Green Participation Green Europe

A5 Green Practices in the Fight Against Climate Change

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ENVIRONMENTAL POLLUTION & CLIMATE CHANGE



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ENVIRONMENTAL POLLUTION

Environmental pollution refers to the contamination of the natural environment by harmful substances or pollutants that negatively impact ecosystems, human health, and the planet. It occurs when pollutants are introduced into the environment, disrupting its balance and causing adverse effects.

01.

Air pollution is caused by the release of pollutants such as carbon dioxide (CO2), sulfur dioxide (SO2), nitrogen oxides (NOx), and particulate matter (PM) into the atmosphere. Sources include vehicles, industrial emissions, and fossil fuel combustion, contributing to climate change and respiratory diseases.



02.

Water pollution occurs when harmful chemicals, waste, and plastics are dumped into water bodies like rivers, lakes, and oceans. Major pollutants include industrial discharge, agricultural runoff (pesticides, fertilizers), and oil spills, affecting aquatic life and human access to clean water.



03. Soil pollution is the contamination of soil due to the overuse of pesticides, chemical fertilizers, and industrial waste. This pollution degrades soil quality, harms plant life, and enters the food chain, impacting human health.



04. Noise pollution results from excessive noise from sources such as transportation (cars, airplanes), industrial activities, and urban development. It can lead to health issues like stress, hearing loss, and sleep disturbances.



05. **Light pollution refers to the excessive and misdirected artificial light in urban areas, which disrupts ecosystems, affects wildlife, and interferes with human circadian rhythms.**



06. **Thermal pollution occurs when industries discharge heated water or waste into natural water bodies, raising the water temperature and disrupting aquatic ecosystems.**



CLIMATE CHANGE

- Climate change refers to a change in average weather conditions, or in the time variation of weather in the context of longer-term average conditions.

- The main causes include the excessive release of greenhouse gases like carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O) into the atmosphere. These gases trap heat from the sun, causing the greenhouse effect and leading to global warming.





It has been proven that climate change is related to some major forms of environment pollution. Environmental pollution releases harmful substances into the air, water, and soil, many of which contribute to the greenhouse effect.

Environmental pollution amplifies climate change by increasing greenhouse gas concentrations and damaging the natural systems that help regulate the Earth's climate, while climate change, in turn, exacerbates pollution problems through its impacts on ecosystems and weather patterns.





As a result the issue of environment pollution and climate change has become an international concern because:

1) persistent and emerging pollutants to a certain extent cause climate change; and

2) the variations in normal weather patterns have unfavorable effects on the physical and biological entities of the environment.

AIR POLLUTION & CLIMATE CHANGE



- These sources release pollutants such as carbon dioxide (CO2), sulfur dioxide (SO2), and nitrogen oxides (NOx). Greenhouse gases, especially CO2 and methane (CH4), trap heat from the sun in the atmosphere, contributing to global warming.

- These pollutants, including carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O), trap heat in the Earth's atmosphere, causing the planet's temperature to rise, resulting in a range of environmental impacts.

- Air pollution not only negatively affects the climate but also human health; respiratory diseases, asthma, bronchitis, and cardiovascular conditions are directly linked to these pollutants.
- At the same time, ecosystems are also harmed; air pollution causes acid rain, which destroys forests, lakes, and soils. The degradation of ecosystems leads to a reduction in biodiversity and the loss of habitats for many animal species.





- Policies to reduce air pollution, therefore, offer a win-win strategy for both climate and health, lowering the burden of disease attributable to air pollution, as well as contributing to the near- and long-term mitigation of climate change

Water Pollution & Climate Change



- This degradation of marine ecosystems weakens the oceans' ability to act as a carbon sink, a vital process in which oceans absorb and store CO2 from the atmosphere, thereby exacerbating climate change.

- Another result of water pollution is ocean acidification, caused by the excess absorption of CO2 into polluted waters. This makes oceans more acidic, harming coral reefs, shellfish, and other marine organisms that play crucial roles in maintaining healthy ecosystems.

