

## Lec→05 Notes

### \* Development and its Environmental Impact :-

→ Development: The process of economic and social advancement aiming to improve living standards, infrastructure, industry, and overall quality of life.

Environment: The surroundings and conditions - physical, chemical, biological, and social - that affect living beings. Includes air, water, land, plants, animals and human beings.

### Environmental Impacts of Development:

The conflict arises mainly from Industrialization (shifting agri to factories) and Urbanization.

→ Consumerism and waste: Development increases consumption.

→ Industrial capitalism: creates a treadmill of production, depleting resources and generating high waste/pollution; world consumption went from \$1.5 trillion (1900) to \$24 trillion (1998)

→ Air Pollution: Rapid industrial growth and the rise of motorized vehicles release harmful pollutants like CO, SO<sub>2</sub>, NO, particulate matter. Which impacts are: Respiratory diseases, cancers, heart problems; ozone depletion and global warming; Acid rain, damage

to ecosystem and crops.

→ Water Pollution:

Industrial: Waste (manufactured products) dumped directly into rivers and oceans. Heavy metals (mercury, lead) lodge in sediments near industrial areas.

Agricultural: Overuse of fertilizers causes nitrates to seep into groundwater.

→ Soil degradation:

Urbanization: Expanding cities cover fertile soil with concrete, reducing arable land.

Industrial: Dumping toxic chemicals/metals contaminates soil.

Agriculture: Commercial farming leads to over-cultivation and nutrient depletion.

→ Global Warming: Driven by industrialization/burning fossil fuels.

Stats: CO<sub>2</sub> (main greenhouse gas) increased by 30% since 1880;  
Methane concentrations doubled.

Development improves life, but without planning it creates severe environmental damage.

# \* Air pollution, water pollution, soil degradation and desertification and global warming :- (Environmental crisis)

## → Air Pollution:

### Types:

→ Primary Pollutants: CO, SO<sub>2</sub>, NO, particulate matter -

directly from vehicles, factories, burning fuels.

→ Secondary Pollutants: Ozone, acid rain, smog - formed by chemical reactions in the air.

### Sources:

Industrial: Factories releases NO, SO<sub>2</sub> and CO<sub>2</sub>

Transportation: Main source since 1960s, CO and NO.

Agriculture: Fertilizers/animal waste release Ammonia (NH<sub>3</sub>) and Methane (CH<sub>4</sub>)

Household: Burning wood/Kerosene, releases pollutants.

### Impacts:

Human Health: Respiratory issues (asthma, bronchitis),

cardiovascular diseases (heart attacks), cancer and neurological effects

Environment: Acid rain (harms soil/water), Ozone depletion (CFC)

Global warming and ecosystem damage.

## → Water Pollution:

### Sources:

Sanitation: Untreated sewage/human waste dumped into rivers.

Industrial: Dumping toxic chemicals/minerals, heavy metals lodged in sediments.

Agriculture: Overuse of fertilizers/pesticides, nitrates seep into ground water.

### Impacts:

#### Human health:

→ Waterborne diseases: cholera, typhoid, diarrhea, hepatitis.

→ Toxic exposure: lead/mercury cause neurological issues.

→ Cancer: linked to industrial pollutants.

#### Aquatic Life:

Oxygen depletion (algal blooms cause "dead zones"), Bioaccumulation (toxins in food chain), Habitat destruction.

Economy: Loss of tourism/fisheries revenue; high healthcare costs.

## → Soil Degradation & Desertification

Sources: Deforestation, over-cultivation, excessive chemical fertilizer, overgrazing, urbanization, industrial pollution, drought.

## Effects and impacts:

- Decline in soil fertility → reduced agricultural productivity.
- Loss of arable land → food shortage, livestock loss.
- Forced migration from affected areas.
- Long-term damage leading to desertification, turning fertile land into desert - already affecting areas the size of Russia + Indonesia.

## Global warming:-

Causes: Increases in greenhouse gases - mainly CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O - from fossil fuel burning, industries, vehicles, deforestation, large-scale agriculture, mining, landfills. CO<sub>2</sub> levels rose 30% since 1880 due to human activities.

## Effects and consequences:

- Rising global temperature (4-6°C increase expected).
- Sea level rise, coastal floods, stronger storms.
- Killer heatwaves, droughts, changing rainfall patterns.
- Desert expansion.
- Spread of infection diseases.
- Worsened air pollution → more respiratory illness,

## **Q7: Can you explain – how development is transforming and destructing the natural environment and the social relations in Bangladesh?**

Certainly, I can explain how development is both transforming and affecting the natural environment and social relations in Bangladesh in a simple way:

### **Transformation of the Natural Environment:**

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

---

#### **1. Positive Transformations:**

- **Infrastructure Development:** Bangladesh has invested in infrastructure projects like roads, bridges, and ports, which enhance connectivity and promote economic growth.
- **Renewable Energy:** The country has been promoting renewable energy sources such as solar power, reducing reliance on fossil fuels and mitigating environmental damage.

