



*wel come to*  
**BEYOND SMART CITIES**

**BEYOND**  
SMART CITIES



# HIGH-PERFORMANCE BUILDING DESIGN PROFESSIONAL - HBDP EXAM REFRESHER

ONLINE PROFESSIONAL COURSES LED BY THE  
WORLD'S TOP SPECIALISTS

ONLINE TRAINING BY KRISHNAJI PAWAR

LEED AP(BD+C), GSAS CGP, GCP, ISO 14001

[LEARN.BEYONDSMARTCITIES.IN](http://LEARN.BEYONDSMARTCITIES.IN)

**BEYOND**  
SMART CITIES

MODULE  
**4.B**

# The Environment & Sustainable Development

KRISHNAJI PAWAR - CEO & FOUNDER

LEED AP(BD+C),GSAS CGP,GCP,ISO 14001

[WWW.BEYONDSMARTCITIES.IN](http://WWW.BEYONDSMARTCITIES.IN)



**HIGH-PERFORMANCE  
BUILDING DESIGN  
PROFESSIONAL - HBDP  
EXAM REFRESHER**

Sustainable development is a growing trend that is transforming our perspectives on the environment and affecting our cities and regions. It is a socially preferable approach to almost everything, and while global solutions are possible, acting locally is a proven means of effecting change.

---

THE ENVIRONMENT AND  
SUSTAINABLE DEVELOPMENT



# Learning Objectives

- Introduction to High Performance Buildings
- Sustainability Concepts
- What is sustainable development?
- **Sustainable Development: The Environment and Sustainable Development**
- Sustainable Buildings
- Sustainable Transportation
- Alternative Energy & Carbon Reduction
- Environmental Improvement Programs and Rating Systems
- HVAC Processes



# INTRODUCTION

- The environment encompasses all living organisms, including humans, providing essential resources like food, water, shelter, and clean air.
- Human activities have significantly impacted the environment, leading to pollution, deforestation, and climate change.
- Sustainable development aims to balance economic growth, social progress, and environmental protection, ensuring resource use wisely and environmental preservation for future generations.
- Renewable energy sources like solar and wind power are examples of sustainable development, reducing reliance on fossil fuels and contributing to air pollution and climate change.
- Sustainable agriculture practices, including crop rotation, organic farming, and natural fertilizers, protect soil, water, and biodiversity while providing food for the growing population.
- Understanding the importance of preserving the environment and implementing sustainable practices is crucial for a healthy planet for future generations.

# THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

The environment encompasses all living and non-living components of Earth's ecosystem, and sustainable development aims to meet present needs without compromising future generations' ability to meet their own needs.

## The Earth's Environment

- The Earth's environment is a complex system consisting of the atmosphere, hydrosphere, lithosphere, and biosphere.
- Human activities like industrialization, deforestation, and pollution significantly impact the environment.

