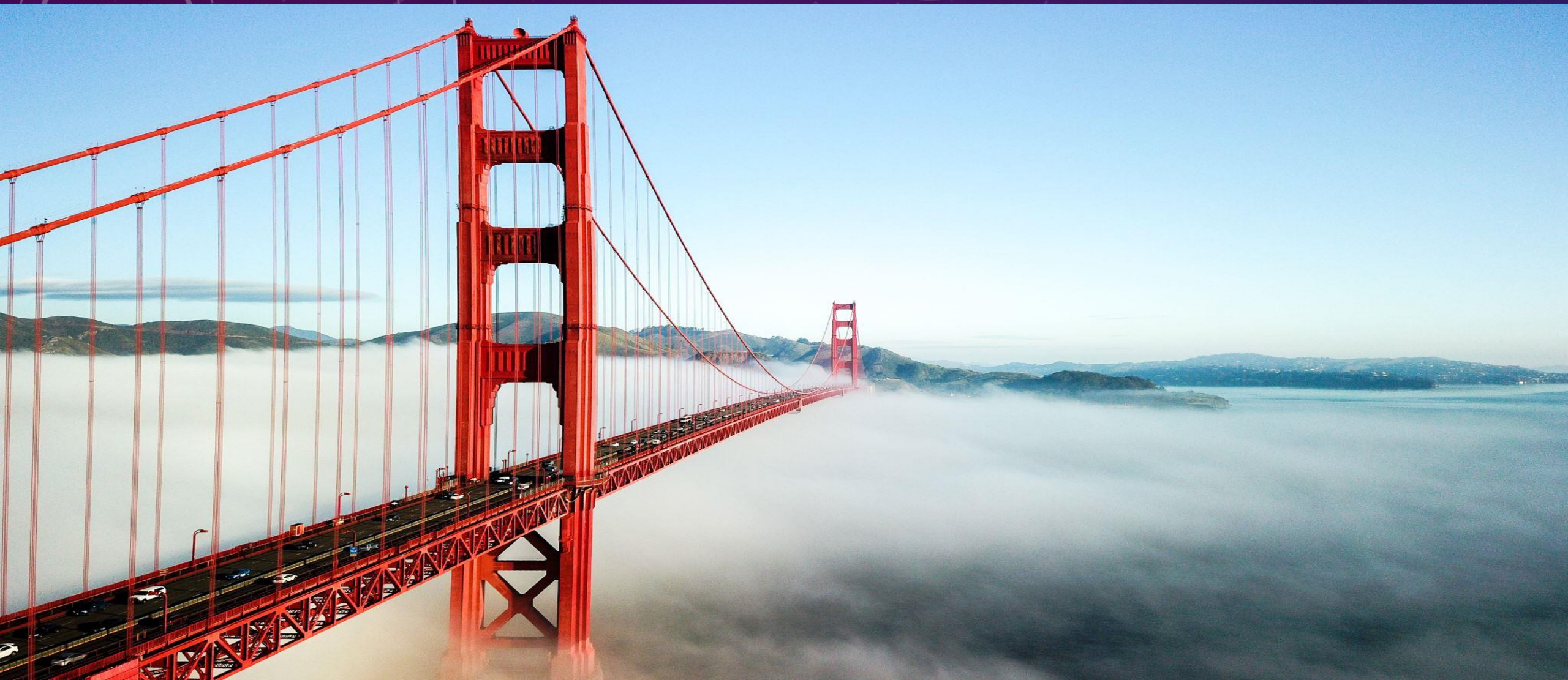
ENVIRONMENT AND SUSTAINABILITY IN CIVIL ENGINEERING



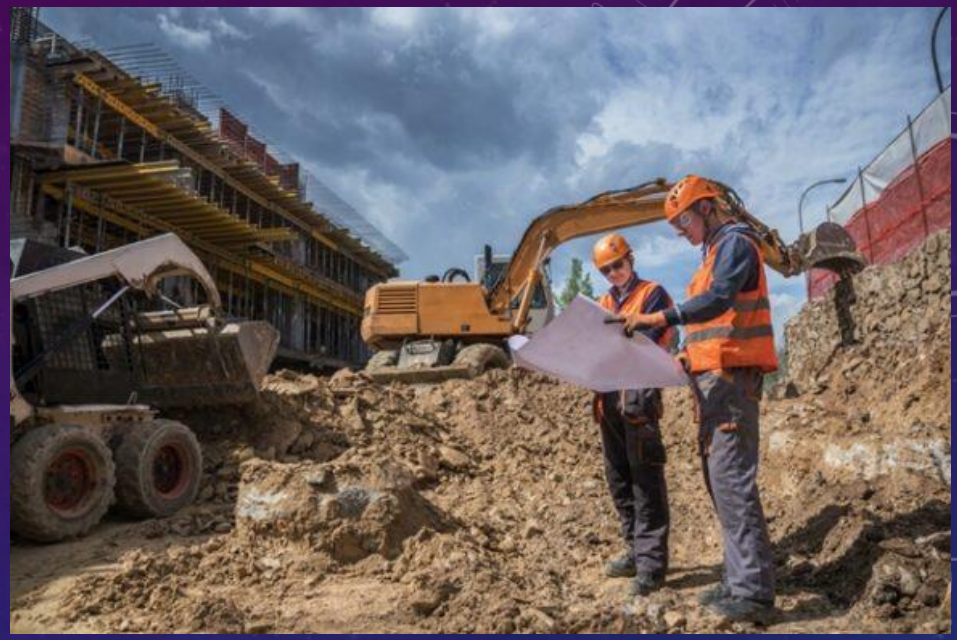
WHAT IS SUSTAINABILITY ?

Sustainability is the idea that human and nature can coexist in a harmonious relationship that supports both present and future generation .

ROLE OF CIVIL ENGINEERING

Civil engineers play a key role in sustainable development by designing ,building and ensuring infrastructure that is environmentally friendly.

ENVIRONMENATL IMPACT



- ***LOCAL IMPACT***
- 80% of agricultural land loss is due to buildings.
- Noise , dust and fumes generation during construction.
- Loss of biodiversity

- ***GLOBAL IMPACT***
- Global warming .
- Ozone layer depletion .

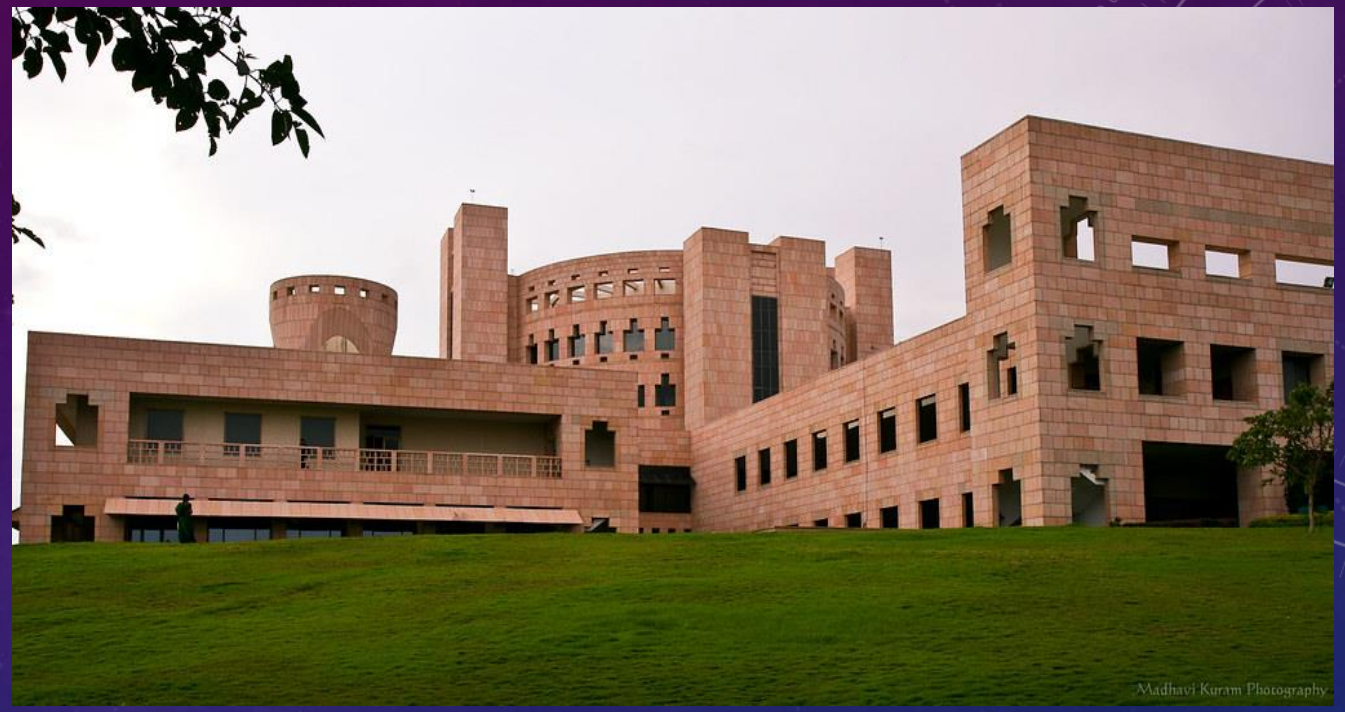
SUSTAINABLE PRACTICES IN CIVIL ENGINEERING

