

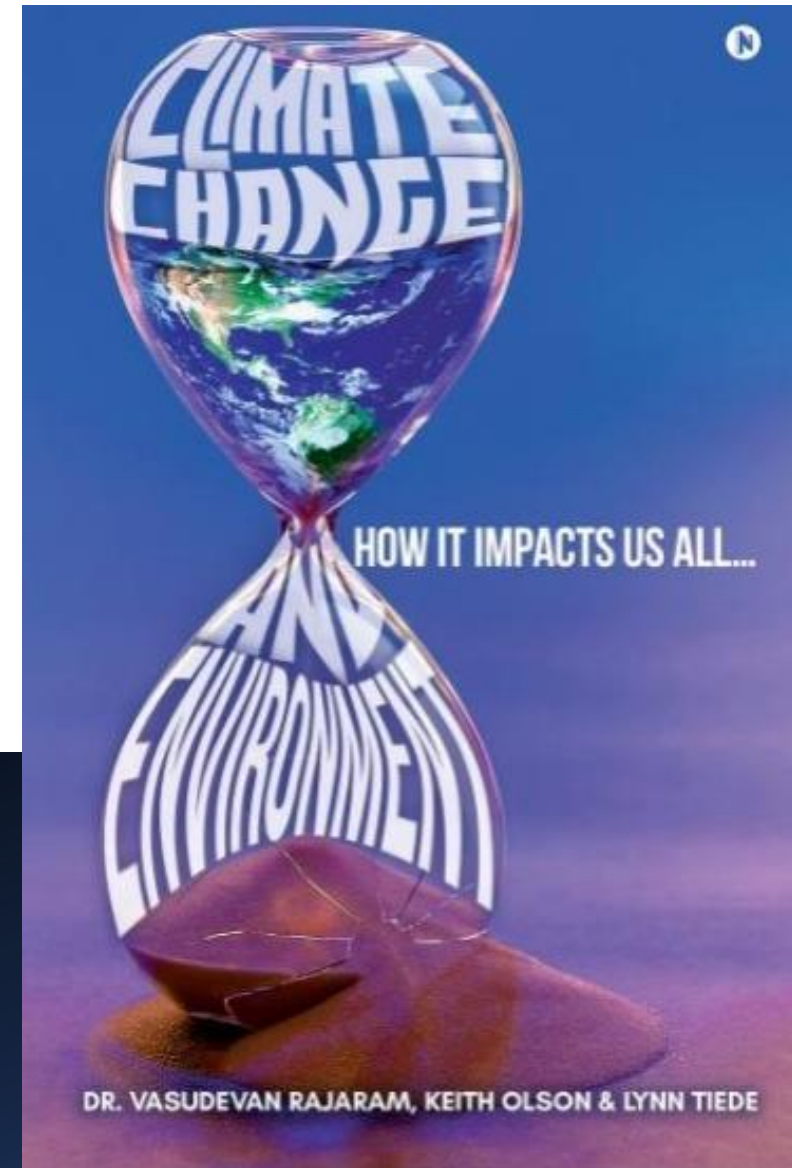
# Climate Change and Sustainability

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*Presented through IUCEE, Hyderabad, India*

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## ***Schedule:***

***Tuesdays at 7 pm IST every week for  
starting December 6, 2022***

***Dec 6, 13, 20, 27 2022***

***Jan 10, 17, 24, 31 2023***

***Feb 7, 14 2023***

# Module 1 Climate Change and the Paris Agreement

- *This module will cover the following topics:*
  - Why does climate change occur?
  - How do we know climate change has been accelerating since the 1960s?
  - What has been done to manage Climate Change since the 1990s?
  - What is the Paris Agreement to mitigate Climate Change?
  - How does the Agreement work internationally?
  - How much is the extent of property loss and death in vulnerable communities around the world?
  - What is India doing to mitigate climate change and meet its goals under the Paris Agreement?
  - Assignment

# Module 2 Natural Resources

- *This module will cover the following topics:*
- The critical natural resources are air, water, forests, mineral resources, and food.
- How is Clean Air in our cities being affected by Climate Change?
- How are water resources affected and what is being done about it?
- How do forest resources affect Climate Change and what is being done to protect and enhance our forests?
- How does mineral resource extraction affect climate change and what is being done about it?
- How is food production and distribution affected by Climate Change?

# Module 3 Energy

- *This module will cover the following topics:*
- How do we produce energy and what has been the historical shift of the sources of energy from the 20<sup>th</sup> century to the 21<sup>st</sup>?
- How does energy derived from fossil fuels (coal, oil and gas) impact climate change?
- What is the share of the energy produced in India from Nuclear Energy? How about other countries?
- Renewable energy and what is the progress of implementing renewable energy programs in India?
- How is innovation affecting the energy use in India?
- Assignment

# Module 4 Ecosystems and Biodiversity

- *This module will cover the following topics:*
- Why are ecosystems important in mitigating climate change?
- What types of ecosystems does India have?
- What is the influence of humans on ecosystem processes?
- What is biodiversity and why is it important in managing climate change?
- What is the extent of biodiversity in India and how is it affected by human population growth?
- National Biodiversity Protection Act – What is it?
- Assignment

# Module 5 Natural Hazards and Disaster Management

- *This module will cover the following topics:*
- How are flood and drought cycles being affected by Climate Change in various parts of India?
- How do earthquakes happen and what are the earthquake zones in India?
- What are cyclones and what are cyclone-prone areas in India?
- What are landslides and how do they happen?
- What are wildfires and how do they affect the forest resources in India and around the world?
- How are disasters managed in India?
- Assignment

# Module 6 Environmental Crises and Response

- *This module will cover the following topics:*
- What are the various environmental crises in India and how are they exacerbated by Climate Change?
- Air pollution and its impacts
- Water pollution and its impacts
- Land pollution and its impacts
- What is the social response to managing environmental crises?
- What can individual citizens do to prevent environmental crises?
- Assignment



# Module 7 Environmental and Habitat Conservation

- *This module will cover the following topics:*
- Environmental Protection is an important aspect of handling Climate Change. The Indian Constitution (Articles 48 and 51) requires the protection and improvement of the environment and safeguarding the forests and wildlife. There are several laws and these will be mentioned and their enforcement at the State and Central government levels will be described.
- Role of Courts in environmental and habitat conservation.
- Role of Non-Governmental and Civil Society Organizations in protecting the environment.
- Assignment

# Module 8 Environmental Approaches to Climate Change

- *This module will cover the following topics:*
- How is the Paris Agreement being implemented at the Central and State Government levels?
- Role of Energy Efficiency and Renewable Energy in the Indian Economy.
- How is Artificial Intelligence being used to manage energy use and make improvements in environmental monitoring?
- Policies and their improved implementation at the Central and State Government levels.
- Role of Technological Innovation and Resource Conservation
- Assignment

# Module 9 Indian and International Case Studies

- *This module will cover the following topics:*
- There are many examples of good and bad environmental stewardship in India and the rest of the world. These will be highlighted in this module.
- Chipko movement in Uttarakhand to save forests.
- Fukushima, Japan, Nuclear Disaster and lessons learned.
- Oil spills and their management.
- How can disaster management in India be improved? What are the lessons learned from the 2004 Tsunami?
- Assignment

## Module 10

How can the future  
be better with  
Innovation?

- *This module will cover the following topics:*
  - There are many countries and intelligent minds working on new ways of managing natural resources and energy production. How can engineers be involved in this international effort?
  - Policy Issues.
  - Economic Issues.
  - Technology Issues.
  - Social Issues.
  - Assignment.