fertilizers electronics, etc. Even agricultural practices were started by chopping down forests and grazing meadows (grasslands) led to soil erosion; disposal of agriculture residues and creation of arable lands by burning causes forest fires and ultimately contributes to pollution.

2. TIMELINE

The events that have influenced people's views on the environment are listed on this timeline of environmentalism in history. Environmental legislation, human-caused disasters, and influential environmentalists are all included in this chronology.

Pioneers In Environmental Science:

- 1. Theodore Roosevelt (Teddy) (1885-1919):** First environmental president known as conservationist president. Established the 150 national forests and 5 national park systems. Protected

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

2300000 acres of land. Established 51 government-run bird reserves. "The primary issue is the preservation of natural resources. Without resolving that issue, we won't be able to accomplish anything in terms of other issues" - Theodore Roosevelt.

2. **John Muir (1838-1914):** He was the founder of the SIERRA CLUB (American environmental organization). "In every walk with nature, one receives far more than he seeks" - John Muir.
3. **Gifford Pinchot (August 11, 1865 - October 4, 1946):** He was an American forester and politician. He was the first director of the United States Forest Service, the fourth chief of the United States Division of Forestry, and the 28th governor of Pennsylvania.
4. **Aldo Leopold (1887-1948):** He is called the father of wildlife conservation in the U.S. He is known for his 'Concept of the land 'ethic. He said, "We treat land badly because we see it as personal property. We might start treating it with adoration and respect when we consider the land to be a community that we are a part of."
5. **Rachel Carson (1907-1964):** She is known as the Mother of the Environmental Science Movement. She was aware of the dangers of pesticides such as DDT. She wrote about it in her book "Silent Spring" in 1962. Pesticide companies who wanted to dishonor her work attacked her. Time magazine elected her one of the most influential people of the century.

All contributed to the early Conservation Era, which brought about the environmental ethics movement.

3. BUILT ENVIRONMENT

Environmental science is all about the systematic study of human interaction with the environment and the impact posed by humans on the environment and by the environment to humans. The environment is the surroundings that can be legitimate or built, so far in this chapter we have discussed the natural environment, and now few words to deduce the built environment. The built environment is human-made structures, facilities, and circumstances. Landscape architecture, urban planning, public health, corporate, agriculture, sociology, and cyber (internet) are a few examples of built environments¹.

These customized spaces facilitate setup for human activity to fulfill wants and requirements².

3.1 Urban planning: Rapid deforestation occurred, as forests were providers of raw materials for the construction of houses and for industries like paper and pulp manufacturing, packaging, firewood fodder for people, etc. Forests are also used as drainage for the rivers. Huge dams were built in independent India to meet the growing demand for water, which resulted in the submersion of vast forest tracts, the displacement of locals, and damage to the flora and fauna. Buildings serve the purpose of residents, commerce, institutions, and government for sleep, eating, etc., and the public means roads, highways, pedestrians, transportation, and parks for use, but all were built by destroying natural landscape.

3.2 Agriculture: When humans start to settle down, leaving behind hunting and roaming around season to season, learn to cultivate the soil and settle down as agriculturists. This can be said as the origin of the built environment. In the early times, hunger eradication was the only priority and agriculture produced food for everyone then and now as it is essential to sustain life. Due to demands from agriculture and other uses, India's forests have been declining for several centuries. Numerous states have recently transformed substantial portions of their woods into agricultural land for the cultivation and plantation of mountainous vegetables and other crops. The goal is to reestablish forest cover in these regions. The tribal communities that live in forests have a reverence for the trees, birds, and other animals that provide them with food. We must appraise the role of these humans in restoring and preserving forests. The traditional knowledge and experience of the local populations should be combined with the contemporary knowledge and abilities of the forest department. To carry out afforestation, the strategies for the combined administration of forests by government representatives and tribal people should be developed in a well-planned manner.

3.3 Industrial setup: India is frequently said to as a prosperous country with impoverished citizens. Environmental deterioration and poverty are related. For their fundamental requirements of food, fuel, fodder, and shelter, the vast bulk of our population is directly dependent on the natural resources of the nation. In essence, poverty is a result of

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

population expansion. In modern times, the needs of humans increased and they moved to cities in search of jobs; thus, industrialization and urbanization bloomed. To maintain the standard of life, cars, trains, trolleys, cable cars, and subways, were used for public transportation. This led to environmental issues like noise pollution, bad drainage, health disease, roadways, air and water pollution, etc. Consequently, the problems of poverty and environmental deterioration are two sides of the same problem.

3.4 Sociology: Despite having only 2.4% of the world's total land area, India is home to 16% of the world's people. The benefits of development are diminished, and the natural resources are put under a lot of pressure. So, the biggest problem we have is how to stop population growth. The physical barriers build boundaries to separate neighborhoods whereas roads and railways interconnect these neighbors. Separation results in the loneliness of society from various facilities available at specific places. Roads, highways, and pedestrians help in accessing jobs and healthcare. The urban areas have hotter Summers and scanty rain in respect to rural areas.

3.5 Health: Due to intensive agriculture, an expansion in industry, rapid urbanization, and population growth, our surface water has become contaminated with industrial effluents, chemical fertilizers, and pesticides, which has also an impact on the quality of our groundwater. The requirement for clean water is increasing day by day but the population is left with polluted water; are forced to survive on it. Everything that was meant for /thought to serve people has impacted health adversely. People are exposed to poisons or chemicals that induce chronic illnesses; asthma is most prominent. A faulty lifestyle causes diabetes, obesity as well and coronary artery disease³.

3.6 Corporate Environment: The corporate environment is defined as the overall culture, atmosphere, and structure within a business or organization. It encompasses the norms, values, and practices that shape the way employees interact with each other, with management, and with external stakeholders. The corporate environment plays an important role in determining the company's overall productivity, employee satisfaction, and success.

Key aspects of the corporate environment include:

- a. **Organizational Structure:** This defines how the company is organized, including reporting lines, hierarchies, and departmental divisions. It can be hierarchical, matrix-based, flat, or other variations.
- b. **Company Culture:** This represents the shared values, beliefs, and behaviors that guide how employees and management interact and work together. Company culture can be collaborative, competitive, innovative, or traditional, among others.
- c. **Communication:** The way information flows within the organization is crucial. Effective communication fosters transparency, encourages teamwork, and ensures everyone is on the same page.
- d. **Leadership Style:** The leadership approach of top executives and managers profoundly influences the corporate environment. Leadership can be authoritarian, democratic, transformational, or other styles.
- e. **Employee Relations:** The degree to which employees get along with one another influences the environment of any organization as a whole. Healthy workplace relationships promote motivation, cooperation, and job satisfaction.
- f. **Work-Life Balance:** Employees who are happier and more productive can result from a corporate culture that values and encourages work-life balance.
- g. **Company Policies:** Corporate policies on various subjects, including ethics, diversity, and employee perks, influence the entire workplace culture.
- h. **Motivation and satisfaction:** Employee motivation and job satisfaction are impacted by performance management, the process of assessing employee performance and offering feedback.
- i. **Corporate Values:** The fundamental values and standards that the organization follows have an effect on how employees behave and how decisions are made.
- j. **Physical Workspace:** How a workplace is configured and designed to have an effect on creativity, teamwork, and overall employee wellbeing.