#### **2. Negative Transformations:**

- **River Pollution:** Rapid urbanization and industrial growth have led to increased pollution of rivers and water bodies, affecting water quality and aquatic life.
- **Deforestation:** Expansion of agricultural land and urban areas has contributed to deforestation, leading to habitat loss and environmental degradation.
- **Climate Change Vulnerability:** Bangladesh is highly vulnerable to climate change, with rising sea levels and increased frequency of natural disasters like cyclones, which pose significant environmental challenges.

### **Transformation of Social Relations:**

#### **1. Positive Transformations:**

- **Women's Empowerment:** Development initiatives have improved gender equality and empowered women, leading to increased participation in the workforce and decision-making.
- **Education:** Increased access to education has resulted in a more educated workforce, fostering economic development and social progress.
- **Microfinance:** The growth of microfinance institutions has reduced poverty and improved livelihoods for many, particularly in rural areas.

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

---

#### **2. Negative Transformations:**

- **Income Inequality:** Despite economic growth, income inequality persists, leading to social disparities and uneven development outcomes.
- **Labor Rights:** Labor rights and working conditions in industries, such as the garment sector, have been areas of concern, sometimes resulting in social unrest.
- **Overcrowding:** Rapid urbanization has led to

## **2. Negative Transformations:**

- **Income Inequality:** Despite economic growth, income inequality persists, leading to social disparities and uneven development outcomes.
- **Labor Rights:** Labor rights and working conditions in industries, such as the garment sector, have been areas of concern, sometimes resulting in social unrest.
- **Overcrowding:** Rapid urbanization has led to overcrowded cities, straining infrastructure, and public services, which can contribute to social tensions.

## **Comparisons:**

- The positive transformations include improvements in infrastructure, renewable energy, gender equality, education, and microfinance, all of which contribute to social and economic development.
- The negative transformations involve environmental challenges, income inequality, labor rights issues, and urban overcrowding, which can hinder social well-being and lead to social tensions.

In summary, development in Bangladesh has brought about both positive and negative transformations. While it has contributed to economic growth and improvements in some social indicators, it has also led to environmental challenges, income inequality, and social issues. Achieving sustainable development in Bangladesh will require addressing these challenges and fostering more equitable and inclusive growth.

**Q8: How does development alter the environment? Can you please make a connection between development and the environment based on your own understanding?**

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

Development can significantly alter the environment, and the relationship between the two is complex. Here, I'll explain how development impacts the environment based on my own understanding, while keeping it simple:

### **1. Urbanization and Infrastructure Development:**

- As countries develop, they often experience rapid urbanization. This involves the construction of cities, roads, bridges, and other infrastructure to accommodate growing populations.
- Impact on the Environment: Urban development can lead to deforestation, wetland drainage, and changes in land use. It can disrupt natural ecosystems, reducing biodiversity and increasing pollution.

### **2. Industrialization and Energy Consumption:**

- Economic development is often accompanied by industrial growth, which requires energy, typically from fossil fuels like coal, oil, and natural gas.
- Impact on the Environment: Increased energy consumption can result in air and water pollution, greenhouse gas emissions, and climate change. These factors contribute to environmental degradation.

### **3. Agriculture and Land Use Changes:**

- Developing countries often expand agricultural activities

Development can significantly alter the environment, and the relationship between the two is complex. Here, I'll explain how development impacts the environment based on my own understanding, while keeping it simple:

**1. Urbanization and Infrastructure Development:**

- As countries develop, they often experience rapid urbanization. This involves the construction of cities, roads, bridges, and other infrastructure to accommodate growing populations.
- Impact on the Environment: Urban development can lead to deforestation, wetland drainage, and changes in land use. It can disrupt natural ecosystems, reducing biodiversity and increasing pollution.

**2. Industrialization and Energy Consumption:**

- Economic development is often accompanied by industrial growth, which requires energy, typically from fossil fuels like coal, oil, and natural gas.
- Impact on the Environment: Increased energy consumption can result in air and water pollution, greenhouse gas emissions, and climate change. These factors contribute to environmental degradation.