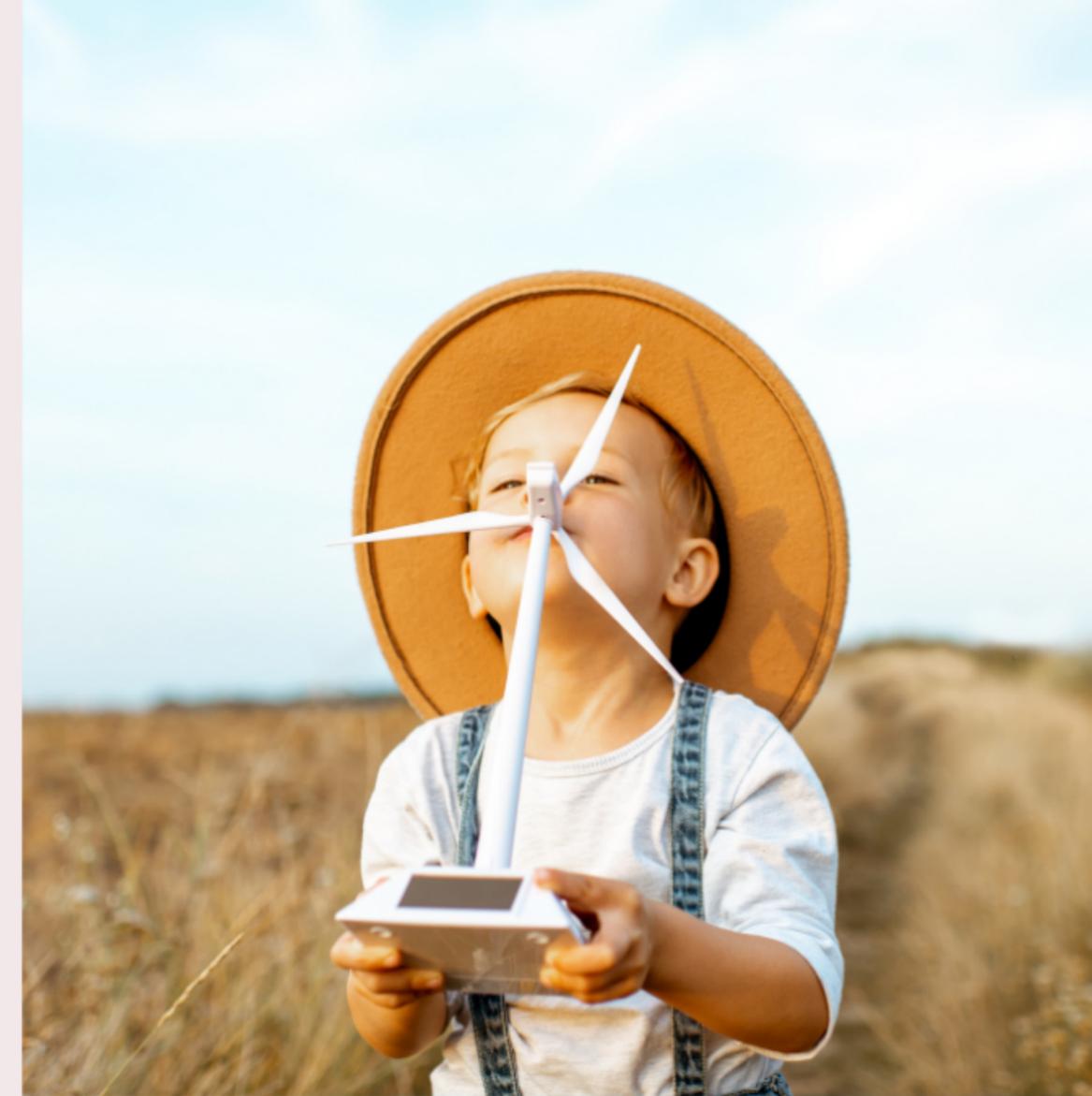
## Sustainable Development

- Sustainable development is a holistic approach that considers economic, social, and environmental factors.
- It promotes economic growth, social equity, and environmental protection.
- Sustainable agriculture practices like organic farming and crop rotation help preserve soil fertility and biodiversity.



# SUSTAINABILITY AND ENVIRONMENT

- Relationship between human existence and the environment.
- Sustainability linked to land development, population growth, fossil fuel usage, forest management, aquaculture, pollution, global warming, limited water supplies, species diversity, and resource consumption.
- Natural resources are ecological systems that sustain life and must be preserved.
- Environmental concerns linked to sustainable development activities that continually degrade the environment.



# WASTE MANAGEMENT

- Waste management is crucial for environmental protection and sustainability.
- It involves collection, transportation, processing, and disposal of waste materials to minimize environmental and health impacts.
- The waste hierarchy prioritizes waste management strategies based on their environmental impact.
- The hierarchy consists of five levels: prevention, minimization, reuse, recycling, and disposal.
- Prevention reduces waste generation at the source through better product design, production processes, and consumer behavior.
- Minimization reduces waste through practices like source reduction, material substitution, and process modifications.
- Reuse involves finding new uses for discarded materials or products.
- Recycling collects and processes materials to create new products, conserving resources, reducing energy consumption, and reducing greenhouse gas emissions.
- Disposal involves the final disposal of waste materials that cannot be prevented, minimized, reused, or recycled.