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

A good corporate environment promotes teamwork, creativity, staff development, and a feeling of purpose, whereas a bad one can result in low morale, a high turnover rate, and decreased productivity. In an effort to increase their ability to recruit and keep personnel and their general market success, businesses frequently work to establish a favorable corporate environment.

3.7 Cyber Environment: The term “cyber environment” refers to the virtual space created by the interconnected networks of computers, devices, and digital systems. It encompasses everything related to cyberspace, including the internet, computer networks, software applications, data storage, communication channels, and the people who use and interact with these technologies.

The cyber environment is constantly evolving and expanding, driven by advances in technology and the increasing reliance of individuals, businesses, and governments on digital platforms for various activities. It has become an important character of modern society and plays a critical role in areas such as communication, commerce, education, entertainment, and governance.

However, the cyber environment also presents various challenges and risks, such as cyber threats, cybercrime, hacking, data breaches, and online privacy concerns. As a result, cybersecurity has become a paramount concern, focusing on protecting information and digital assets from unauthorized access, use, or damage. Elements of the cyber environment comprises:

- a. **Networks:** The infrastructure that connects devices and computers together, allowing them to communicate and exchange data.
- b. **Devices:** Computers, smartphones, tablets, servers, and other internet-connected devices that enable users to access and interact with the cyber environment.
- c. **Software:** Applications, operating systems, and programs that provide functionality and allow users to perform tasks within the digital space.
- d. **Data:** Information stored, processed, and transmitted in the cyber environment. This includes personal data, business data, and any other digital information.

- e. **Users:** People who access and utilize the cyber environment for various purposes, ranging from casual internet browsing to conducting business and managing critical systems.
- f. **Cybersecurity Measures:** Mechanisms and practices put in place to protect the cyber environment from cyber threats and unauthorized access, including firewalls, encryption, antivirus software, and security protocols.
- g. **Cyber Infrastructure:** The physical and virtual unit that covers the cyber environment, including data centers, cloud computing resources, and internet service providers.

4. INDUSTRIAL CATASTROPHE

The industrial revolution is the root cause of many of the environmental issues. There have been numerous industrial catastrophes around the world that have seriously harmed people's health, the environment, and the economy. These deaths have sparked new international rules as well as protracted legal battles.

4.1 The 'Four Big Pollution Diseases' of Japan (1912-1965) - Itai-Itai illness, a painful skin and bone disorder, was first reported as a result of improper handling of industrial waste in Japan in 1912. Two variants of the fatal Minamata disease (Niigata Minamata and original Minamata disease), which can cause paralysis and death, appeared in 1956 and 1965 after methylmercury was released into the local water supplies by the Chisso Corporation and Showa Denko K.K.

In 1956, Asthma from Yokkaichi was one of the "Four Big Pollution Diseases of Japan," and it was the focus of the first pollution-related court action in Japan. It refers to human cases of COPD, chronic bronchitis, pulmonary emphysema, and bronchial asthma as well as various environmental changes that are typically attributed to sulfur dioxide (SO₂) emissions that were visible as smog over the city of Yokkaichi in Mie Prefecture, Japan, between 1960 and 1972.

4.2 Niger Delta Oil Pollution (1958)- Due to the massive oil spills that have been occurring in the Niger Delta for the past 50 years, the region has become one of the most polluted in the world, and the introduction of oil production has had a detrimental influence there as well. This affects the livelihood of the indigenous people who depend on the ecosystem services for survival leading to increased poverty and displacement of people. Unsustainable oil exploration activities have

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

made the Niger Delta region one of the five ecosystems in the world that have been most severely impacted by petroleum, despite the fact that the oil industry located in this area has significantly contributed to the growth and development of the nation. It has had disastrous consequences on the environment in the region and has adversely affected people inhabiting that region.

4.3 Ecuador's Amazon Degradation (1964-1990) - Ecuador's major rainforests, which formerly covered more than 15% of the nation's land mass, have been severely damaged by logging, road construction, and oil exploration. Most of the country's rainforest has been destroyed by logging in Western Ecuador, namely in coastal and low Andean regions. For other countries and stakeholders, Ecuador's attempts to establish a logging-free and sustainable manufacturing model serve as an example of how environmental sustainability and economic protection can coexist in harmony. However, in order to strengthen production systems and lives and to give priority to high-quality goods highly socially and environmentally responsible, these efforts call for the collaboration of many sectors under the same vision. An innovative agreement was endorsed in January 2021 by Ecuador's Ministry of Environment and Water, Ministry of Agriculture and Livestock, and its Agency for the Regulation and Control of Phytosanitary and Animal Health (Agrocalidad). This pact will establish a "Deforestation-Free Certification for Agricultural and Livestock Production." With the full support of manufacturers and private businesses, this historic initiative aims to enhance the supply chain for the commercialization of high-quality sustainable products.

4.4 Peru's Amazon degradation (1971-1996) - The total area of about 59% of Peru is made up of forest, including more than 68 million ha of tropical rainforest spread over the Amazon and Andes. With roughly 6.3% of plant species and 7.5% of animal species, Peru is the ninth most biodiverse country in the world. Of these, 7,590 plant species and 725 animal species are native to Peru's distinct ecosystems. Peru's forests - which store 28.4 Gt of carbon - are midst the most skinned in the world. Peru lost 3.12 million hectares (or 4%) of its tree cover between 2001 and 2019, which resulted in 1.48Gt of CO₂ emissions. Primary rainforests made up 2 million of those hectares or 2.8% less of Peru's overall primary rainforest. In 2019, Peru was the tropical nation that lost the most

primary forest that year, ranking third in Latin America and sixth overall.

4.5 Papua New Guinea's Panguna Mine War (1972-1989)- The Panguna copper mine, one of the biggest open-pit mines in the world, is accused of causing extensive environmental damage by the people of Bougainville Island. Environmental activists claim that once the mine was opened in 1972, over one billion tonnes of mining waste containing Sulphur, arsenic, copper, zinc, cadmium, and mercury were thrown into the nearby river system, rendering a 40-mile stretch of the waterway biologically dead.

