Understanding Renewable Energy and Environmental Impact Training Course



14 - 18 Dec 2026

Cape town

4600 € (Per Person)

Ref: #ENV5980_266772

Course Introduction / Overview:

This training course provides a comprehensive overview of renewable energy technologies and their environmental impact. The global shift toward sustainable energy sources is one of the most significant trends of our time, and understanding the nuances of this transition is essential for a wide range of professionals. Offered by BIG BEN Training Center, this course delves into the principles, applications, and environmental effects of various renewable energy technologies, including solar, wind, and geothermal power. We explore how these systems are engineered and integrated into existing energy grids while carefully evaluating both their benefits and their potential drawbacks. The curriculum draws on the insights of experts like Mark Z. Jacobson, a prominent academic whose work, including his book 100% Clean, Renewable Energy and Storage for Everything, has shaped discussions on sustainable energy futures. This program is designed to move past simple descriptions of technologies to provide a balanced and critical analysis of their real-world implications, helping participants make informed decisions that promote both energy security and environmental sustainability. We provide a holistic view of the renewable energy landscape, from policy and regulation to economic viability and ecological footprint, preparing participants for leadership roles in a greener future.

Target Audience / This training course is suitable for:

- Energy sector professionals and engineers.
- Environmental consultants and policymakers.
- Urban planners and real estate developers.
- Financial analysts and investors in the energy market.
- Corporate sustainability officers.
- Public sector officials in energy and environment departments.
- Academics and researchers in related fields.
- Anyone interested in the future of energy and its environmental implications.

Target Sectors and Industries:

- Energy generation and distribution.
- Utilities and public services.
- Manufacturing renewable energy components.
- Government and public administration agencies.
- Construction and infrastructure.
- Financial services and investment.
- Real estate and urban development.
- Environmental consulting.

Target Organizations Departments:

- Renewable energy and sustainability.
- Engineering and R&D.
- Operations and maintenance.
- Corporate social responsibility (CSR).
- Environmental and safety.
- Policy and regulation.
- Investment and finance.
- Urban planning.

Course Offerings:

By the end of this course, the participants will have able to:

- Assess the operational principles and environmental impact of various renewable energy technologies.
- Evaluate the life cycle of renewable energy systems, from production to disposal.
- Analyze the economic viability and policy landscape for renewable energy projects.
- Identify and mitigate the potential negative environmental impacts of renewable energy deployment.
- Develop strategies for integrating renewable energy sources into existing infrastructure.
- Compare and contrast different renewable energy options based on their efficiency and sustainability.
- Understand the role of energy storage in a renewable energy system.
- Advise on policy and investment decisions related to sustainable energy.

Course Methodology:

This training course is designed to be highly engaging and practical, using a variety of interactive methods to enhance learning. Our approach includes detailed case studies of both successful and challenging renewable energy projects, providing participants with a real-world context for the concepts. We use group discussions to explore complex topics, such as the trade-offs between different technologies, and workshops to apply theoretical knowledge to practical scenarios. The program also features a hands-on approach where participants will analyze energy data and evaluate project proposals. This helps ensure a deeper understanding and provides a direct application of the skills learned. BIG BEN Training Center believes that active participation is key to mastering new concepts, which is why we encourage constant feedback and questions. Our methodology ensures that participants not only learn about renewable energy but also gain the confidence to implement and manage sustainable projects effectively.

Course Agenda (Course Units):

Unit One: Principles and Technologies of Renewable Energy

- Introduction to the global energy landscape.
- Fundamentals of solar photovoltaics and concentrated solar power.
- Wind energy systems, from small-scale to utility-scale.
- Geothermal energy: direct use and power generation.
- Hydropower and its environmental considerations.
- Biomass and biofuels.
- Emerging renewable energy technologies.

Unit Two: Environmental Impact Assessment of Renewables

- Life cycle assessment (LCA) of renewable energy systems.
- Land use and habitat disruption.
- Impacts on wildlife, including birds and marine life.
- Manufacturing and material resource impacts.
- Waste management and end-of-life disposal of components.
- Noise pollution and visual aesthetics.
- Comparing the environmental footprint of renewables vs. fossil fuels.

Unit Three: Economics and Policy

- Cost-benefit analysis of renewable energy projects.
- Government policies and incentives, including subsidies and tax credits.
- Renewable portfolio standards and their effect on the market.
- Carbon pricing and its role in promoting renewables.
- Investment and financing models for sustainable energy.
- The role of public-private partnerships.
- Market trends and future outlook for the renewable energy sector.

Unit Four: Grid Integration and Energy Storage

- Challenges of integrating intermittent renewables into the grid.
- Smart grid technologies and their role in a renewable future.
- Types of energy storage: batteries, pumped hydro, and thermal.
- The economic case for energy storage.
- Decentralized energy systems and microgrids.
- Policy and regulatory frameworks for energy storage.
- Future trends in grid management.

Unit Five: Practical Applications and Project Management

- Developing a renewable energy project proposal.
- Site selection and feasibility studies.
- Risk management in renewable energy projects.
- Stakeholder engagement and community relations.
- Case studies of large-scale renewable projects.
- Measuring and reporting project performance.
- Career opportunities in the renewable energy sector.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

Beyond carbon emissions, what are the most critical and often overlooked environmental and social trade-offs that must be carefully managed as the world accelerates its transition to a fully renewable energy system?

What unique qualities does this course offer compared to other courses?

This training course stands out by providing a balanced and critical examination of renewable energy technologies. Most programs focus on the positive aspects, but we give equal weight to the environmental and social challenges that arise from their widespread deployment. By examining the full life cycle of each technology, from resource extraction to waste disposal, participants get a realistic and nuanced understanding of their true impact. We also emphasize the practical application of this knowledge, with case studies and interactive sessions that prepare professionals to manage real-world projects. Our curriculum combines academic rigor with practical insights, ensuring that participants are not just learning theory but gaining the skills to make informed decisions. This course is for those who need to understand the big picture of renewable energy, including its complexities, so they can contribute to a truly sustainable and responsible energy transition.