



GREEN ENERGY PROJECT DEVELOPMENT SPECIALIST

BLENDED - LEARNING PROGRAMME

Supported by:



Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety

IKI



INTERNATIONAL
CLIMATE
INITIATIVE



PFAN

Accelerating Investment
for Climate and Clean Energy

based on a decision of
the German Bundestag

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PROJECT INTRODUCTION

PROJECT OVERVIEW

The **Green Energy Project Development Specialist (GEPDS) programme** is a part of the **Green Banking – Capacity Building on Green Energy and Climate Finance** project. This project is supported by the International Climate Initiative (IKI) of the Federal Government of Germany. Within the Federal Government, the IKI is anchored in the Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety (BMUKN). Selected individual projects are also the responsibility of the Federal Foreign Office (AA).

Green Banking aims to strengthen the capacities of financial institutions and professionals in partner countries to finance renewable energy, energy efficiency, green hydrogen, and energy storage projects. In addition, the programme supports the development of sustainable capacity-building approaches for banks, investors, and project developers across the entire banking value chain.

Since its launch, the project has been successfully implemented in Southeast Asia, Africa, and Latin America. It is currently in its third implementation phase (2024–2027), building on the experience and results of previous phases in the partner countries



PROJECT OBJECTIVES

The **Green Banking – Capacity Building on Green Energy and Climate Finance** project pursues the following key objectives:

- Build technical and economic expertise on renewable energy, energy efficiency, green hydrogen, and energy storage projects, including their financial and economic assessment, to mobilise increased investment from development banks, commercial banks, private equity, venture capital, infrastructure funds, and institutional investors.
- Strengthen access to climate finance by facilitating knowledge exchange and networking around German and international climate finance instruments, such as the Green Climate Fund, and by supporting the integration of international funding sources with local financing opportunities.
- Promote sustainable capacity building through holistic training formats tailored to the needs of financial institutions, project developers, and policymakers.

GREEN ENERGY PROJECT DEVELOPMENT SPECIALIST

INTRODUCTION TO THE PROGRAMME

The **Green Energy Project Development Specialist (GEPDS) Blended Learning Programme** develops practical knowledge of renewable energy and energy efficiency project development, covering technical, financial and contractual aspects from site selection and feasibility assessment to due diligence, risk analysis and power purchase agreements.

The programme combines eight asynchronous online modules with a mandatory three-day seminar held in the relevant partner country. Together, these components comprise a total workload of 300 hours.

Topics include renewable energy technologies, project finance, investment valuation, project contracts, environmental and social standards, energy efficiency and project portfolio management. Assessment comprises assignments, module examinations, practical exercises and a final examination, which must be passed with at least 70 per cent.



THIS PROGRAMME IS SUITABLE FOR THOSE WHO ARE:

- Experienced project development professionals and managers leading project development teams
- Project development directors or heads of project development overseeing project portfolios
- Engineers or technical specialists with hands-on experience in complex project development processes
- Staff at commercial banks, development banks, multilateral organisations and government energy agencies responsible for managing project pipelines
- Professionals with a background in renewable energy companies and utilities, project development and engineering
- Professionals with prior experience in project development firms and consultancies
- Professionals working in project development units of commercial banks, development banks and multilateral organisations
- Government energy agency and ministry staff with exposure to project development
- Professionals in engineering and technical consulting firms specialising in renewable energy

Participants are expected to possess foundational knowledge of financial principles, project management, renewable energy technologies and relevant technical or financial disciplines.

PROGRAMME SUMMARY

LEARNING OBJECTIVES

Upon completing the programme, participants will be able to:

- Understand the main stages of green energy project development and the role of renewable energy technologies across the project-development value chain.
- Assess political and market frameworks and explain how they influence renewable energy deployment and the development of green energy projects.
- Explain the main principles of project finance and investment structures and relate them to the development and implementation of renewable energy projects.
- Perform or interpret feasibility assessments and investment valuations in order to evaluate the viability and attractiveness of renewable energy projects.
- Understand and apply due diligence and risk-analysis approaches when evaluating renewable energy projects and their development requirements.
- Analyse project contracts and power purchase agreements and understand their importance for the contractual structure and bankability of renewable energy projects.
- Evaluate site-selection considerations and define projects at an early stage of development, taking account of the technical, financial and contractual dimensions of project development.
- Understand the planning requirements for large-scale renewable energy systems and how these requirements connect with the wider project-development process.
- Apply environmental and social standards when assessing and developing renewable energy projects.
- Understand the role of energy efficiency projects within the wider green energy and energy-transition context.
- Consider project development and portfolio management from an organisational and professional perspective, and communicate effectively with technical, financial and governmental stakeholders.