4.6 Italy's Seveso Dioxin Cloud (1976)- Hazardous chemical-related major industrial accidents are a serious threat to both human health and the environment. Additionally, these accidents frequently lead to considerable financial losses and block long-term progress. In addition, as they are a necessary component of almost every technology we use, chemicals play a significant role in most of our everyday activities, contributing to our security and well-being, as well as solving new problems through innovation. At least 2,000 people become ill as a result of a dioxin cloud from a chemical factory accident near Seveso, Italy, and 80,000 animals must be put to death to prevent the poison from entering the food chain.

4.7 France's Amoco Cadiz Tanker Spill (1978)- This was the largest oil spill ever recorded to have been brought on by a ship grounding. Due to the serious repercussions of this catastrophe, the French government revised its oil response plan (the Polmar Plan), purchased stocks of equipment (Polmar Stocks), implemented a traffic expressway in the English Channel, and established Cedre. The Amoco firm was pursued in the United States by the French government and the impacted local communities. After 14 years of challenging procedures, they finally received 1,257 million francs (190 million euros), which is less than half of the anticipated amount.

4.8 India's Bhopal Cyanide Gas Leak (1984) - At least 4,000 people are killed, and an estimated 500,000 people become ill as a result of a methyl isocyanate gas leak from a chemical plant run by the American company Union Carbide in Bhopal, India. Survivors also suffered from a variety of health problems, including blindness, chronic respiratory problems, and birth defects.

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

4.9 Chernobyl Nuclear Disaster (1986)- A reactor explosion at the Chernobyl Nuclear Power Plant in Soviet Ukraine in 1986, which occurred seven years after a partial meltdown at the Three Mile Island nuclear facility in Pennsylvania, casts doubt on the future of nuclear energy globally. 31 people were killed directly in the Chernobyl accident, while estimates of the long-term death toll range greatly, from 5,000 deaths according to the World Health Organization to 90,000 according to Greenpeace.

4.10 Exxon Valdez Oil Spill (1989)- The Exxon Shipping Company-owned *Exxon Valdez* oil tanker spills 10.8 million gallons of crude oil into Prince William Sound, off the Alaskan coast, after striking a reef. The pollutes, 1,300 miles of coastline killing 250,000 seabirds, 3,000 sea otters, and 250 bald eagles, and destroys billions of salmon eggs in a major blow to Alaska's fishing industry.

4.11 Romania's Cyanide Spill (2000)- The Lupes, Somes, Tisza, and Danube Rivers received 34 million gallons of cyanide from the Baia Mare gold mine in Romania. Numerous miles of aquatic and plant life are completely destroyed by the leak, which has an effect on regional fishing industries and prevents Serbian, Hungarian, Romanian, and Bulgarian citizens from accessing clean drinking water for several months.

4.12 Ivory Coast's Toxic Waste Dumping (2006)- It began on 20 August 2006 when they woke up to find that foul-smelling, toxic waste had been dumped in numerous places around their city. Numerous thousands of people had blistering skin, stinging eyes, nausea, headaches, and respiratory problems. The 400 tonnes of hazardous garbage, including caustic soda and petroleum waste, are transported from Amsterdam to Abidjan by the Dutch oil trader Trafigura and dumped there.

4.13 Deepwater Oil Spill - Eleven people are killed and the greatest oil spill in American history – roughly, five million barrels – is produced by a BP oil rig in the Gulf of Mexico explosion as it was drilling at a depth of greater than one mile below the surface. It took nearly three months for U.S. authorities to stop the spill, which damaged beaches, animals, fisheries, and tourism to the tune of \$17.2 billion.

4.14 Amazon Wildfires (2019-2020)- During the Amazonian tropical dry season of that year, there was an increase in the number of fires in the

Amazon rainforest and Amazon biome in Brazil, Bolivia, Paraguay, and Peru. The world has been concerned about what will happen to the rainforest of the Amazon, which was the greatest land-based carbon dioxide sink in the world and plays a vital role in reducing global warming, because of the greater fire count rate in 2019. Brazilian President Jair Bolsonaro's pro-business policies, which have fewer environmental safeguards and favoured deforestation of the Amazon since he took office in January 2019, have caused the most concern regarding the country's increased rate of fires, according to international leaders, including French President Emmanuel Macron and environmental non-governmental organizations (ENGOs).

5. ENVIRONMENTAL EDUCATION (EE)

The arranged and planned efforts to teach and make others understand the functioning of natural environments, especially in terms of managing human behavior towards the ecosystem so that future generations should not suffer. Such type of education is important to create environmental ethics and induce population with the significance of environmental protection and biodiversity⁴. Figure 1 illustrates the integration of the study of biology, chemistry, physics, ecology, earth science, mathematics, geology, and geography.



Fig.1. Integration of different subjects.

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), Environmental Education is crucial for maintaining and restoring the wildness of nature by making the

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

public environmentally aware and thoughtful of tribal communities living in the forests or wild areas. UNESCO insists on this type of education and emphasizes making it mandatory for safeguarding nature and its resources for future generations⁵.

The term education is often confusing within the walls of the schooling system, from primary to higher secondary; it is necessary to be initiated at school to inculcate goodness of nature and its conservation. These can be practiced by doing educational tours and visits to aquariums, zoological parks, biological parks, botanical gardens; and biodiversity parks that combine or imitate nature in urban areas. To educate oneself is to develop psychological and scientific attitudes in students to realize and recognize the environmental issues; society is facing right now and inculcate pro-environmental sensibility. Apart from school and students, it helps in spreading awareness of communication viz., print media and electronic media.

The main objectives of Environmental education are:

- a. To make aware and develop interest of everyone's for the protection of the environment.
- b. Ethical and innovative thoughts to tackle environmental issues;
- c. To create green careers: environment scientist, environment engineer, park ranger and eco-tourism guide;
- d. Provoke people to act independently and collectively for sustainable development;
- e. To promote green transportation for enhancement of environmental behavioral change⁶.

6. ENVIRONMENTAL DESIGN AND PLANNING

Environmental design and planning are essential equipment for human remodeling. Environmental design is the process of communicating environmental framework when devising plans, programs, policies, buildings, or products. It aims to develop regions that will satisfy the local ecological, social, cultural, and physical environments. Planning for construction and human growth that is both practical and sustainable is referred to as "environmental planning". Environmental planning is crucial to achieving project objectives while also preserving the environment and undeveloped areas. Environmental planning's objectives go counter to prior human development objectives, which included the notion of "conquering nature." Instead,

environmental planners aim to integrate humans into the natural environment, protecting the ecosystem while simultaneously enhancing human quality of life. Environmental planners see their mission as essential: balancing the requirements of the present while also considering the needs of future generations on a globe with more than 7 billion people.

