Future Trends in Renewable Energy Training Course

Professional Development Training Course Outline

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

Course Introduction

Future Trends in Renewable Energy Training Course provides a forward-looking exploration of the technologies, business models, policies, and market forces shaping the global transition toward a clean energy economy. As organizations accelerate decarbonization, net-zero strategies, energy transition, and climate resilience, professionals need practical knowledge of emerging renewable-energy solutions and their commercial potential. The course examines solar photovoltaics (PV), wind power, battery energy storage systems (BESS), green hydrogen, smart grids, digital energy, floating renewables, offshore wind, agrivoltaics, energy-as-a-service, and AI-enabled energy management. Participants gain insight into how energy storage, grid flexibility, electrification, distributed energy resources, and renewable integration are transforming power systems and creating new opportunities across industries.

Designed around future-ready skills, the training connects technology trends with real-world applications, investment decisions, policy developments, and sustainability outcomes. Participants explore AI and machine learning for energy forecasting, digital twins, predictive maintenance, blockchain-enabled energy markets, virtual power plants, microgrids, vehicle-to-grid (V2G) systems, and green hydrogen value chains. Through interactive learning, scenario analysis, group exercises, and industry case studies, learners develop the capability to evaluate emerging technologies, identify viable renewable-energy opportunities, manage transition risks, and design innovative solutions for a rapidly changing energy landscape. The course is particularly relevant to organizations pursuing ESG performance, energy security, carbon reduction, climate action, and long-term sustainable development.

Programme Curriculum

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Course Duration

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Course Objectives

By the end of the course, participants will be able to:

1. Analyze major renewable energy trends shaping the global energy transition.
2. Evaluate emerging solar PV, wind, storage, and hybrid energy systems.
3. Explain the role of AI, machine learning, and digitalization in renewable-energy operations.
4. Assess the growing commercial potential of green hydrogen and Power-to-X.
5. Understand battery energy storage, long-duration energy storage, and grid flexibility.
6. Explore smart grids, microgrids, virtual power plants, and distributed energy resources.
7. Identify opportunities created by electrification, electric mobility, and vehicle-to-grid technologies.
8. Examine offshore wind, floating solar, floating wind, and next-generation renewable technologies.
9. Apply energy forecasting, predictive analytics, and predictive maintenance concepts.
10. Evaluate renewable projects using techno-economic, ESG, and lifecycle considerations.
11. Understand emerging energy markets, policy frameworks, carbon pricing, and climate regulation.
12. Develop strategies for decarbonization, net-zero transformation, energy resilience, and energy security.
13. Build a future-ready renewable energy roadmap aligned with innovation, investment, and sustainability goals.

Target Audience

1. Renewable energy and clean-tech professionals
2. Energy managers and sustainability leaders
3. Engineers, technical specialists, and project managers
4. Government officials and energy-policy professionals
5. Utilities and grid-management professionals
6. Investors, financiers, consultants, and ESG specialists

7. Corporate leaders responsible for decarbonization and net-zero strategies
8. Entrepreneurs, researchers, academics, and professionals entering the energy transition sector

Course Modules

Module 1: Global Renewable Energy Transition & Future Outlook

- Global energy transition, decarbonization, and net-zero pathways
- Major trends in solar, wind, hydro, geothermal, marine, and bioenergy
- Renewable-energy market growth, investment, and technology cost curves
- Energy security, climate resilience, and the changing global power mix
- Case Study: How a national clean-energy strategy accelerates renewable deployment and reduces fossil-fuel dependence

Module 2: Next-Generation Solar & Wind Technologies

- Advanced solar PV, high-efficiency modules, bifacial systems, and perovskite technologies
- Floating solar and agrivoltaics for land and water optimization
- Onshore, offshore, and floating wind technology developments
- Hybrid renewable plants combining solar, wind, and energy storage
- Case Study: Hybrid solar-wind-storage development for improving renewable generation reliability

Module 3: Energy Storage & Grid Flexibility

- Battery Energy Storage Systems (BESS) and next-generation battery technologies
- Long-duration energy storage and emerging storage chemistries
- Thermal, pumped hydro, compressed-air, and hydrogen-based storage
- Grid balancing, peak shaving, frequency regulation, and renewable firming
- Case Study: Battery storage deployment for integrating high shares of intermittent solar and wind power

Module 4: Green Hydrogen & Power-to-X

- Fundamentals of green hydrogen, electrolysis, and renewable hydrogen production
- Hydrogen storage, transportation, distribution, and infrastructure
- Power-to-X, green ammonia, sustainable fuels, and industrial decarbonization
- Hydrogen opportunities in heavy industry, shipping, aviation, and energy storage
- Case Study: Renewable-powered green hydrogen hub supporting industrial decarbonization

Module 5: AI, Digital Energy & Smart Grids

- Artificial intelligence (AI) and machine learning for energy forecasting
- Digital twins, IoT sensors, automation, and real-time energy monitoring
- Predictive maintenance for renewable-energy assets
- Smart grids, virtual power plants, demand response, and distributed energy resources
- Case Study: AI-enabled forecasting and virtual power plant management to optimize distributed solar and battery assets

Module 6: Electrification, EVs & Distributed Energy

- Energy electrification across transport, buildings, and industrial systems
- Electric vehicles, charging infrastructure, and vehicle-to-grid (V2G)
- Microgrids, prosumer models, and peer-to-peer energy systems

- Distributed generation and community renewable-energy models
- Case Study: EV charging and V2G integration providing grid flexibility during peak demand

Module 7: Renewable Energy Finance, ESG & Policy

- Renewable-energy project finance, investment trends, and bankability
- ESG, climate disclosure, carbon markets, and sustainable finance
- Renewable-energy policy, incentives, auctions, and regulatory frameworks
- Risk assessment, project economics, lifecycle costs, and return on investment
- Case Study: Evaluating a utility-scale renewable project using financial, ESG, and policy criteria

Module 8: Future Innovation, Business Models & Net-Zero Strategies

- Emerging technologies and future energy systems
- Energy-as-a-Service, clean-energy marketplaces, and innovative business models
- Circular economy, sustainable supply chains, and renewable-asset lifecycle management
- Corporate net-zero roadmaps, climate resilience, and energy transformation
- Case Study: Designing a future-ready corporate renewable-energy roadmap combining clean power, storage, electrification, and carbon reduction

Training Methodology

- 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

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