



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

Mobile: +254 721 214 795

Email: info@pebblesinstitute.org

Economics Of Energy Transitions Training

Duration: 5 days

On-Site

01 Who Should Attend

- This course is ideal for;
- Energy Sector Engineers
- Data Scientists and Analysts
- Oil and Gas Professionals
- Renewable Energy Managers
- Asset and Infrastructure Inspectors
- Utility Grid Operators
- Project Managers
- Health and Safety Officers
- Technology Strategists
- Research and Development Teams

02 About the Course

This course provides a deep dive into the economic drivers, financial mechanisms, and policy choices shaping the global shift from fossil fuels to sustainable energy systems. It focuses on the quantitative tools needed to evaluate energy transition pathways, covering topics like technology cost forecasting, carbon pricing mechanisms, and the economic impact of decarbonization across various sectors. Participants will learn how to build and analyze financial models for both established and emerging technologies, such as green hydrogen and carbon capture, while also examining how regulatory uncertainty and market design fundamentally influence investment decisions. This training is essential for professionals tasked with making strategic, long-term financial and policy decisions in the evolving energy landscape.



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

Mobile: +254 721 214 795

Email: info@pebblesinstitute.org

03 Workshop Objectives

- Identifying Drivers and Barriers
- Analyzing Energy Technologies
- Financial Modeling
- Navigating Carbon Markets
- Evaluating Policy Impacts
- Strategizing a Just Transition

04 Module Topics

Module 1: Foundations of Energy Economics

- The economics of resource extraction
- Understanding energy demand and supply
- Market structures in the energy sector
- The concept of energy elasticity
- Externalities and market failures in energy

Module 2: The Macroeconomics of Energy Transition

- The role of energy in economic growth
- Analyzing the impact of energy shocks on the economy
- Global and national energy transition scenarios
- Measuring the economic benefits of decarbonization
- The link between energy transition and industrial policy

Module 3: Energy Policy and Regulation



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

Mobile: +254 721 214 795

Email: info@pebblesinstitute.org

- Principles of energy policy design
- The role of government in energy markets
- Regulatory frameworks for power grids
- Policy tools to incentivize clean energy
- Market-based versus command-and-control regulation

Module 4: Carbon Pricing and Carbon Markets

- The economic rationale for carbon pricing
- Carbon taxes vs. Emissions Trading Systems (ETS)
- Designing and implementing an effective carbon market
- The role of offsets and carbon credits
- International cooperation and carbon border adjustments

Module 5: Economics of Renewable Energy

- Levelized Cost of Energy (LCOE) analysis
- Economics of wind, solar, and geothermal power
- Managing the intermittency of renewables
- The economics of distributed generation
- The impact of subsidies and tax incentives

Module 6: Energy Efficiency and Demand-Side Management

- The "negawatt" as an energy resource
- Economic models of consumer behavior
- Designing policies to promote energy efficiency
- The economics of smart grids and smart meters
- Cost-benefit analysis of energy efficiency projects

Module 7: Energy Finance and Investment



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

Mobile: +254 721 214 795

Email: info@pebblesinstitute.org

- Project finance models for renewable energy
- The role of green bonds and sustainable finance
- Managing investment risk in clean energy projects
- Public and private capital mobilization
- The cost of capital and its impact on projects

Module 8: The Economics of Energy Storage

- The economic value of energy storage
- Cost analysis of different storage technologies
- Business models for grid-scale storage
- The role of storage in grid stability and resilience
- Policy and regulatory support for energy storage

Module 9: The Role of Technology and Innovation

- The economics of R&D in energy
- The learning curve effect in new technologies
- The role of AI and digitalization
- Analyzing the economic impact of smart grids
- Innovation policy for a low-carbon future

Module 10: Just and Equitable Transitions

- The economic implications for fossil fuel-dependent regions
- Designing policies for a "just transition"
- The impact on employment and labor markets
- Addressing energy poverty and access
- Stakeholder engagement and community benefits

Module 11: Transport and Industry Decarbonization



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

Mobile: +254 721 214 795

Email: info@pebblesinstitute.org

- The economics of electric vehicles and charging infrastructure
- Policy for low-carbon transportation
- The economic challenges of industrial decarbonization
- Carbon capture and storage economics
- The role of hydrogen and other new fuels

Module 12: Applied Financial Modeling

- Hands-on lab session with a financial modeling software
- Building a simple pro-forma model for a solar farm
- Running sensitivity analyses and risk assessments
- Valuation techniques (NPV, IRR) for energy projects
- Case studies in successful and unsuccessful project financing

Module 13: International Energy Policy and Governance

- Global climate agreements (e.g., Paris Agreement)
- The role of international financial institutions
- Cross-border electricity trade and its economics
- Energy security in a transitioning world
- Geopolitics of renewable energy resources

Module 14: Risk Management in Energy Transition

- Identifying financial, market, and regulatory risks
- Strategies for risk mitigation and hedging
- The role of insurance and financial instruments
- Analyzing political and social risks
- Building resilience into a portfolio of assets

Module 15: The Future of Energy Markets



PB INSTITUTE OF RESEARCH AND TECHNOLOGY

P.O Box 21457-00100

Nairobi - Kenya

Mobile: +254 721 214 795

Email: info@pebblesinstitute.org

- ▶ The rise of prosumers and decentralized markets
- ▶ The economic implications of blockchain and tokenization
- ▶ The future of fossil fuel demand and prices
- ▶ Emerging business models in the energy sector
- ▶ Long-term strategic planning for a net-zero world