Briefly:

- a. To construct structures, infrastructure, landscapes, cities, and regions that perform more sustainably, environmental design and planning should follow nature in the same way that follows function in the natural world.
- b. The ability of environmental design and planning experts to incorporate ecological ideas into their work is currently limited.
- c. Design that draws inspiration from nature can be justified by better usability, financial gain, and marketability.
- d. Resilience provides a unified paradigm for teaching ecology and environmental design.
- e. Interdisciplinary collaboration is made possible by real-world tactics like enhancing urban resilience to the effects of natural disasters.

Professionals in these fields have the potential to develop more sustainable structures, communities, landscapes, and geographic areas if they include ecological understanding in their design and planning processes. Likewise, experts in design and planning who have a deeper understanding of ecology can be encouraged to use that information more skillfully. Through more interaction and cooperation between ecologists and specialists in planning, designing, engineering, and building the artificial environment, the difficulty of incorporating ecological concepts in research, education, and practice for the man-made environment can be overcome.

Architecture and engineering, two subdisciplines of design and planning, possess the most extensive institutional histories, but their current pedagogical systems do not support the development of ecological literacy. Architecture has traditionally placed a strong emphasis on form, aesthetics, and object creation. Although they don't have ecology information, architects are well-versed in physics, microclimate, and calculus; they are aware of how the construction

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

process must connect to the site circumstances; and they are exceptionally good at picking up creative talents. A Carnegie Foundation study from the 1990s promoted changing the focus of architectural education from “making objects” to “building community”⁷. This research has served as motivation to enhance environmental education in architecture, as has the growing interest in “green” building design. Since the availability of resources is essential to our survival and subsistence, development must be carefully planned. Therefore, it was necessary to coordinate the use of resources and their processing into products with the ecological cycle. While creating any developmental strategy for the preservation of the environment and humanity, our actions should be planned ecologically.

7. ENVIRONMENTAL ECONOMICS

Having knowledge of environmental economics that affects our society is increasingly important as the globe works consciously towards a more sustainable way of life. Environmental economic policy began in 1952. The effects of the Korean War, the advent of major international gatherings like the Rio20+ Conference, and the rise of youthful activists are not new, here are a few examples.

1960s: John Krutilla publishes a groundbreaking paper titled “Conservation Reconsidered.”

John Krutilla, regarded as one of the RFF’s founders, released his paper titled “Conservation Reconsidered” in 1967⁸. His work outlined and investigated the economic worth of unaltered, natural resources like rivers and forests, serving as the standard for the advantages of preservation in policy research, and was awarded⁹. He also succeeded in making a defence of the presence of a natural resource’s worth ecosystems independent of economic consideration and material gain, which led to the eventual inclusion of environmental values in the economic numbers¹⁰.

1970s: 26 environmental management principles were proposed in the United Nations Conference on the Human Environment.

The first conference of its class in history took place in 1972 at the United Nations. During the course of 11 days, participants met in Stockholm to debate issues such as global well-being, air pollution, water and seas, and economic growth. The conference’s output, The Stockholm Declaration, had 26 principles that gave environmental concerns a high

priority. A set of guidelines for nations to follow was adopted in the Action Plan for the Environment and Humans, which was released with the Declaration. Three categories were used to separate them: Environmental Management Activities, the Global Environmental Assessment Programme, and International Measures to Support Assessment and Management Activities.

1980s: The term “sustainable development” was first used in the study Our Common Future, which was published in 1987.

The **World Commission on Environment and Development (WCED)** released its groundbreaking report, *Our Common Future*, in 1987¹¹. It is also known as the *Brundtland Report*, after the head of the commission, Gro Harlem Brundtland. According to the report, “critical environmental issues worldwide were primarily caused by the South’s enormous poverty and the North’s non-sustainable consumption and output trends.” The major objective of this study, which is to “the ability of future generations to meet their own needs without sacrificing the ability to meet the demands of the present,” is where the word “sustainable development” comes from “ was first used.

1990s: In 1992, Rio de Janeiro hosted the United Nations Conference on Environment and Development, which produced Agenda 21.

The demand for more contributions from the various governments, in the world grows as the discourse about sustainable development develops. Some of the most influential leaders in the world attended the UN Conference on Environment and Development, also known as the Earth Summit, which was held in Rio de Janeiro in June 1992¹². The objectives of the Summit were to assist Member State governments in “rethinking economic development” and identifying solutions to cease wasting resources and harming the environment. Finally, Agenda 21 was created, marking the beginning of international efforts to develop the economic and environmental impacts of development. The Rio Declaration, which contains 27 principles that were also produced by the summit, is a commitment made by each state to use its resources to promote sustainable economic growth, end poverty, and safeguard the environment.

2000s: Reasons behind climate change are outlined in the 2007 IPCC Report on Climate Change.

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

Nations all across the world are becoming increasingly aware of global warming and how humans are contributing to its escalation. The Intergovernmental Panel on Climate Change (IPCC) of the UN produced a number of reports that year, the fourth of which was this one. The document, often referred to as The Synthesis Report, was created by almost six hundred authors from forty different nations and then reviewed by over 620 professionals and governments.

The paper was acknowledged as the most thorough overview of the global warming scenario at the time. According to their findings, "It is "unequivocal" that global warming is taking place; the likelihood that it is being brought on by greenhouse gas emissions from people is greater than 90% and the likelihood that it is being brought on by natural climatic phenomena is not more than 5%."

2010s: In 2012, the Rio 20+ Conference was held, and in 2015, the Paris Agreement was established, marking the beginning of a legally enforceable commitment to combat climate change.

The Rio20+ Conference, which was organized in Rio de Janeiro in 2012, brought together Member States once more¹³. The conference produced a set of innovative principles for green economic strategies as well as concrete ways to put sustainable development into practice. Over 700 people voluntarily made pledges at the conference, which worked as a catalyst for sustainable development. The Paris Agreement, which was adopted on December 12 at COP 21 in Paris, established a "legally binding climate change agreement." One of the primary objectives outlined in the accord was to keep global warming below 2 degrees Celsius, ideally below 1.5, in contrast to pre-industrial levels. The 196 Parties sought to make the globe climate-neutral by the medieval of the century when they adopted the accord¹⁴. Despite its ambitious scope, this contract was especially noteworthy because this was the first to formally bind all countries to work together to address the climate change challenge. All parties to the agreement will undergo periodic reviews; the first one took place in 2020 after all parties submitted their climate action plans. These, which are formally referred to as nationally determined contributions (NDCs), outline each nation's strategies for drastically reducing its greenhouse gas emissions. From 2024, nations prefer to report openly on their efforts and any advancements made in reducing climate change. These reports will subsequently permit the

required help to be given where it is needed, and for those nations that are making progress as expected, a fresh list of more ambitious suggestions will be given.

