



ROLE OF CIVIL ENGINEERS IN REDUCING GLOBAL WARMING

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INTRODUCTION

- Civil Engineers are instrumental in combating global warming through the design , construction and maintenance of sustainable infrastructure
- We will discuss sustainable design practices , the use of innovative materials , and the development of renewable energy systems , among other strategies



SUSTAINABLE CONSTRUCTION MATERIALS

- **Hempcrete:** Made from hemp fibers mixed with lime, hempcrete is a lightweight, insulating material that absorbs CO2 during its curing process
- **Eco-Friendly Paints and Finishes:** Low-VOC (volatile organic compound) paints and finishes reduce indoor air pollution and are less harmful to the environment.
- **Bamboo:** Bamboo grows rapidly and absorbs a significant amount of carbon dioxide, making it a renewable alternative to traditional timber. It's also strong and versatile



GREEN INFRASTRUCTURE

1. Green Roofs

Urban Cooling: Green roofs absorb sunlight and provide insulation, reducing the heat island effect common in urban areas. By cooling buildings and their surroundings, they lower the need for air conditioning, thereby reducing energy consumption and greenhouse gas emissions.

Carbon reduction: The vegetation on green roofs absorbs CO₂ during photosynthesis, helping to offset carbon emissions. Plants also release oxygen, improving air quality.



2. Permeable Pavements

Reduced Heat Island Effect: Permeable pavements allow water to infiltrate the surface rather than run off. This can help cool the surface and the surrounding area, mitigating the heat island effect and reducing the need for air conditioning.

Stormwater Management: These pavements allow rainwater to seep through and be absorbed into the ground, reducing runoff and helping to recharge groundwater supplies. This can decrease the risk of flooding and erosion, and improve water quality by filtering out pollutants.

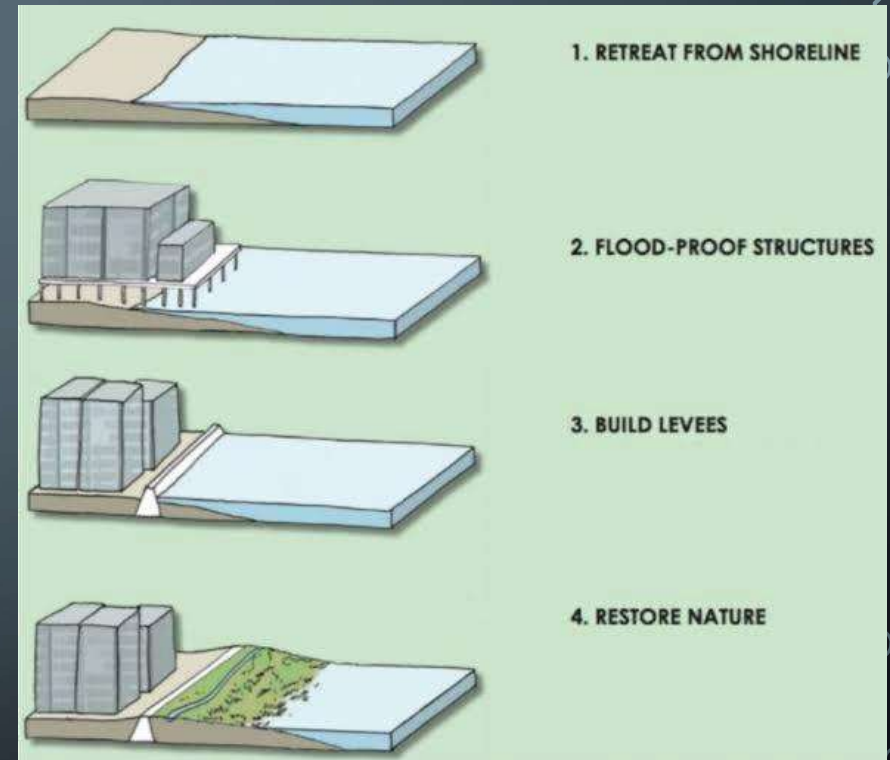


RESILIENT INFRASTRUCTURE DESIGN

1. Elevated and Flood-Resistant Structures

Elevation: Design buildings, roads, and utilities to be elevated above projected flood levels. This reduces the risk of damage from flooding and sea-level rise.

Flood-Resistant Materials: Use materials that are resistant to water damage and corrosion. For example, concrete with water-resistant additives or composite materials can be more durable in flood-prone areas.



2. Integrating Renewable Energy Systems

Solar Panels: Photovoltaic (PV) panels on rooftops generate electricity directly from sunlight, reducing the need for grid power and lowering the building's carbon footprint.

Solar Thermal Systems: These systems capture solar energy for heating purposes, reducing the reliance on gas or electric heaters.

Energy Storage: Integration of energy storage systems (e.g., batteries) with renewable energy sources provides a reliable power supply during outages and reduces vulnerability to energy supply disruptions.



INNOVATIVE IDEAS

- **Floating Solar Plants** - Lakes solar energy plants, commonly referred to as floating solar farms or floating photovoltaic (FPV) systems, are an innovative approach to harnessing solar energy by installing solar panels on bodies of water such as lakes, reservoirs, or ponds. This technology is gaining popularity due to its efficiency, reduced land use, and additional environmental benefits.



- **Footstep Power Generator System –**

It is type of energy harvesting technology that converts the kinetic energy from people footsteps into electrical energy. This technology is an innovative approach to sustainability , especially in urban environments where foot traffic is abundant.



- **Advanced ventilation system [COOLANT] –**
Air conditioners as increasing day by day release big amount of harmful gases which can be reduced if we use proper ventilation systems. As company named coolant make walls of mud which convert hot air into cool air . Terracotta is material used in this evaporating water makes the air cooler



The image features a dark blue gradient background. In the corners, there are decorative white line art elements resembling circuit boards or neural networks, with lines and small circles connecting them.

THANK YOU