Clean Energy Systems and Transition Fundamentals Course

9 – 13 August 2027
Tokyo

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Training Center

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Overview

Clean Energy Systems and Transition Fundamentals Course is a one-week foundation course for energy professionals, sustainability teams, project developers, strategy staff, investment analysts, and technical managers who need a Clean Energy Decision Map. Participants distinguish technology families, connect supply and end use, examine grids and flexibility, interpret policy and market signals, and follow a project from concept to decision. The course builds shared vocabulary without reducing the transition to one technology. Agile Leaders Training Center delivers foundation learning in clean energy systems and transition choices.

Who Should Attend

- Professionals entering clean energy strategy, technology, or project roles
- Teams responsible for sustainability targets and energy transition initiatives
- Project developers who screen early-stage energy opportunities
- Policy, market, and investment staff who compare energy pathways
- Technical managers who coordinate specialists across the energy system

The course assumes basic familiarity with energy use and organizational decisions; it leaves out detailed engineering design, financial modeling, and regulatory legal advice.

Departments and Industries

The course supports departments that need a common basis for clean energy choices.

- Power generation, grids, utilities, and energy services
- Manufacturing, buildings, transport, and process industries
- Corporate strategy, sustainability, and environmental management
- Project development, finance, procurement, and commercial teams
- Public policy, research, and infrastructure planning

Learning Objectives

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

- Apply clean energy vocabulary and system boundaries
- Compare technology families and enabling infrastructure
- Analyze policy, market, security, and transition drivers
- Use project-lifecycle and economic screening tools
- Evaluate environmental, social, and delivery risks
- Build a transparent clean energy decision map

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Course Agenda

Day 1: Energy System Boundaries and Transition Drivers

- Energy, Electricity, Power, and Fuel Vocabulary Map
- Primary Energy-to-End-Use Flow Diagram
- Clean Energy and Low-Emission Technology Boundary
- Energy Security, Affordability, and Sustainability Decision Triangle
- Transition Driver and Stakeholder Evidence Register

Day 2: Technology Families and System Roles

- IEA Energy Technology Classification System Map
- Renewable Power Technology Comparison Matrix
- Energy Efficiency and End-Use Electrification Pathway
- Storage, Hydrogen, Low-Emission Fuels, and CCUS Role Canvas
- Technology Readiness and Deployment Context Screen

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Day 3: Grids, Flexibility, Policy, and Markets

- Variable Renewable Energy Integration Diagram
- Grid Flexibility, Adequacy, and Resilience Option Set
- Clean Energy Policy Instrument Comparison Table
- Power Market Revenue and Contract Structure Map
- Supply Chain, Critical Input, and Infrastructure Constraint Log

Day 4: Project Lifecycle, Economics, and Risk

- Clean Energy Project Stage-Gate Model
- Capital Cost, Operating Cost, Yield, and Lifetime Input Sheet
- Levelized Cost and System Value Interpretation Guide
- Environmental and Social Consideration Checklist
- Policy, Market, Technology, Delivery, and Finance Risk Register

Day 5: Decision Practice and Capstone

- Exercise on Energy-System Boundary Selection
- Exercise on Technology and Infrastructure Comparison
- Exercise on Policy, Market, and Project Screening
- Exercise on Risk, Metric, and Stakeholder Prioritization
- Capstone Exercise: Clean Energy Decision Map

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Practical Exercises

The course uses suggested activities that turn broad clean energy concepts into comparable evidence.

- Suggested activity: trace an energy service from primary supply to end use and losses
- Suggested activity: compare technologies by system role, readiness, constraints, and infrastructure
- Suggested activity: screen a project concept through policy, market, economics, and risk gates
- Suggested activity: build a decision map with assumptions, evidence gaps, and next actions

FAQs

Who suits clean energy systems and transition fundamentals, and what does it assume?

Professionals entering energy strategy, sustainability, project, policy, investment, or technical coordination roles suit the course. It assumes basic energy awareness and does not require specialist design or financial-modeling experience.

How does clean energy systems training differ from a renewable energy technology course?

Clean energy systems training includes efficiency, electrification, grids, storage, low-emissions fuels, hydrogen, CCUS, policy, markets, project economics, and transition risk. A renewable technology course usually goes deeper into selected renewable generation technologies.

What technologies are included in clean energy systems?

Scope can include renewable and other low-emissions supply, electricity networks, storage, efficiency, end-use electrification, hydrogen and related fuels, CCUS, digital controls, and enabling infrastructure. The relevant mix depends on the system boundary and decision purpose.

Why do grids and flexibility matter in a clean energy transition?

Higher shares of variable resources change the timing and location of electricity supply. Networks, storage, responsive demand, flexible generation, interconnection, forecasting, and operating practices help balance the system and maintain adequacy and resilience.

How should clean energy options be compared?

Options should be compared by service delivered, boundary, maturity, cost inputs, system value, emissions, infrastructure, security, environmental and social effects, policy exposure, delivery risk, and evidence quality. No single metric answers every decision.

Conclusion

Participants leave with a Clean Energy Decision Map containing system boundaries, technology roles, policy and market drivers, project gates, economic inputs, risk evidence, metrics, and next actions. The map changes fragmented terminology into a structured comparison. Teams can reuse it to frame discussions before specialist analysis begins.