2020s: The COVID-19 pandemic is being addressed, and governments all over the world are thinking about how their economy will recover after it.

It may take years before all of the COVID-19 pandemic's impacts are completely understood. A slower pace of life has some advantages, including a short reduction in air pollution to a heightened understanding of the connection between the earth and its inhabitants. However, what was supposed to be a critical period for discussions on the subject of climate and environment has instead become a waiting game with no apparent conclusion. Governments will be compelled to reevaluate what their economy would resemble after the pandemic world because of the new way of life that has taken hold and the uncertain future. As government institutions start to reopen, governments will need to think about economist Paul Romer's assertion that " A framework for the economy that supports ethical means of generating income is necessary." Michael Spence, the chairman of the Commission on Growth and Development, discusses the necessity for global firms in particular to adjust to the post-pandemic landscape: "You need education," the speaker said. " You require involvement, values, and behavioural adjustments." Will the opportunity to go more slowly have given us time to reconsider our consequences on the environment, or our convenience?

8. ESG (ENVIRONMENT, SOCIAL AND GOVERNANCE)

ESG stands for Environmental, Social, and Governance, and it is a framework used by investors, businesses, and organizations to evaluate and assess the sustainability and ethical impact of an investment or business decision. Here's a brief explanation of each component:

- a. **Environmental (E):** This aspect focuses on how a company's activities and operations impact the environment. It involves assessing factors such as carbon emissions, energy efficiency, waste management, water usage, and the company's efforts to address climate change and other environmental issues.

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

- b. **Social (S):** The social component examines how a company manages its relationships with employees, customers, suppliers, locals, and other related parties. It consists of things like labour practices, employee welfare, diversity and inclusion, product safety, customer satisfaction, community participation, and human rights policies.
- c. **Governance (G):** Governance refers to the company's management, internal controls, and overall corporate structure. It evaluates factors such as board independence, executive compensation, transparency, accountability, adherence to ethical standards, and shareholder rights.

The ESG framework assists stakeholders and investors in making more knowledgeable decisions about how to use their resources and support companies that share their values and have a good effect on society and the environment. Additionally, it pushes businesses to embrace environmentally friendly practices, increase their social impact, and uphold high expectations of corporate governance, all of which help to create long-term value and reduce risk. ESG factors are incorporated into investing plans by various investment funds and financial organizations, and their significance has been progressively increasing in the last few years as ethical and sustainable practices have gained more attention in the business sector.

There were several companies known for their strong ESG practices. The company's current state of ESG performance is subject to change over time, thus it's critical to undertake updated research to obtain the most recent data. Here are some examples of businesses that, as of 2021, had received commendation for their excellent ESG practices:

- a. **Unilever:** A multinational manufacturer of consumer goods, Unilever has long been an innovator in sustainability and ethical sourcing. They have established high goals for their influence on the environment, social equity, and the ethical sourcing of raw materials.
- b. **Patagonia:** Outdoor gear manufacturer Patagonia is renowned for its unwavering dedication to social responsibility and environmental sustainability. They have made efforts to reduce their carbon footprint and have been actively involved in environmental concerns.

- c. **Microsoft:** Microsoft has taken considerable steps towards sustainability and has established a year-specific target to be carbon negative and water positive. Additionally, they place a high value on diversity and inclusiveness in the workplace.
- d. **Nature & Co:** Brazilian cosmetics manufacturer Natura & Co places a high priority on a commitment to both the environment and society. They promote social programmes in the communities they operate with and have adopted sustainable sourcing practises.
- e. **Adobe:** Adobe has received recognition for its dedication to workplace inclusion and diversity as well as for its efforts to lessen its carbon footprint.
- f. **Danone:** A multinational company that produces food goods, Danone is renowned for its work to support sustainable agriculture and lessen its negative environmental consequences.
- g. **Salesforce:** Salesforce has won praise for its dedication to environmental sustainability, charity, and social impact.
- h. **Novo Nordisk:** A pharmaceutical company actively participates in social initiatives relating to healthcare and well-being and has incorporated sustainable business practices into its fundamental strategy.
- i. **Vivint Solar:** This business offers solar energy solutions and promotes the usage of renewable energy sources, both of which are good for the environment.
- j. **BASF:** Chemical manufacturer BASF has demonstrated a dedication to sustainability and minimizing its environmental impact.

9. EMPOWERING ENVIRONMENT: MAIN MOTTO

9.1 Environmental Rights

Environmental rights refer to any declaration of a human right to certain environmental circumstances. Human rights and the environment are interwoven; human rights cannot upstand without a safe, healthy, and sustainable environment; and sustainable environmental governance can't be established without the respect for and upholding of human rights. The human rights and environmental treaties that have been ratified in our nation or region, as well as the

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

constitution, legal rulings, and applicable environmental regulations, govern our environmental rights.

Environmental rights are an extension of the fundamental rights to life and liberty that everyone is entitled to. In addition to the rights to food, water, shelter, and education, it is crucial to have an environment that is secure and sustainable because it is a prerequisite for all other rights. The main goal of environmental rights is to guarantee that everyone on Earth has access to this basic level of living. Environmental rights also involve a duty on the part of people living in highly industrialized countries, in addition to fair distribution and access to resources that are sustainable and clean. It calls on us to limit our consumption levels in an equal way and to use natural resources sustainably¹⁵.

Finding a better place to dispose of your trash and pledging to use less won't cut it. Environmental rights also address the preservation of natural resources, their usage and accessibility, as well as the effects of these activities on the population in their immediate vicinity and the resources themselves. For more than three decades, the World Research Institute (WRI) has been tackling issues of this nature. The UN Human Rights Council approved a resolution recognizing the human right to a safe, wholesome, and sustainable environment as a crucial human right on October 8, 2021. This human right has been acknowledged before more than 150 national jurisdictions, its worldwide recognition opens the door for its effective integration into international law and more robust domestic application.

