Training Course on Renewable Energy Solutions

Professional Development Training Course Outline

Category	Renewable Energy	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Introduction

The global imperative for sustainable development and the urgent need to combat climate change have propelled renewable energy solutions to the forefront of national and international agendas. Kenya, with its abundant natural resources, is particularly well-positioned to harness the power of solar, wind, geothermal, and biomass energy. Training Course on Renewable Energy Solutions is meticulously designed to equip professionals, policymakers, investors, and technicians with the essential technical knowledge, practical skills, and strategic insights to effectively develop, implement, and manage diverse renewable energy projects. Participants will delve into the design, installation, maintenance, and economic viability of various renewable energy technologies, contributing directly to energy security and a greener future.

This intensive program goes beyond theoretical understanding, focusing on the real-world applications and market dynamics of the rapidly evolving renewable energy sector. We will explore cutting-edge concepts such as energy storage, smart grids, off-grid solutions, and green hydrogen, alongside the critical policy and financing mechanisms that drive large-scale adoption. By mastering these innovative and sustainable energy solutions, participants will be empowered to accelerate the transition away from fossil fuels, enhance energy access, create green jobs, and foster economic resilience in Kenya and across the African continent, aligning with global climate goals.

Programme Curriculum

Training Course on Renewable Energy Solutions

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Course Objectives

1. Understand the fundamental principles and global trends in renewable energy.
2. Assess the feasibility and suitability of various renewable energy technologies for specific applications.
3. Design and size solar photovoltaic (PV) systems for both on-grid and off-grid scenarios.
4. Comprehend the mechanics and applications of wind energy systems and site assessment.
5. Explore the potential and applications of geothermal and biomass energy solutions.
6. Understand the importance of energy storage technologies and grid integration.
7. Analyze the policy, regulatory, and financial frameworks supporting renewable energy projects.
8. Conduct economic and environmental impact assessments of renewable energy installations.
9. Develop project management skills specific to renewable energy ventures.
10. Identify opportunities for off-grid and mini-grid solutions for rural electrification.
11. Explore the role of emerging technologies like green hydrogen and smart grids.
12. Contribute to sustainable energy transitions and climate change mitigation efforts.
13. Troubleshoot and maintain basic renewable energy systems.

Organizational Benefits

1. Reduced operational costs through cleaner, cheaper energy.
2. Enhanced corporate social responsibility (CSR) and brand image.
3. Increased energy security and independence from fossil fuels.
4. Compliance with environmental regulations and sustainability goals.
5. Access to new markets and funding opportunities in the green economy.
6. Attraction and retention of environmentally conscious talent.
7. Improved operational efficiency and reliability of energy supply.
8. Contribution to national climate targets and global sustainability.
9. Development of internal expertise in renewable technologies.
10. Creation of new revenue streams through excess energy generation.

Target Participants

- Engineers and Technicians (Electrical, Mechanical, Environmental)
- Energy Project Developers and Investors
- Policymakers and Regulators in the Energy Sector
- Business Owners and Managers seeking sustainable energy solutions
- Environmental Consultants and Sustainability Managers
- Students and Researchers in Renewable Energy Fields
- Community Leaders involved in Rural Electrification Projects

Course Outline

Module 1: Introduction to Renewable Energy Landscape

- Global and Kenyan Renewable Energy Overview
- Environmental, Economic, and Social Benefits of Renewables
- Key Renewable Energy Sources: Solar, Wind, Hydro, Geothermal, Biomass
- Energy Transition: Drivers, Challenges, and Opportunities
- **Case Study:** Analyzing Kenya's leading position in geothermal energy utilization and its impact.

Module 2: Solar Photovoltaic (PV) Systems

- Principles of Photovoltaics and Solar Cell Technologies
- Types of PV Systems: On-Grid, Off-Grid, Hybrid
- Components of a Solar PV System: Panels, Inverters, Batteries, Charge Controllers
- Basic PV System Sizing, Design, and Installation Principles
- **Case Study:** Designing an off-grid solar PV system for a rural health clinic in Kenya.

Module 3: Wind Energy Solutions

- Principles of Wind Energy Generation
- Types of Wind Turbines: Horizontal and Vertical Axis
- Wind Resource Assessment and Site Selection Criteria
- Installation, Operation, and Maintenance of Wind Systems
- **Case Study:** Examining the success and challenges of the Lake Turkana Wind Power Project.

Module 4: Geothermal and Hydroelectric Power

- Geothermal Energy: Principles, Resources, and Power Plant Types
- Hydropower Basics: Run-of-River, Dam-Based Systems, Micro-hydro
- Environmental and Social Considerations of Hydropower Projects
- Advantages and Limitations of Geothermal and Hydro

- **Case Study:** A small-scale community-based micro-hydro project providing power to a remote village.

Module 5: Biomass and Bioenergy Applications

- Types of Biomass Resources: Agricultural Waste, Forest Residues, Energy Crops
- Biomass Conversion Technologies: Combustion, Gasification, Anaerobic Digestion
- Biofuel Production: Biodiesel, Bioethanol, Biogas
- Sustainability and Lifecycle Analysis of Bioenergy Projects
- **Case Study:** A community-based biogas digester project providing cooking fuel and fertilizer from organic waste.

Module 6: Energy Storage and Grid Integration

- Importance of Energy Storage in Renewable Energy Systems
- Battery Technologies: Lithium-ion, Lead-acid, Flow Batteries
- Integration of Renewable Energy into the National Grid (Grid Intermittency Challenges)
- Smart Grids, Microgrids, and Distributed Energy Resources
- **Case Study:** Analyzing a battery storage solution integrated with a solar farm to enhance grid stability.

Module 7: Renewable Energy Project Development and Financing

- Feasibility Studies: Technical, Economic, Environmental Assessments
- Project Planning, Permitting, and Regulatory Compliance
- Financing Mechanisms: Green Bonds, Carbon Credits, Power Purchase Agreements (PPAs)
- Risk Management in Renewable Energy Projects
- **Case Study:** Developing a business plan and financing strategy for a commercial solar rooftop project.

Module 8: Policy, Future Trends, and Social Impact

- Kenya's Energy Policy and Regulatory Framework for Renewables (e.g., EPRA regulations)
- International Climate Agreements and Renewable Energy Targets
- Emerging Technologies: Green Hydrogen, Carbon Capture, Ocean Energy

- Renewable Energy's Role in Job Creation, Rural Development, and Energy Access

- **Case Study:** Discussing the socio-economic impact of a large-scale renewable energy project on local communities.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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