Training Program:

Energy and Climate Change

Decarbonizing Energy Economies with Renewable Energy

Introduction:

Investors will have the knowledge base to de-risk their renewable energy investments and realize higher returns with a better understanding of debt/equity ratios, credit enhancement, and end-user creditworthiness assessments.

This BTS training course will help the participants from public and private sectors to better understand, design, and implement strategies to de-carbonize energy economies based on cost-effective, local renewable energy solutions. These strategies are vital tools against the very real threat of climate change faced by this and future generations of our species - and conveniently, renewable energy can often save end-users money if done correctly. For example, solar energy is now cheaper than conventional energy from the power grid in many cases. With energy storage, this renewable energy source can be as reliable as grid-supplied power as well.

It will have a solid grasp on how the use of renewable energy can be integrated into the conventional energy paradigm to make a positive impact on the environment and society.

Who Should Attend?

This BTS training course is ideal for those who work in the energy sector, particularly those in finance, accounting, and performance measurement roles.

This BTS training course is suitable for a wide range of energy and climate change professionals from public, private, and association sectors, but will greatly benefit:

- Energy Policymakers and Regulators
- Climate Change Policymakers and Regulators
- National and Sub-National Government Leaders
- Renewable Energy Project Developers
- Renewable Energy Industry Associations
- Renewable Financial Institutions and Lenders
- Renewable Energy Equity Investors
- End-User Market Sector Associations

Objective:

The participants will benefit from a deeper understanding of global energy trends; knowing why carbon release into the environment is causing an "inter generational inequity" on future generations; understanding ways to de-carbonize economies; being able to assess, develop, and finance renewable energy projects on technical, economic environment bases; creating an conducive environment to scaling up renewable energy; and being able to make informed decisions by leveraging data from the world's best information sources.

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

- Draw a line between the generation and use of conventional energy and climate change impacts
- Better understand the roles of Energy Efficiency, Renewable Energy, Reducing Emissions from Deforestation (REDD), and Carbon Capture and sequestration in de-carbonizing economies
- Conduct basic renewable energy project assessment and development
- Understand how renewable energy policies, regulations, and procurement paradigms can enable low-carbon energy strategies
- Analyze which financing approach may best meet their set of goals on a situational basis
- Access the world's best set of data to expand the knowledge of climate change and energy

Course Outline

DAY 1

Global Energy Resources, Generation, Delivery, and End-Use

- Resources
- Coal
- Oil and gas
- Nuclear
- Solar
- Wind

- Biomass
- Biofuels
- Hydrogen
- Generation Technologies
    - Combustion: Boilers, Steam Generators, Turbines, and Engines
    - Combined Heat & Power
    - Solar Photovoltaic (PV)
    - Concentrating Solar Power (CSP)
    - Wind Turbines
    - Geothermal
    - Wave, Current, And O-TEC
    - Fuel Cells
- Electricity Transmission & Distribution Networks
    - Energy Access as SDG Goal
    - Transmission Lines
        - kV Range
        - Associated Land Requirements
        - Associated Thermal Energy Losses
    - Distribution
        - kV Range
        - Collection Rates
        - Regularization
    - End-use
        - Energy - Efficiency First
        - Electricity, Heating, Cooling, and Process Heat
        - Net - Zero Energy
        - Residential
        - Commercial & Institutional
        - Industrial
        - Transportation
        - District Energy
        - Off-Grid vs. On-Grid
        - Energy Storage and Controls Systems

DAY 2

The Trouble with Carbon

- Sustainable Development Goals (SDG) Goals
- Climate Change Mitigation vs. Adaptation
- Extraction
    - Drilling
    - Mountaintop Removal
- Carbon Content of Fossil Fuels vs. Natural Gas vs. Renewable Energy
- Ozone and Greenhouse Gases
- Decarbonizing Methods
    - Energy Efficiency
    - Renewable Energy
    - Reducing Emissions from Deforestation and Forest Degradation (REDD)
    - Carbon Capture and Sequestration
- Cost Considerations
    - Price Data
- Carbon Neutral Countries
- United Nations Intergovernmental Panel on Climate Change (IPCC)
    - Interaction Among Emissions, Climate, Risks and Development Pathways: Characteristics of Mitigation Pathways
    - Economic and Social Costs and Benefits of Mitigation and Adaptation in the Context of Development Pathways
    - Adaptation and Mitigation Actions in the Context of Sustainable Development
    - Finance and Means of Support

DAY 3

Technical-Economic Considerations for Scaling Up Renewable Energy

- Centralized vs. IPP vs. Decentralized Renewable Energy
- Making Renewable Energy Projects Bankable Through Due Diligence
    - Pre-Feasibility Studies
    - Detailed Feasibility Studies

    - Project Preparation Facility
- Technical Assessment
    - Available Resources
        - Global Atlas for Renewable Energy
        - Need for Local Data Acquisition
    - Capacity Factors
        - Translating CF Into Spreadsheet Analyses
    - Modeling
    - Variable Renewable Energy and Grid Stability
- Economic Assessment
    - The Costs of Renewable Energy Systems
    - Power Purchase Agreements
- De-Risking Instruments
    - Put Call Option Agreements (PCOAs)
    - Partial Risk Guarantees (PRGS)
    - Sovereign Guarantee
- Financing Models Overview
    - Debt-Equity Ratios
    - Credit Enhancement
    - Self-Financed
    - Project Financing
    - Leasing
    - Renewable Energy Service Companies (RESCO)
    - Independent Power Producers (IPP)
    - PAYGO

DAY 4

Creating an Enabling Environment Conducive to Scaling Up Renewable Energy

- Integrated Resource & Resilience Planning
- National Long-Term Energy Planning
- Project Preparation Facility
- Net Metering
- Community Energy

- Renewable Portfolio Standards
- Feed-In Tariffs
- Single-Buyer Paradigm
- Competitive Procurement
- Public-Private Partnerships
    - Private Sector Assets and Motivations
    - Public Sector Assets and Motivations
    - Capacitating the Public Sector

DAY 5

Sources of Data for Informed Decision Making

- International Energy Agency (IEA)
    - Fuels and Technologies
    - Analysis
    - Data
    - Analysis
    - World Energy Outlook
- International Renewable Energy Agency (IRENA)
    - Country Profiles
    - Clean Energy Corridors
    - Global Geothermal Alliance
    - Parliamentary Network
    - Renewable Energy Roadmap (Remap)
    - Renewables Readiness Assessments
    - Small Island Developing States (SIDS) Lighthouses
    - Global Atlas for Renewable Energy
    - Sustainable Energy Marketplace
- International Development Partners Promoting Climate Change Mitigation with Renewable Energy
- International Foundations Promoting Climate Change Mitigation with Renewable Energy
- Relevant Associations
    - C40
    - Compact of Mayors

- Global Covenant of Mayors for Climate and Energy
- Global Climate Change Alliance
- International Renewable Energy Alliance
- International Solar Alliance

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