- a. **A Safe, Sustainable, and Healthy Environment:** The current circumstance. The right to a healthy environment has gradually grown into its own since the **Stockholm Declaration** of 1972, which made the first reference to it in the 1970s¹⁶. In accordance with its first Principle, "Man has the fundamental right to freedom, equality, and requisite living conditions, in a setting of a standard that makes it possible to live with dignity and comfort." The Stockholm Declaration acted as a catalyst for the recognition of the right to a healthy environment on a national and regional level. According to UN Special Rapporteur David R. Boyd, nowadays, 120 States are bound by regional environmental and human rights accords that include the

precise sustainable environment¹⁷. It is constitutionally protected in more than 100 States, and more than 100 States have made it a part of their environmental legislation. There are currently 155 States that have passed laws recognizing the right to a healthy and sustainable environment. In 1976, Portugal became the first nation to formally establish constitutional rights. Since then, other constitutions have quickly adopted the healthy environment's rights in a way. The acknowledgment of this right is minor overt in the European continent. In his first article, the Escaz Agreement's counterpart, the 1998 Aarhus Convention, declares " the right of every person, both now and in the future, to a living environment that is suitable for their health and wellbeing ". Nevertheless, the right to a healthy environment was not expressly guided by the European Convention on Human Rights (1950). Through its creative features, the European Court's flexible interpretation of the Convention of Human Rights deals indirectly with environmental challenges while providing some degree of protection under already established human rights. As an illustration, the Court expanded Article 2 right to life to also encompass the right to be shielded from risk brought on by dangerous industrial practices. Similar to this, it was believed that Article 8's protection of one's right to a personal and professional life included a right to be shielded from significant environmental harm. The Parliamentary Assembly of the Council of Europe made a further proposal in September 2021, urging the approval of a new convention to the European Convention on Human Rights, it would comprise the right to a wholesome environment among other rights. Numerous initiatives have attempted to conclude healthy environmental rights in international treaties in the face of this resistance. For example, item 14 of the 1995 IUCN Draught International Covenant on Environment and Development states that States "commit to working towards the progressive realization of everyone's right to a healthy, eco-friendly environment." More recently, the first item of the drafted Global Pact for the

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

Environment (2017) advocated that the need for a safe environment be recognized¹⁸.

- b. The Human Rights Council's Resolution 48/13 of October 8, 2021:** A resolution affirming that the need for a safe, wholesome, and healthy environment is a fundamental human right was approved by the UN Human Rights Council on October 8, 2021. A big improvement is this choice¹⁹. Despite not having any legal force behind it, the approved human right was nearly unanimous, demonstrating the general agreement on its creation, significance, and content. Environmental law and human rights law have typically evolved independently. There are, nevertheless, similarities between the two fields of study. Human rights have either been utilized in environmental conservation or new categories of rights have emerged particularly for that reason.
- c. Examining the various parties and international laws:** These affect environmental rights and, by extension, human rights are crucial to developing a comprehensive knowledge of environmental rights. Countries utilize international law to mutually agree to uphold specific regulations for the safety of people and the environment. There is not yet an internationally enforceable human right to a sustainable environment, and these agreements frequently fail to produce tangible results. The need for more efficiency and efficacy, however, is growing as progress is made. Environmental rights are a tool that many different organizations employ in the struggle to protect both mankind and the ecosystem. Nations may put these rights into effect, and international agencies like the UN may also supervise them. Justice for the environment has been a top priority to several communities worldwide even before there was international law. To bring justice and prudence to conflicts when the vulnerable and disadvantaged communities were involved in the fight for ecosystem justice. More broadly, various ideas and cultures are at the foundation of the struggle for the joint safety of the environment and humans. Many communities in Latin America, some subsectors of Indian religion, and the majority

of indigenous peoples around the world hold nature in high regard at times.

9.2 International Environmental Law (IEL)

The main two objectives of International environmental law (IEL) are the conservation of the environment and the welfare of people. IEL covers a wide range of environmental issues, including overfishing, global warming, and pollution of the air and water. It is a subfield of international law and internationalization of national environmental law too. In between 20th century, IEL grew as a field of international law. According to the United Nations and the Rule of Law (2020), “The achievement of all aspects of sustainable development and environmental sustainability is undermined by violations of environmental legislation.” Analyzing IEL and its separation from not only children but also from people themselves can help one understand the flaws in the international legal system’s approach to protecting both infants and the environment²⁰.

Law of the International environment is derived from several sources such as Conventions, common law, and general legal principles (as stated in Article 38 of the International Court of Justice (ICJ) Statute), with international judicial commitment having a significant impact. Conventions and common law have emerged as the most reliable sources as IEL has developed. As with corporate contracts, states are required to uphold their responsibilities under the Vienna Convention’s Article 26 to codify the legal precept *Pacta Sunt Servanda*, making international legal treaties effective in this regard. A formal agreement between two or more states is known as a treaty. The most important treaties related to the environment are as under:

- a. A foundation for regulating trade in endangered species abroad is provided by the 1973 **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**. More than 30,000 different kinds of creatures and plants are protected by it, whether they are exchanged for live animals, fur jackets, or dry medicines.
- b. **The Montreal Protocol**, signed in 1987, set a goal to lower and eventually end the making and consuming of chemicals that damage the ozone layer. It mandates that the nations specify a deadline for the phase-out of ozone-depleting substances. It

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

does, however, make a specific allowance for developing nations. It acknowledges that poorer nations haven't done much to cause the issue, therefore it gives them a 10-year grace period before phasing out the manufacturing and consumption of ozone-depleting substances.

- c. **The Rio Convention, signed in 1992**, said that its main goals were to reduce poverty, stop the degradation of the local environment, and safeguard the health and probity of the biosphere.
- d. The initial global environmental pact created to address the issue of climate change was the **Climate Change Framework** of the UN, which was published in 1994. The convention is an "institutional framework agreement" where nations pledge to work together to deal with the issue and risk of climate change. It outlines general objectives and guiding principles, leaving the more particular and in-depth activity to be covered by subsequent agreements, protocols, and modifications.
- e. **The Kyoto Protocol, 1997**: "Under this protocol, which emerged from UNFCCC, an agreement was made between nations to mandate country-by-country reductions in greenhouse-gas emissions."²¹.
- f. **According to the 2015 Paris Agreement**, "[its] goal is to improve the international response to climate change by working to limit the temperature increases to 1.5 degrees Celsius and to keep the global temperature rise this century well below 2 degrees Celsius above pre-industrial levels (UNFCCC, 2020)²². Landmark environmental agreement centered on concrete pledges from all major polluters to cut back on emissions.