**3. Agriculture and Land Use Changes:**

- Developing countries often expand agricultural activities to meet the growing food demand of their populations.
- Impact on the Environment: Deforestation, overuse of pesticides, and the conversion of natural habitats into farmland can harm ecosystems, soil quality, and water resources.

**4. Resource Extraction:**

- Development often involves the extraction of natural resources, such as minerals, oil, and timber, to fuel economic growth.

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

- Impact on the Environment: Resource extraction can lead to habitat destruction, soil and water contamination, and the depletion of non-renewable resources, negatively affecting ecosystems.

**5. Waste Generation:**

- Economic development results in increased consumption and waste production, which strains waste management systems.
- Impact on the Environment: Poorly managed waste disposal can lead to pollution of land and water, posing health risks to communities and harming the environment.

**6. Technological Advancements:**

- Development is often driven by technological innovations, which can have both positive and negative environmental impacts.
- Impact on the Environment: While technology can enable cleaner and more sustainable practices, it can also lead to increased energy consumption and electronic waste.

**7. Conservation Efforts:**

- In some cases, development can promote conservation efforts, such as the establishment of national parks and wildlife reserves.
- Impact on the Environment: Conservation can help protect ecosystems and biodiversity, mitigating some of the negative impacts of development.

- Development is often driven by technological innovations, which can have both positive and negative environmental impacts.
- Impact on the Environment: While technology can enable cleaner and more sustainable practices, it can also lead to increased energy consumption and electronic waste.

#### 7. Conservation Efforts:

- In some cases, development can promote conservation efforts, such as the establishment of national parks and wildlife reserves.
- Impact on the Environment: Conservation can help protect ecosystems and biodiversity, mitigating some of the negative impacts of development.

In summary, development is a double-edged sword when it comes to the environment. While it can lead to economic growth and improved living standards, it often alters the environment in ways that can be detrimental. Balancing development with environmental sustainability is a critical challenge for societies to ensure that economic progress does not come at the cost of irreparable environmental damage.

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

### **Q9: How would you prove / disprove that development processes put strain on the natural environment?**

To prove or disprove that development processes put a strain on the natural environment, we can look at various factors and examples that illustrate the impact of development on the environment. Here's a simple breakdown:

#### **Proving that Development Puts Strain on the Natural Environment:**

1. **Resource Extraction:** Development often requires the extraction of natural resources like minerals, fossil fuels, and timber. The extraction process can lead to deforestation, habitat destruction, and resource depletion, all of which strain the environment.
  - *Example:* The clearing of forests for palm oil plantations in Southeast Asia has led to deforestation, impacting biodiversity and contributing to greenhouse gas emissions.
2. **Industrialization:** Economic development is often associated with industrial growth and increased energy consumption. Factories and industrial processes release pollutants into the air and water.
  - *Example:* Rapid industrialization in parts of China has resulted in severe air pollution, which negatively affects both the environment and public health.
3. **Urbanization:** As societies develop, urban areas expand to accommodate growing populations. This expansion can lead to the conversion of natural habitats into urban landscapes, harming ecosystems and wildlife.

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

accommodate growing populations. This expansion can lead to the conversion of natural habitats into urban landscapes, harming ecosystems and wildlife.

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

- *Example:* The urban sprawl in many parts of the world has led to habitat loss for various species and increased demand for resources like water and energy.

#### **Disproving that Development Puts Strain on the Natural Environment:**

1. **Sustainable Development:** Some development processes incorporate sustainability principles, aiming to minimize the negative impact on the environment.
  - *Example:* Countries like Sweden and Denmark have successfully implemented sustainable development practices, promoting clean energy, recycling, and green infrastructure.
2. **Technological Advancements:** Technological innovations can lead to more efficient and environmentally friendly processes, reducing the strain on the environment.
  - *Example:* The development of electric vehicles and renewable energy technologies is reducing reliance on fossil fuels, which is a positive environmental development.
3. **Conservation Efforts:** In some cases, development can lead to increased awareness and funding for conservation efforts.
  - *Example:* The development of eco-tourism in countries like Costa Rica has led to the preservation of natural habitats and the protection of biodiversity.

In conclusion, development processes can indeed put a strain on the natural environment, as demonstrated by factors like resource extraction, industrialization, and urbanization. However, it's essential to note that development can also incorporate sustainable practices, technological advancements, and conservation efforts to mitigate these strains. The impact on the environment can vary depending on the approach taken during the development process.