- **Additionally, the melting of polar ice caps is accelerated by polluted waters, particularly those contaminated with oil and waste, which absorb more heat.**

- **This results in rising sea levels, intensifying climate change effects like coastal flooding and habitat loss.**

- **The reduction in wetland ecosystems, due to water pollution, also affects their ability to act as natural buffers against climate extremes.**



Soil Pollution & Climate Change

Soil pollution occurs when harmful chemicals, heavy metals, and waste contaminate the soil, primarily from sources like industrial waste, pesticides and fertilizers from agriculture, mining activities, and improper waste disposal.



These pollutants degrade the quality and health of the soil, making it toxic for plants and microorganisms that are crucial for maintaining fertile ecosystems.



Soil pollution has a direct impact on climate change by reducing the ability of soil to act as a carbon sink. Healthy soils store carbon, helping to reduce the amount of CO2 in the atmosphere. When soils are polluted, their carbon storage capacity is diminished, contributing to the rise in greenhouse gases.

Furthermore, the breakdown of organic materials in polluted soils can release harmful gases like methane (CH4), which is much more potent than CO2 in trapping heat. Overall, soil pollution reduces the earth’s natural ability to regulate carbon levels, thereby accelerating climate change.

5 MINUTES BREAK

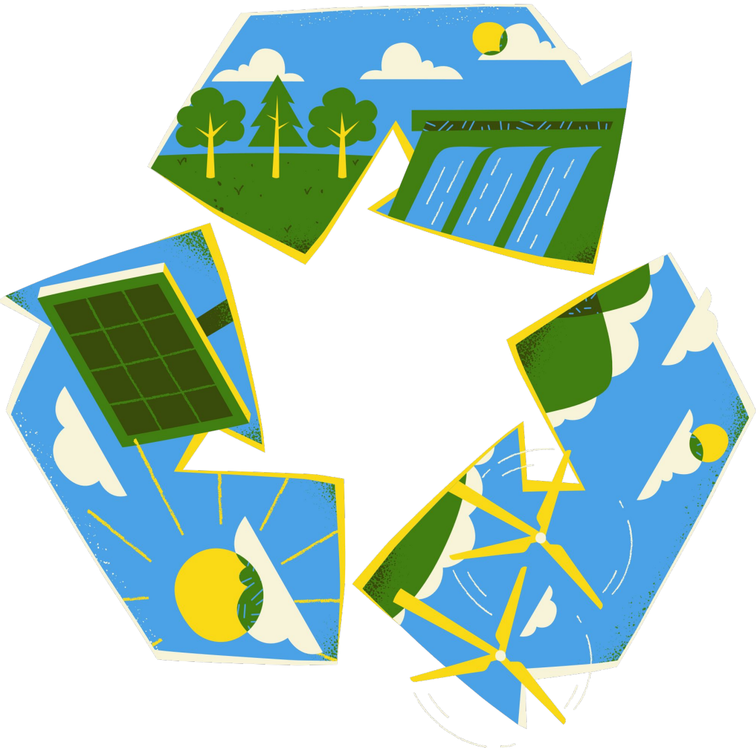
Green Practices

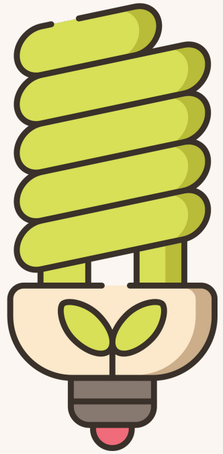
Green practices that have proven effective in preventing environmental pollution and mitigating climate change focus on sustainable solutions that reduce harmful emissions, protect natural resources, and promote renewable energy.

1. Transition to Renewable Energy

- Moving away from fossil fuels like coal, oil, and gas to renewable energy sources such as solar, wind, hydropower, and geothermal energy is one of the most effective ways to reduce greenhouse gas emissions.

- Fossil fuel combustion is the largest contributor to CO2 emissions, which is a leading cause of global warming. Renewable energy sources produce clean energy with little to no carbon emissions.





2. Energy Efficiency:

- Improving energy use in homes, industries, and transportation through efficient appliances, insulation, and LED lighting reduces energy demand, lowering emissions.