The United Nations Conference on Environment and Development (UNCED), popularly known as the Earth Summit, served as the forum for the negotiation of the UNFCCC, an international agreement. It was the initial agreement to address the issue of climate change. The objective of the agreement is to "maintain atmospheric greenhouse gas concentrations at a level that would shield the climate system from harmful human intervention." The UNFCCC serves as an "institutional framework agreement" where nations agree to take coordinated action in response to the threat and problem of climate

change. The UNFCCC does not have any procedures for enforcing any legally binding caps on national emissions of greenhouse gases. The Kyoto Protocol was signed in 1997, and due to this, there are now enforceable requirements for greenhouse gas reduction.

More recently, 195 nations signed the Paris Agreement, which established it as a historic environmental deal. One crucial international commitment that established an important and early principle of IEL was the arbitration Trail Smelter Arbitration case of 1938 and 1941 (United States v Canada). This arbitration confirmed the “polluter pays principle”, meaning that a state that emits pollution and harms another must compensate for the damage.

The International Court of Justice (ICJ) had to interpret an agreement between Argentina and Uruguay in the Pulp Mills case of 2010 (Argentina vs. Uruguay), and it used this opportunity to define the concepts of diligently and a need to do environmental impact assessments²³. As a corollary principle to the obligation due diligence is predicated on a state’s duty for harm perpetrated on another state to prevent transboundary harm: “ When States have scientific proof that considerable transboundary damage is likely, they are compelled under due diligence to take preventive measures in respect to that harm.”²⁴.

9.3 Environmental Justice

Environmental justice is described by the United Nations Development Programme (2014) as “the fair treatment and meaningful involvement of all people in the creation, implementation, and enforcement of environmental laws, regulations, and policies, regardless of their race, colour, country origin, or level of income.”

In the absence of a national organization to regulate environmental justice, any population or group of people can decide how to interpret the concept, giving it relevance as a means of bringing about socio-environmental transformation. In order to comprehend environmental justice, it is necessary to consider the environment in the literal definition of the term, which is “ the environment or circumstances in which someone lives,” rather than only as lovely vistas and “green” stretches of nature. A major concern of environmental justice includes “reducing environmental, health, economic and racial disparities.” It may be explained by giving a suitable example.

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

Coronavirus and people: Since the virus disproportionately infects impoverished people and those who live in substandard housing, the way the coronavirus has touched the world makes it abundantly evident that the epidemic is a significant example of environmental justice. New York city described those who reside in more rich and roomy housing, such as that in the vicinity of Manhattan, are less susceptible to the virus than those who reside in congested areas and buildings where physical separation may be downright impossible. Despite the fact that they are comparatively less likely to contract the virus itself, children around the world still be severely affected by coronavirus. In fact, children depend heavily on the efficient operation of institutions and governmental agencies in crises to receive the correct nutrition in addition to a safe and sustainable environment. The epidemic is a glaring and unparalleled illustration of how children in underprivileged communities unfairly fight more, suffer a lot, and are more vulnerable than others. Inaction will have severe effects on children's lives, according to the World Economic Forum (2020)²⁵.

Laws and rights both have their origins in common communal ideals. Regarding, the philosophy of nature, well-known thinkers from all over the world are just the iceberg tip. The details of environmental rights are commonplace realities and difficulties for many individuals. These might be connected to those residing in low-income housing close to a floodplain, water pollution caused by the usage of chemicals, or air pollution brought on by an oil drilling site²⁶. Since individuals with the fewest resources are disproportionately affected by environmental challenges, environmental justice has the explicit purpose of attempting to create a balance.

Nature appears frequently in literature and philosophy without necessarily having anything to do with current environmental issues. Although not nature, always regarded as something to be protected in Western civilization, it was nevertheless a subject of great intrigue and thought. What is mainly termed "environmentalism" in Western society is the result of various intellectual movements²⁷.

9.4 Regulations for Environment

In order to prevent environmental damage or restore degraded settings, environmental control is the imposing of limitations. or obligations on people, businesses, and other entities. Many

environmental laws have been made and enforced in this regarding in various regions of the world; a few are mentioned here:

Indian Regulations: There are distinct types of regulations made for the environment.

1. The Forest (Conservation) Act, 1980,
2. The Environment (Protection) Act 1986,
3. The Wildlife Protection Act, 1972.

In India, regulations are made by the contribution and decision of different departments and offices at different levels, we have tried to depict it. Fig.2.

U.S.A Regulations:

National Environmental Policy Act (NEPA),1969: The act check upon the actions of the federal government to construct highway, decide land management, etc. All the proceedings have to undergo a plethora of documentation and proper study of environmental impacts. E.g.

- I. Wastewater treatment: Discharging into the Tijuana Estuary,
- II. San Francisco International Airport,
- III. Development of Houston,
- IV. Metro transportation system,
- V. Establishment of Interstate 66 (Arlington, Virginia). (U.S. Council on Environmental Quality. 2007)²⁸.

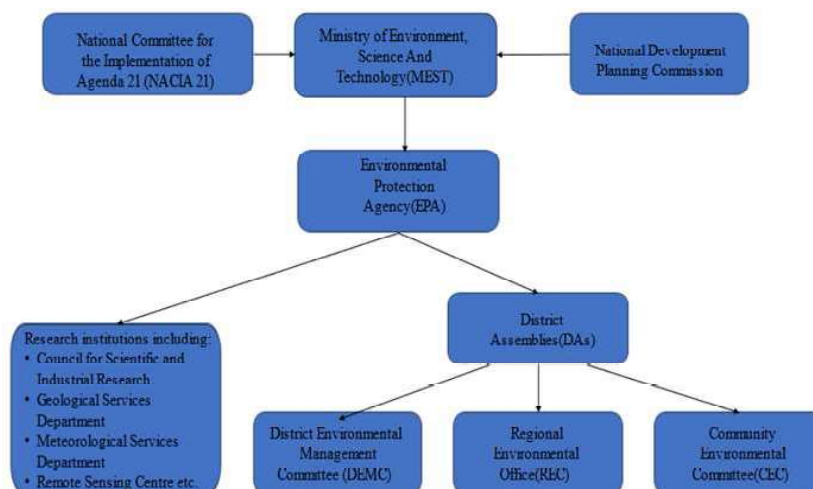


Fig. 2. Environmental Law and Policymaking and enforcement, advisory and implementing institutions.

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

England and Wales Regulations:

Environment Act 1995: According to this act, 1996 a public organization named Environment Agency was established in 1996 meant for the protection and improvement of the environment. (Communities and Local Government. 2007)²⁹.