Downloaded by md shakil hossain (mhossain223670@bscse.uiu.ac.bd)

#### **Q10: Discuss some of the environmental problems/ crises caused by the current form of development?**

The current form of development, characterized by rapid industrialization, urbanization, and resource-intensive economic growth, has led to various environmental problems and crises. Here are some of the key issues:

1. **Climate Change:**
  - **Cause:** The burning of fossil fuels for energy and transportation, as well as deforestation and other industrial activities, has led to a significant increase in greenhouse gas emissions.

## **Q10: Discuss some of the environmental problems/ crises caused by the current form of development?**

The current form of development, characterized by rapid industrialization, urbanization, and resource-intensive economic growth, has led to various environmental problems and crises. Here are some of the key issues:

### **1. Climate Change:**

- **Cause:** The burning of fossil fuels for energy and transportation, as well as deforestation and other industrial activities, has led to a significant increase in greenhouse gas emissions.
- **Crisis:** Climate change results in rising global temperatures, melting glaciers, more frequent and severe weather events, sea-level rise, and disruptions to ecosystems and agriculture.

### **2. Air Pollution:**

- **Cause:** The industrial and transportation sectors release pollutants and particulate matter into the atmosphere.
- **Crisis:** Air pollution is a major health hazard, causing respiratory diseases, premature deaths, and environmental damage.

### **3. Water Pollution:**

- **Cause:** Industrial discharges, agricultural runoff, and inadequate sewage treatment contaminate water bodies with pollutants and chemicals.
- **Crisis:** Water pollution affects drinking water quality, aquatic life, and ecosystems, leading to health risks and environmental degradation.

### **4. Biodiversity Loss:**

- **Cause:** Habitat destruction due to urbanization, deforestation, and land-use changes, as well as over-exploitation of resources, has resulted in biodiversity loss.
- **Crisis:** Loss of species and ecosystems can disrupt ecological balance, reduce resilience to environmental changes, and impact food security.

### **5. Deforestation:**

- **Cause:** The clearing of forests for agriculture, infrastructure development, and resource extraction.
- **Crisis:** Deforestation reduces carbon storage capacity, contributes to climate change, and threatens the survival of many plant and animal species.

### **6. Land Degradation:**

- **Cause:** Intensive agriculture, soil erosion, and overgrazing degrade arable land.
- **Crisis:** Land degradation reduces agricultural productivity, compromises food security, and can lead to desertification in some regions.

### **7. Resource Depletion:**

- **Cause:** Unsustainable extraction of natural resources, such as minerals, fossil fuels, and fisheries.
- **Crisis:** Resource depletion threatens future availability, increases environmental damage, and can lead to conflicts over scarce resources.

### **8. Plastic Pollution:**

- **Cause:** The production, use, and disposal of plastic

- **Cause:** Habitat destruction due to urbanization, deforestation, and land-use changes, as well as over-exploitation of resources, has resulted in biodiversity loss.
- **Crisis:** Loss of species and ecosystems can disrupt ecological balance, reduce resilience to environmental changes, and impact food security.

#### 5. **Deforestation:**

- **Cause:** The clearing of forests for agriculture, infrastructure development, and resource extraction.
- **Crisis:** Deforestation reduces carbon storage capacity, contributes to climate change, and threatens the survival of many plant and animal species.

#### 6. **Land Degradation:**

- **Cause:** Intensive agriculture, soil erosion, and overgrazing degrade arable land.
- **Crisis:** Land degradation reduces agricultural productivity, compromises food security, and can lead to desertification in some regions.

#### 7. **Resource Depletion:**

- **Cause:** Unsustainable extraction of natural resources, such as minerals, fossil fuels, and fisheries.
- **Crisis:** Resource depletion threatens future availability, increases environmental damage, and can lead to conflicts over scarce resources.

#### 8. **Plastic Pollution:**

- **Cause:** The production, use, and disposal of plastic products result in widespread plastic pollution in oceans and on land.
- **Crisis:** Plastic pollution poses threats to marine life, wildlife, and human health, and it accumulates in ecosystems over time.

#### 9. **Loss of Ecosystem Services:**

- **Cause:** The degradation of ecosystems, including wetlands, forests, and coral reefs.
- **Crisis:** This loss reduces the provision of essential ecosystem services like clean water, pollination, and natural hazard regulation.

#### 10. **Waste Management Problems:**

- **Cause:** Increased consumption and urbanization result in greater waste production.
- **Crisis:** Poor waste management leads to landfills, incineration, and dumping in natural environments, causing pollution and health issues.

In summary, the current form of development has led to a range of environmental problems and crises, including climate change, pollution, biodiversity loss, and resource depletion. Addressing these challenges requires a shift toward more sustainable and environmentally friendly development practices.

**Q11 • What is “Sustainable Development”. Write down Sustainable Development Goals?**

