Wind Energy Project Risk Management 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

Wind Energy Project Risk Management Training Course is designed to equip energy professionals with practical, strategic, and data-driven capabilities for identifying, assessing, mitigating, and monitoring risks across the complete lifecycle of onshore and offshore wind energy projects. As the global energy transition accelerates, wind projects face increasingly interconnected technical, financial, environmental, regulatory, construction, supply-chain, grid-integration, cybersecurity, and stakeholder risks. Effective risk management is therefore essential for project bankability, schedule certainty, cost control, operational resilience, and long-term asset performance. Contemporary renewable-energy training increasingly integrates project lifecycle management, resource assessment, financial viability, environmental and social considerations, digitalization, and risk mitigation.

The course provides a structured framework for developing risk registers, risk breakdown structures, probability-impact assessments, scenario analyses, mitigation strategies, contingency plans, and risk-monitoring dashboards. Participants examine risks from feasibility and site selection through development, procurement, financing, construction, commissioning, operations, maintenance, repowering, and decommissioning. Practical case studies enable participants to evaluate real-world challenges involving wind-resource uncertainty, turbine technology, extreme weather, logistics, contractor performance, permitting, environmental impacts, power purchase agreements, financing, grid constraints, supply-chain disruption, and operational availability. The methodology combines expert-led instruction, workshops, simulations, group exercises, case-study analysis, risk-mapping activities, and practical project scenarios approaches consistent with current renewable-energy and risk-management training practice.

Programme Curriculum

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Course Duration

5 days

Course Objectives

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

1. Identify and classify technical, commercial, financial, environmental, regulatory, operational, and strategic risks across the wind-project lifecycle.
2. Apply enterprise risk management (ERM) and project risk-management frameworks to wind-energy developments.
3. Conduct qualitative and quantitative risk assessment using probability, impact, exposure, and risk-ranking techniques.
4. Develop dynamic risk registers, risk breakdown structures, risk heat maps, and mitigation plans.
5. Assess wind-resource uncertainty, energy-yield risk, technology risk, and performance degradation.
6. Evaluate CAPEX, OPEX, financing, inflation, foreign-exchange, revenue, and bankability risks.
7. Strengthen supply-chain resilience and manage procurement, transportation, contractor, and logistics risks.
8. Integrate ESG, environmental and social risk, biodiversity, stakeholder engagement, and sustainability considerations.
9. Manage construction, commissioning, HSE, quality assurance, and schedule risks.
10. Assess grid-integration, curtailment, transmission, power-quality, and system-reliability risks.
11. Apply digital risk management, predictive analytics, AI-enabled monitoring, and data-driven decision-making.
12. Develop effective business continuity, emergency response, contingency, and resilience strategies.

13. Establish risk monitoring, reporting, governance, escalation, and continuous-improvement mechanisms for wind-energy portfolios.

Target Audience

1. Wind Energy Project Managers and Project Directors
2. Renewable Energy Developers and Investors
3. Electrical, Mechanical, Civil, and Energy Engineers
4. Risk Managers, Enterprise Risk Professionals, and Project Controls Specialists
5. Finance, Investment, Banking, and Project-Finance Professionals
6. Operations, Maintenance, Asset Management, and Reliability Teams
7. Environmental, ESG, Sustainability, and Social Performance Professionals
8. Government Officials, Regulators, Utilities, Consultants, and Energy Policymakers

Course Modules

Module 1: Wind Energy Project Risk Management Fundamentals

- Wind-energy project lifecycle and **risk governance**
- Risk identification, categorization, ownership, and escalation
- **Risk Breakdown Structure (RBS)** and risk taxonomy
- Probability-impact matrices and risk prioritization
- **Case Study:** Developing a risk register for a new onshore wind farm

Module 2: Wind Resource, Site, and Technical Risk

- Wind-resource assessment and **energy-yield uncertainty**
- Site selection, geotechnical, metocean, and terrain risks
- Turbine technology, design, reliability, and performance risks
- Extreme-weather and climate-resilience considerations
- **Case Study:** Assessing resource uncertainty and turbine performance risk before investment

Module 3: Financial, Commercial, and Bankability Risk

- **CAPEX, OPEX, LCOE, IRR, NPV, and sensitivity analysis**
- Inflation, interest-rate, currency, and financing risks
- Power Purchase Agreement (**PPA**) and revenue risks
- Insurance, guarantees, warranties, and contractual risk allocation
- **Case Study:** Financial stress-testing of a wind project under cost and revenue uncertainty

Module 4: Development, Permitting, ESG, and Stakeholder Risk

- Licensing, permitting, land acquisition, and regulatory compliance
- Environmental and social impact risks
- Biodiversity, wildlife, noise, visual impact, and community considerations
- **ESG governance** and stakeholder engagement strategies
- **Case Study:** Managing permitting and community risks during wind-farm development

Module 5: Procurement, Supply Chain, Construction, and Logistics Risk

- Turbine procurement and **supplier due diligence**
- Global supply-chain disruption and critical-component risks

- Transportation, ports, roads, cranes, and installation logistics
- Contractor, subcontractor, quality, schedule, and interface risks
- **Case Study:** Responding to a delayed turbine-component supply chain during construction

Module 6: HSE, Operational, Maintenance, and Asset Risk

- Health, safety, quality, and operational risk management
- Preventive, predictive, and condition-based maintenance
- Turbine availability, reliability, component failure, and downtime
- Emergency preparedness and operational resilience
- **Case Study:** Building a mitigation plan following recurring turbine component failures

Module 7: Grid Integration, Digitalization, AI, and Cyber Risk

- Grid connection, transmission, curtailment, and power-quality risks
- SCADA, sensors, IoT, digital twins, and predictive analytics
- **AI-enabled risk monitoring** and anomaly detection
- Cybersecurity, data integrity, and digital operational risks
- **Case Study:** Using predictive analytics to identify emerging turbine-performance risks

Module 8: Quantitative Risk Analysis, Monitoring, and Resilience

- **Monte Carlo simulation**, scenario analysis, and sensitivity testing
- Contingency reserves, risk response, and residual-risk management
- Key Risk Indicators (**KRIs**) and risk dashboards
- Risk reporting, governance, audits, and continuous improvement
- **Case Study:** Portfolio-level risk simulation and development of an executive risk dashboard

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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