Renewable Energy Adaptation Planning 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

Renewable Energy Adaptation Planning Training Course is designed to build practical capacity for integrating climate resilience, renewable energy deployment, energy security, and climate adaptation into modern energy planning. As climate hazards increasingly affect energy infrastructure, planners need approaches that connect climate risk assessment, vulnerability analysis, resilient infrastructure, renewable energy integration, energy-system modelling, and investment planning. Recent IRENA work highlights the importance of identifying climate risk, exposure and vulnerability, developing measurable adaptation indicators, and incorporating resilience into renewable-energy and power-system planning.

The course provides a practical, systems-oriented pathway from climate-risk identification to adaptation strategy, project prioritisation, financing, implementation, and monitoring. Participants explore how solar, wind, hydropower, geothermal, storage, smart grids, distributed energy resources and other clean-energy solutions can contribute to resilient energy systems. The programme uses scenario analysis, GIS and risk mapping, energy modelling, stakeholder engagement, case-study analysis, group exercises, simulations, and adaptation planning projects. This reflects established capacity-building approaches that combine online learning, hands-on workshops, energy modelling and country-specific planning exercises.

Programme Curriculum

Renewable Energy Adaptation Planning Training Course

Introduction

Renewable Energy Adaptation Planning Training Course is designed to build practical capacity for integrating climate resilience, renewable energy deployment, energy security, and climate adaptation into modern energy planning. As climate hazards increasingly affect energy infrastructure, planners need approaches that connect climate risk assessment, vulnerability analysis, resilient infrastructure, renewable energy integration, energy-

system modelling, and investment planning. Recent IRENA work highlights the importance of identifying climate risk, exposure and vulnerability, developing measurable adaptation indicators, and incorporating resilience into renewable-energy and power-system planning.

The course provides a practical, systems-oriented pathway from climate-risk identification to adaptation strategy, project prioritisation, financing, implementation, and monitoring. Participants explore how solar, wind, hydropower, geothermal, storage, smart grids, distributed energy resources and other clean-energy solutions can contribute to resilient energy systems. The programme uses scenario analysis, GIS and risk mapping, energy modelling, stakeholder engagement, case-study analysis, group exercises, simulations, and adaptation planning projects. This reflects established capacity-building approaches that combine online learning, hands-on workshops, energy modelling and country-specific planning exercises.

Course Duration

5 days

Course Objectives

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

1. Develop climate-resilient renewable energy adaptation strategies aligned with national and regional priorities.
2. Conduct climate risk, hazard, exposure and vulnerability assessments for renewable-energy assets.
3. Apply scenario planning and climate projections to long-term energy-system decisions.
4. Integrate renewable energy, energy efficiency and energy security into adaptation pathways.
5. Strengthen resilience planning for solar, wind, hydro, geothermal, storage and grid infrastructure.
6. Apply GIS, geospatial risk mapping and data analytics to identify climate-sensitive energy assets.
7. Evaluate grid flexibility, distributed energy resources and storage as resilience-enabling solutions.
8. Develop adaptation investment plans using cost-benefit, risk-reduction and prioritisation approaches.
9. Align renewable-energy adaptation strategies with NDCs, national adaptation plans, SDGs and net-zero pathways.
10. Design climate-smart policies, regulations and institutional frameworks supporting resilient energy transitions.
11. Apply monitoring, reporting, verification and adaptation indicators to track resilience outcomes.
12. Strengthen stakeholder participation, inclusive planning, gender responsiveness and climate justice in adaptation decisions.
13. Produce an actionable Renewable Energy Adaptation Plan for an organisation, project, utility, region or country.

Target Audience

1. Energy policymakers and government officials
2. Renewable energy planners and project developers
3. Power-system and grid planning professionals
4. Climate change and adaptation specialists
5. Environmental and sustainability managers
6. Engineers, infrastructure planners and technical consultants
7. Development-finance, investment and donor-programme professionals
8. Researchers, academics, NGOs and energy-sector programme managers

Course Modules

Module 1: Foundations of Renewable Energy Adaptation Planning

- Climate change, **energy transition and resilience** fundamentals.
- The relationship between **mitigation, adaptation and energy security**.
- Climate hazards affecting renewable-energy systems.
- Principles of **climate-resilient infrastructure and adaptive planning**.
- **Case study:** Assessing climate risks to a renewable-powered electricity system.

Module 2: Climate Risk, Vulnerability and Resilience Assessment

- Hazard, exposure, vulnerability and **risk assessment frameworks**.
- Identification of climate-sensitive renewable-energy assets.
- Physical and operational vulnerability assessment.
- **Climate scenario analysis** and uncertainty management.
- **Case study:** IRENA's Canary Islands assessment of energy-demand risks and the potential contribution of renewables to reducing those risks.

Module 3: Renewable Energy Technologies for Climate Adaptation

- Resilience applications of **solar, wind, hydro and geothermal energy**.
- Distributed renewable energy and **energy access resilience**.
- Battery storage and other flexibility options.
- Microgrids and decentralized energy systems.
- **Case study:** Designing a resilient solar-plus-storage solution for critical community services.

Module 4: Climate-Resilient Power Systems and Grid Planning

- Climate-proofing **transmission and distribution infrastructure**.
- Grid flexibility, stability and renewable integration.
- Extreme-weather preparedness and operational continuity.
- Smart grids, forecasting and **digital energy systems**.
- **Case study:** Developing resilience measures for a power network exposed to flooding, heatwaves and severe storms. IRENA identifies smarter planning, quality infrastructure and cross-sector coordination as key resilience measures.

Module 5: Energy Modelling, Scenario Planning and Data Analytics

- Long-term **energy-system modelling** fundamentals.
- Renewable-energy resource and demand scenarios.
- Scenario comparison for adaptation investment decisions.
- Data visualisation and **evidence-based planning**.
- **Case study:** Using a national energy model to compare renewable-energy pathways under alternative climate scenarios. IRENA's capacity-building programmes use modelling and scenario development to support national energy master planning.

Module 6: Adaptation Investment, Finance and Policy

- Climate-resilient **investment planning and project prioritisation**.
- Cost-benefit and multi-criteria assessment.
- Climate finance and renewable-energy investment pathways.
- Policy, regulation and procurement mechanisms.

- **Case study:** Prioritising resilience investments across renewable-energy generation, transmission and distribution assets.

Module 7: Inclusive, Participatory and Just Energy Adaptation

- **Stakeholder engagement and participatory energy planning**.
- Gender-responsive and socially inclusive adaptation.
- Energy access, affordability and **climate justice**.
- Community participation and local knowledge.
- **Case study:** Developing an inclusive renewable-energy adaptation pathway with government, utilities, communities and private-sector stakeholders. IRENA's participatory planning work emphasises co-creation and stakeholder involvement in long-term energy planning.

Module 8: Adaptation Action Plans, Implementation and Monitoring

- Developing a practical **Renewable Energy Adaptation Action Plan**.
- Adaptation indicators, targets and performance measurement.
- Monitoring, reporting, verification and adaptive management.
- Implementation roadmaps, governance and accountability.
- **Case study:** Participants develop and present a climate-resilient renewable-energy plan for a selected country, utility, project or region.

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

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

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com