This is also known as sustainable development ,in which sustainable materials are used that not only reduce the environment burden of construction but also promote responsible resource management .

Civil Engineers are increasing opting for green materials (using recycled and eco-friendly materials) and also designing in such a way that save energy and for recycling and reducing waste.

EXAMPLES

- GREEN BUILDINGS
- ECO-FRIENDLY PROJECTS
- SMART URBAN PLANNING



NEW TECHNOLOGIES

- **SMART CONSTRUCTION**
- It integrates the design and fabrication process more than traditional construction methods , meaning minimal recycling and eliminate of waste.
- For example:-Smart Buildings (using technology to design and build better)
- Like building with automated systems or wireless technologies . It integrates systems like energy management ,lighting , security, networking and maintenance.

ENVIRONMENTAL REGULATIONS

- Mitigating environment impact
- Preserving natural resources
- Promoting sustainable development
- Protecting biodiversity
- Enhancing public health and quality of life

CHALLENGES

- Challenges of environment and sustainability in civil engineering can be more expensive and difficult , especially in areas with limited resources.

- <u>SOME CHALLENGES</u>
- Cost
- Green building maintenance
- Innovation
- Resource depletion
- Carbon reduction

FUTURE TRENDS

- GREEN CITIES
- Planning cities to be sustainable

- CLIMATE RESILIENCE
- Building for future weather changes

KEY POINTS

- Green building design
- Sustainable material
- Efficient resource management
- Urban planning and smart cities
- Climate Resilience
- Biodiversity protection

ENCOURAGING SUSTAINABLE PRACTICES

- By green building certifications like LEED , which stands for leadership in energy and environmental design.
- They recognize and reward environmentally responsible construction projects that reduce their impacts, improve energy efficiency and create healthier space.

MULTIPLE CHOICE QUESTION

- ***1. Which of the following is NOT a principle of sustainable development in civil engineering ?***

a)Resource efficiency

b)Environment protection

c)Economic viability

d)Rapid urbanization

2. The concept of "Green Building" primarily focuses on:

a)Reducing construction costs

b)Using sustainable materials and energy efficient designs

c)Maximizing the building area

d)Building in rural areas

3. The term “LEED” stands for:

a)Low Energy Environmental Design

b)Leadership in Energy and Environmental Development

c)Leading Energy and Environmental Development

d)Low Emission Environmental Development

4.What does the “Triple Bottom Line” approach in sustainability emphasize ?

a)Economy ,aesthetics ,durability

b)Profit ,people, planet

c)Speed , cost, quality

d)Design, construction, maintenance

THANK YOU

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