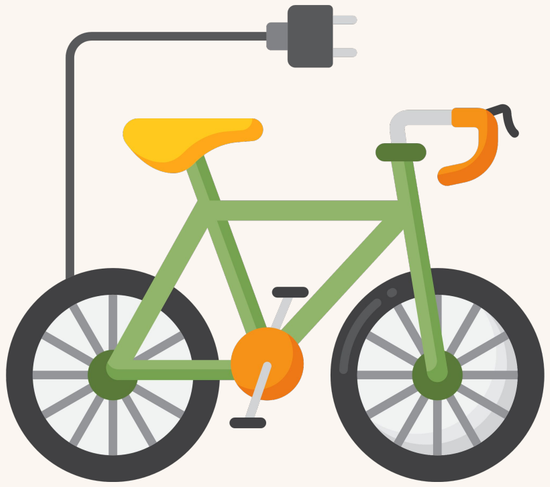
- By using less energy to perform the same tasks, energy efficiency lowers demand for energy production, reducing pollution from power plants.



3. Sustainable Transportation

- Transportation is a major source of air pollution and greenhouse gases, particularly from gasoline and diesel vehicles.

- Encouraging the use of public transportation, electric vehicles (EVs), biking, and carpooling reduces emissions from the transportation sector, which is one of the largest sources of air pollution and greenhouse gases.





4. Waste Reduction and Recycling

- Reducing waste and promoting recycling helps minimize the amount of waste sent to landfills, which reduces methane emissions—a potent greenhouse gas.

- Effective waste management systems prevent pollution and conserve resources.

- Recycling conserves natural resources, reduces the demand for raw materials, and prevents waste from contributing to air, soil, and water pollution.





5. Sustainable Agriculture

- Organic farming and regenerative agriculture reduce reliance on chemical fertilizers and pesticides, which can pollute water and degrade soil.

- These methods also sequester carbon in the soil, helping combat climate change.

- **6. Afforestation and Reforestation**

- Afforestation (planting new forests) and reforestation (restoring degraded forests) are powerful tools for sequestering carbon from the atmosphere, as trees absorb CO2 and act as carbon sinks.

- Trees capture CO2, improve air quality, and support ecosystems, making them a crucial part of global efforts to combat climate change.



- **7. Water Conservation**

- Water conservation practices, including efficient irrigation systems (e.g., drip irrigation), rainwater harvesting, and greywater recycling, reduce water waste and prevent water pollution.

- By conserving water, these practices reduce the energy required for water treatment and distribution, cutting emissions and preventing runoff pollution into rivers and lakes.

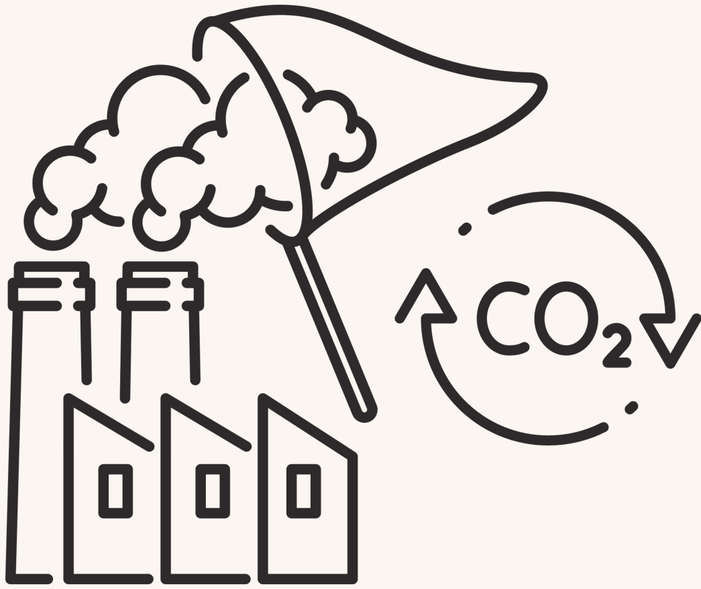




8. Carbon Capture and Storage (CCS)

- Carbon Capture and Storage (CCS) technologies capture CO2 emissions from industrial processes and store them underground, preventing them from entering the atmosphere.

- CCS is particularly useful for industries that are hard to decarbonize (e.g., steel, cement), allowing them to reduce their carbon footprints significantly.