# THE ASSAULT ON FRESH WATER RESOURCES

- Over-extraction: Rapid depletion of freshwater reserves due to population growth and increased water demands. This leads to groundwater depletion, reduced river flows, and drying up of lakes and wetlands.
- Pollution: Industrial activities, agricultural runoff, and urbanization contaminate rivers, lakes, and groundwater with pollutants. This harms aquatic ecosystems and biodiversity.
- Climate Change: Changing precipitation patterns, rising temperatures, and frequent extreme weather events are leading to water scarcity.
- Sustainable Water Management Practices: Promoting water conservation, improving water efficiency, investing in water infrastructure, and protecting freshwater ecosystems.



# AIR QUALITY



- Air quality directly impacts human and environmental health, leading to respiratory problems, cardiovascular issues, and ecosystem damage.
- Ozone depletion, caused by the release of chemicals like chlorofluorocarbons (CFCs), is a key issue. CFCs break down ozone molecules, thinning the ozone layer.
- Increase in greenhouse gases like carbon dioxide and methane contribute to global warming and climate change. Burning fossil fuels releases carbon dioxide into the atmosphere.
- Human activities like vehicle emissions, industrial processes, and agriculture release pollutants like nitrogen oxides, sulfur dioxide, and particulate matter into the air.
- Natural events like wildfires and volcanic eruptions also contribute to air pollution.
- Maintaining good air quality is crucial for long-term sustainability, reducing emissions and protecting the ozone layer.

# CLIMATE CHANGE

- Climate change refers to long-term changes in Earth's climate system, driven by human activities like burning fossil fuels, deforestation, and industrial processes.
- Greenhouse gases trap heat in the Earth's atmosphere, leading to the greenhouse effect.
- The current rate of climate change is unprecedented, largely due to human activities increasing greenhouse gas concentration since the Industrial Revolution.
- Global warming, the increase in Earth's average surface temperature, has led to melting of polar ice caps, rising sea levels, more severe heatwaves, and changes in precipitation patterns.
- Climate change exacerbates extreme weather events like hurricanes, droughts, and wildfires, causing devastating consequences for human health, agriculture, and infrastructure.
- Climate change can also have indirect effects on ecosystems and biodiversity, leading to shifts in species distributions, loss of habitat, and increased risk of extinction.
- Addressing climate change requires a coordinated global effort to reduce greenhouse gas emissions, transition to renewable energy sources, and adapt to the changing climate.



# THE KYOTO PROTOCOL

- An international agreement aimed at reducing greenhouse gas emissions.
- Adopted in December 1997 and entered into force in February 2005.
- Negotiated under the United Nations Framework Convention on Climate Change (UNFCCC).
- Establishes legally binding emission reduction targets for industrialized countries.
- Countries can implement domestic policies, increase renewable energy use, and implement carbon pricing mechanisms.
- Allows countries to participate in emissions trading for cost-effective emission reduction.
- Includes Clean Development Mechanism (CDM) and Joint Implementation (JI) for developed countries to offset their own emissions.
- Has faced criticisms for not including major emitters and for some countries struggling to meet their targets.
- Despite limitations, the Kyoto Protocol has raised awareness about reducing emissions and paved the way for more ambitious climate agreements.



# THE PARIS AGREEMENT | UNFCCC

## Paris Agreement:

- Adopted in 2015, builds upon the principles of the UNFCCC.
- Aims to limit global temperature rise to well below 2 degrees Celsius above pre-industrial levels, with efforts to limit the increase to 1.5 degrees Celsius.
- Enhances countries' ability to adapt to climate change impacts and make financial flows consistent with low greenhouse gas emissions and climate-resilient development.

## Key Features of the Paris Agreement:

- Concept of nationally determined contributions (NDCs).
- Transparency framework promoting accountability and trust among countries.



**B E Y O N D**  
S M A R T C I T I E S

**CONTACT US**



+91 6363032722



info@beyondsmartcities.in



learn.beyondsmartcities.in



#55,HMR Layout ,Bengaluru ,India



# THANK YOU