10. FUTURE OUTLOOK

Enlightening people with the causes and effects of environmental problems is the ultimate goal. This goal will help society become more just and sustainable. Policymakers and communities can make better choices and work towards a future with greater sustainability by comprehending all the dimensions of the environment. Government plays an important role in promoting sustainable development, according to policy and governance. They can formulate policies that promote responsible resource management, adopt and enforce environmental rules, and offer incentives for sustainable practices. Reduction in differences on the basis of health, economy, race, and natural resources facility.

11. INFERENCE

Promoting sustainable development requires a coordinated effort from various stakeholders, including governments, businesses, civil society organizations, and individuals. This chapter explained possible applications and feasible solutions in making of sustainable civilization with limited resources facilitated by nature and giving a better living standard. Global cooperation not only offers understanding and addressing of the environmental problems; but also generates common expedition for diminishing pollution.

REFERENCES

1. Lawrence, D. L., & Low, S.M. (1990). The Built Environment and Spatial Form. *Annual Review of Anthropology*. 19, 453–505. doi:10.1146/annurev.an.19.100190.002321. ISSN 0084-6570. JSTOR 2155973.
2. McClure, W.R., & Bartuska, Tom.J. (2007). *The Built Environment: A Collaborative Inquiry into Design and Planning* (2nd ed.). Canada and Hoboken, New Jersey: John Wiley & Sons. pp. 5–6. ISBN 9780470007525, 0470007524
3. Perdue, W. C., Stone, L. A., & Gostin, L. O. (2003, September). *The Built Environment and Its Relationship to the Public's*

- Health: The Legal Framework. *American Journal of Public Health*. 93 (9), 1390–1394. <https://doi.org/10.2105%2Fajph.93.9.1390>
4. Hirabayashi H. (2021, December 30). *India: The Last Super Power*. Aleph Book Company. Reviewed by Roy, G. S. in *Journal of Japanese Studies: Exploring Multidisciplinarity*. 1(1), 585-587. <https://doi.org/10.55156/jjsem.dec2132>
 5. UNESCO. (2023). Ecological Sciences for Sustainable Development. Retrieved June 2, 2023, from <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/capacity-building-and-partnerships/educational-materials/>
 6. Wals, A. E. J., Brody, M., Dillion, J., & Steveson R.B. (2014, May 9). Convergence Between Science and Environmental Education. *Education forum. Science*. 344 (6184), 583-584. <https://doi.org/10.1126/science.1250515>
 7. Boyer, E.L., & Mitgang, L.D. (1996). Building community: a new future for architecture education and practice. A special report. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching. <https://eric.ed.gov/?id=ED396659>
 8. Krutilla, J. V. (1967). Conservation Reconsidered. *American Economic Review*, 57, 777–786.
 9. Saxon, W. (2003, July 20). John Krutilla, 81, Economist Who Focused on Environment: Volve Environment Prize. *New York Times*.
 10. Banzhaf, H. S. (2019). The Environmental Turn in Natural Resource Economics: John Krutilla and ‘Conservation Reconsidered’. *Journal of the History of Economic Thought*, 41, 27–46
 11. World Commission on Environment and Development. (1987, October). *Our Common Future (Brutland Report)*. Sustainability. Oxford University Press. 383 pages. ISBN 019282080X
 12. United Nations Conference on Environment and Development. (1992, April 23). *Agenda 21 (Earth Summit)*. United Nations. 300 pages.

Suman, K. and Shree, S. (2023). Development and industrial bloom along with environment empowering.

13. Rio+20. (2012, June). Sustainable Development Goals (SDGs), Millennium Development Goals and Guidelines on green economy policies. United Nations Conference on Sustainable Development, Rio de Janeiro, Brazil.
14. COP 21. (2015, December10). United nations conference on climate change". Retrieved December 7, 2015, from <http://www.cop21.gouv.fr/en/>
15. Lakrichi, A. (2020, June 24). Environmental Rights. Humanium. Retrieved from <https://www.humanium.org/en/focus-on-environment/environmental-rights/>
16. Stockholm Declaration. (1972, June). United Nations Conference. United Nations environment Programme comes into existence.
17. Boyd, D. R. (2019, March). Chapter 2: The Right to a Healthy and Sustainable Environment. In Aguila, Y. and Viñuales, J.E., (Eds.), A Global Pact for the Environment-Legal Foundations (pp.30-36). Centre for Environment Energy and Natural Resource Governance. University of Cambridge.
18. Global Pact for the Environment. (2017). Preliminary Draft of The Group of Experts. Draft Global Pact for The Environment. <https://globalpactenvironment.org/uploads/EN.pdf>
19. UN Human Rights Council. (2021, October 8). The Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. Retrieved July 19, 2023, from <https://www.ohchr.org/en/special-procedures/sr-environment>
20. U.N and the Rule of Law. (2020). Environmental Law, United Nations. Retrieved from: <https://www.un.org/ruleoflaw/thematic-areas/land-property-environment/environmental-law/>
21. Swain, S. (2019). Top Environmental Agreements of 20th Century. Blogging Hub. Retrieved from <https://www.cleantechloops.com/environmental-agreements/>
22. UNFCCC (2020). *What is the Paris Agreement?* United Nations Climate Change, retrieved from: <https://unfccc.int/process-and-meetings/the-paris-agreement/what-is-the-paris-agreement>

23. Hyder, J. P. (2020). International Environmental Law. Retrieved from <https://www.encyclopedia.com/environment/energy-government-and-defense-magazines/international-environmental-law>
24. French, D., & Stephens, T. (2014). ILA Study Group on Due Diligence in International Law. Retrieved from https://olympereseauinternational.files.wordpress.com/2015/07/due_diligence_-_first_report_2014.pdf
25. World Economic Forum. (2020). How is COVID-19 affecting children's Rights? Retrieved from <https://www.weforum.org/agenda/2020/05/covid19-kidsrights-children-rights-rankings-pandemic/>
26. Roewe, B. (2020). What is environmental justice? Earthbeat. Retrieved from <https://www.ncronline.org/news/earthbeat/what-environmental-justice>
27. Van Reeth, A. (2018). Philosophie de l'écologie, France Culture. Retrieved from <https://www.franceculture.fr/emissions/series/philosophie-de-lecologie>
28. U.S. Council on Environmental Quality. (2007). A Citizen's Guide to the National Environmental Policy Act. https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html
29. Communities and Local Government. (2007, August 12). Global Biodiversity Outlook 5. Convention on Biological Diversity. Communities and Local Government: Environment. Ministry of communities & Local Government, UK. Retrieved March 23, 2023, from <https://www.cbd.int/gbo5>.