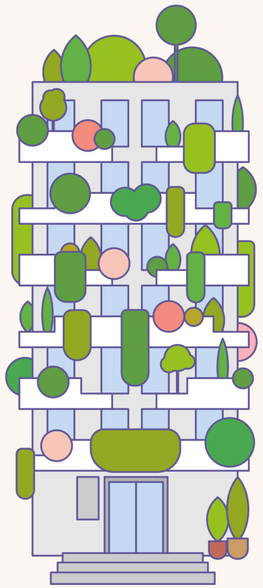




9. Green Building Practices

- Green buildings incorporate energy-efficient designs, sustainable materials, and renewable energy sources to reduce environmental impacts.

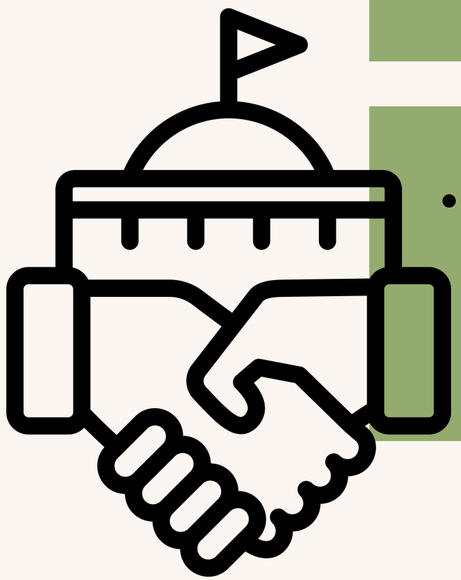
- Practices include using solar panels, green roofs, and water-saving technology.



10. Legislation and Policy Support

- Environmental policies and regulations are critical in guiding industries and individuals toward green practices.

- Policies such as emission controls, carbon taxes, and international agreements like the Paris Agreement have been successful in reducing emissions.



- Supporting strong environmental policies ensures that systemic change occurs on a global scale, leading to long-term reductions in pollution and climate change mitigation.




QUIZ
A
B
C



Thank you very much!



Which of the following greenhouse gases is NOT mentioned as a contributor to climate change?

A) Methane (CH_4)

B) Carbon dioxide (CO_2)

C) Nitrous oxide (N_2O)

D) Oxygen (O_2)

What is a common source of water pollution?

A) Excessive noise from airplanes

B) Agricultural runoff containing pesticides and fertilizers

C) Carbon dioxide emissions from vehicles

D) Overuse of artificial lighting

How does climate change exacerbate pollution problems?

A) By decreasing greenhouse gas concentrations

B) By reducing industrial activity

C) By worsening air pollution and increasing the formation of ground-level ozone

D) By improving the health of marine ecosystems

What is one consequence of climate-driven disasters like floods and storms mentioned in the presentation?

A) Improved air and soil quality

B) Increased carbon sequestration

C) Contamination of water bodies with pollutants

D) Stabilization of climate systems

How does water pollution affect marine ecosystems?

A) It reduces the oceans' ability to act as a carbon sink.

B) It increases biodiversity in oceans.

C) It improves water quality for phytoplankton.

D) It enhances the absorption of CO_2 by coral reefs.

What role do phytoplankton play in mitigating climate change?

A) They release harmful gases into the atmosphere.

B) They absorb CO2 from the atmosphere.

C) They contribute to soil pollution.

D) They increase the acidity of oceans.

How does energy efficiency contribute to reducing environmental pollution?

A) By increasing energy demand

B) By promoting the use of fossil fuels

C) By decreasing public transportation options

D) By using less energy for the same tasks

What successful outcome is associated with the European Union's Emissions Trading System (ETS)?

A) A cap on emissions with carbon credit trading

B) Increased industrial CO2 emissions

C) Higher energy prices for consumers

D) Less investment in renewable energy

What is one characteristic of green buildings?

A) They typically use non-renewable energy sources.

B) They promote high energy and water consumption.

C) They incorporate energy-efficient designs and sustainable materials.

D) They do not require any waste management practices.

How do environmental policies and regulations contribute to climate change mitigation?

A) By allowing unrestricted emissions

B) By promoting fossil fuel dependency

C) By guiding industries and individuals toward green practices

D) By increasing industrial carbon footprints