Hydrogen Infrastructure 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

Hydrogen Infrastructure Planning Training Course is designed to equip professionals with practical knowledge and strategic capabilities for planning, developing, integrating, and scaling future-ready hydrogen infrastructure. As the global hydrogen economy expands, effective infrastructure planning requires an integrated understanding of green hydrogen, hydrogen hubs, production facilities, storage systems, pipelines, transportation corridors, refueling networks, renewable-energy integration, grid connectivity, digital infrastructure, safety-by-design, and regulatory compliance. The course focuses on the complete infrastructure lifecycle from site selection and demand assessment through feasibility, network planning, technology selection, project development, investment planning, risk management, and long-term expansion. Current professional training approaches similarly emphasize site selection, utility coordination, demand assessment, scalability, economics, safety, standards, and real-world project case studies.

Participants will explore how hydrogen valleys, industrial clusters, mobility corridors, ports, energy hubs, and integrated renewable-hydrogen systems can be planned as resilient and commercially viable infrastructure ecosystems. Particular attention is given to techno-economic assessment, hydrogen logistics, infrastructure optimization, permitting, stakeholder engagement, ESG, lifecycle sustainability, digitalization, SCADA/IoT, risk assessment, and investment readiness. Through practical exercises and case-based learning, participants will develop the ability to evaluate infrastructure alternatives and create strategic hydrogen infrastructure roadmaps. Industry training methodologies increasingly combine lectures, workshops, hands-on exercises, case studies, simulations, and group discussions to connect technical theory with real-world hydrogen infrastructure challenges.

Programme Curriculum

Hydrogen Infrastructure Planning Training Course

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Course Duration

5 days

Course Objectives

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

1. Understand hydrogen infrastructure ecosystems, value chains, and emerging market dynamics.
2. Develop strategic hydrogen infrastructure master plans aligned with energy-transition objectives.
3. Conduct site selection and infrastructure feasibility assessments using technical, environmental, and commercial criteria.
4. Assess hydrogen demand forecasting, production requirements, storage capacity, and distribution needs.
5. Evaluate hydrogen production, storage, transportation, pipelines, and refueling technologies.
6. Design integrated hydrogen hubs, valleys, industrial clusters, and mobility corridors.
7. Apply techno-economic analysis, CAPEX/OPEX evaluation, LCOH, and infrastructure investment modelling.
8. Integrate renewable energy, electrolyzers, grid systems, energy storage, and hydrogen infrastructure.
9. Apply hydrogen safety-by-design, hazard identification, risk assessment, emergency planning, and resilience principles.
10. Understand codes, standards, permitting, regulatory frameworks, certification, and compliance requirements.
11. Apply GIS, digital twins, data analytics, SCADA, IoT, and smart infrastructure planning concepts.
12. Evaluate ESG, lifecycle emissions, water requirements, sustainability, and climate-resilience considerations.
13. Develop actionable hydrogen infrastructure investment strategies, implementation roadmaps, and scalable development plans.

Target Audience

1. Energy policy makers and government officials
2. Hydrogen project developers and project managers
3. Engineers and technical professionals
4. Renewable-energy and power-system professionals
5. Transport, mobility, logistics, and infrastructure planners
6. Investors, financiers, consultants, and business leaders
7. Environmental, sustainability, ESG, and compliance professionals
8. Researchers, academics, graduates, and clean-energy professionals

Course Modules

Module 1: Hydrogen Economy and Infrastructure Ecosystem

- **Hydrogen value chain**
- **Green, blue, low-carbon, and renewable hydrogen** pathways and infrastructure implications.
- Hydrogen hubs, valleys, industrial clusters, ports, and **integrated energy systems**.
- Global hydrogen market trends, infrastructure gaps, and emerging development opportunities.
- **Case Study:** Analysis of a hydrogen hub development model and lessons for regional infrastructure planning.

Module 2: Hydrogen Infrastructure Planning and Site Selection

- Infrastructure master planning, demand mapping, **GIS-based site assessment**, and spatial planning.
- Evaluation of land availability, water resources, renewable-energy potential, grid access, and logistics.
- Utility coordination, transport connectivity, industrial demand, and community considerations.
- Infrastructure scalability, phased development, redundancy, and **resilience planning**.
- **Case Study:** Strategic site-selection assessment for a proposed hydrogen production and distribution hub.

Module 3: Hydrogen Production, Storage and Distribution Infrastructure

- Electrolyzers, renewable-energy integration, compression, purification, and balance-of-plant systems.
- **Hydrogen storage technologies** and capacity planning.
- Pipelines, tube trailers, liquid hydrogen logistics, terminals, and distribution networks.
- Infrastructure interfaces between production facilities, storage, transport, and end users.
- **Case Study:** Planning a multi-user hydrogen network connecting production, storage, industry, and mobility demand.

Module 4: Hydrogen Mobility, Refueling Networks and Transport Corridors

- Planning **hydrogen refueling stations** for buses, trucks, fleets, rail, maritime, and other mobility applications.
- Hydrogen demand forecasting and station capacity optimization.
- Corridor planning, fleet transition analysis, logistics, and station location strategies.
- Integration of hydrogen mobility hubs with renewable power, grid infrastructure, and other energy systems.
- **Case Study:** Development of a hydrogen heavy-duty transport corridor, including station siting and demand analysis. Real-world planning frameworks emphasize site selection, daily demand, fueling solutions, scalability, and economic assessment.

Module 5: Safety, Standards, Regulation and Infrastructure Risk

- Hydrogen properties, leakage considerations, ignition hazards, detection, ventilation, and safe facility planning.
- **Safety-by-design**, HAZID, HAZOP, risk assessment, and mitigation strategies.
- Codes, standards, permitting, inspection, certification, and regulatory compliance.
- Emergency response, operational safety, asset integrity, and infrastructure resilience.
- **Case Study:** Risk-based assessment of a hydrogen storage and refueling facility, identifying hazards and mitigation measures. Professional hydrogen safety training commonly emphasizes hazards, technical codes, guidance, and risk-evaluation methods.

Module 6: Techno-Economic Planning and Investment Strategy

- Hydrogen infrastructure **CAPEX, OPEX, LCOH, lifecycle costs**, and financial assumptions.
- Demand scenarios, infrastructure utilization, economies of scale, and sensitivity analysis.
- Business models, public-private partnerships, grants, incentives, carbon markets, and project finance.
- Investment-risk assessment, bankability, procurement strategy, and phased infrastructure development.
- **Case Study:** Comparative financial assessment of centralized versus distributed hydrogen infrastructure.

Module 7: Digitalization, Smart Infrastructure and Sustainability

- **Digital twins, GIS, AI-enabled analytics, IoT, SCADA**, monitoring, and predictive maintenance.
- Data-driven infrastructure optimization and demand forecasting.
- Renewable-energy integration, grid interaction, energy storage, and smart energy management.
- **ESG, lifecycle assessment, carbon intensity, water management**, and sustainability indicators.
- **Case Study:** Digital planning model for an integrated renewable-hydrogen industrial hub.

Module 8: Hydrogen Infrastructure Master Planning and Future Deployment

- Developing **hydrogen infrastructure roadmaps**, investment priorities, and implementation schedules.
- Hydrogen valleys, national corridors, export hubs, ports, and cross-border infrastructure.
- Stakeholder engagement, governance, public acceptance, permitting, and institutional coordination.
- Scenario planning, technology evolution, infrastructure expansion, and **net-zero transition strategies**.
- **Case Study:** Development of a 5–10-year hydrogen infrastructure roadmap for a national or regional hydrogen economy.

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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