PROGRAM PARTICIPATION

APPLICATION PROCESS

As part of the Green Banking project, RENAC offers 15 scholarships per partner country for participants from Brazil, Colombia, Kenya, Indonesia, South Africa, and Vietnam. Individuals interested in participating in the training must submit a completed application form via the RENAC website, where the application period and training start dates are also published.

The training promotes balanced gender representation among participants and supports equal career development opportunities.

RENAC will inform applicants by email as soon as possible regarding the outcome of their scholarship application. Selected candidates must confirm their acceptance of the scholarship offer by replying to the invitation email sent by RENAC.

Note: Scholarship recipients must log in to the learning platform no later than two weeks after the start of the training. Failure to do so may result in the scholarship being reassigned to a participant on the waiting list.

LANGUAGE

The programme language is English, Spanish and Portuguese. All mandatory programme material (including course content, videos, pre-recorded lectures, assignments, and exams) will be available in English, Spanish, and Portuguese. Live virtual classrooms will be conducted in English with simultaneous translation via Wordly. In-person seminars will be conducted in English, Spanish, and Portuguese.

ONLINE TRAINING PROGRAMME FEATURES

The Green Energy Project Development Specialist training combines asynchronous and synchronous learning methods. Participants have access to written materials, assignments, and instructional videos, and are also invited to take part in live virtual sessions.

Learning with RENAC follows a two-step asynchronous approach. First, participants work through the course content independently. This is followed by the application of newly acquired knowledge and skills, allowing learning outcomes to be reinforced and consolidated. These steps are supported through a variety of learning activities.

The online training also includes written assignments, which further strengthen learning outcomes and may contribute to the final exam results.

WORKLOAD FOR PARTICIPANTS

Depending on prior knowledge, participants should expect to spend approximately 300 hours to successfully complete the course. This corresponds to an estimated 10–12 hours per week over the duration of the training. The workload includes reading and understanding the course materials, watching videos, completing self-test questions, participating in virtual classrooms, joining the Q&A forum, and attending a three-day on-site seminar. It also includes submitting short assignments, completing administrative tasks (such as familiarising yourself with the Moodle platform and creating profiles), and preparing for and taking the online exam.

PROGRAMME ELEMENTS

LIVE VIRTUAL SESSIONS

The programme begins with a live online orientation session in which participants meet RENAC staff members, receive an introduction to the Moodle learning platform and its functions, and are familiarised with the forum. The session also covers key programme details, including activities and assignments, the exam, deadlines, and scheduling. Throughout the programme, virtual classroom sessions of approximately 1–1.5 hours are offered. Participation in these sessions is not mandatory. The sessions are conducted via Zoom, recorded, and made available on the Moodle platform for later viewing. In general, there is approximately one virtual classroom per module, and the content of each session is directly related to the respective module content or the corresponding module assignment.

EXAM AND CERTIFICATIONS

The final programme grade is based on the results of the final exam, as well as the grades obtained in the programme assignments and end-of-module exams. The minimum passing grade is 70% for assignments and 70% for both the end-of-module exams and the final exam.

The final exam consists of 80 multiple-choice questions, and participants are given 120 minutes to complete it. To prepare for the exam, participants are encouraged to complete the self-test questions included in each mandatory course.

Participants who score below 70% may request a certificate of attendance, provided they have attempted all self-test questions in the compulsory courses. Certificates are issued as PDF files. Participants who do not pass the exam on their first attempt will have the opportunity to retake it at a later date. Exam and retake dates will be announced during the introductory live session.

IN-PERSON SEMINAR

The three-day onsite seminar takes place in partner countries and is mandatory for certificate completion. Participants engage with key topics covered in the online modules, including renewable energy technologies, project finance, policy frameworks, and energy efficiency. The seminar runs from approximately 9:00 to 17:00 each day and provides opportunities to work through case studies and practical exercises that reinforce concepts from the preceding online training. Lunch and refreshments are provided during seminar days. Participants bear all other costs, including accommodation and travel expenses.

ASSIGNMENTS AND EVALUATION

The courses are designed to be followed continuously from the beginning of the semester through to the final exam. Typically, there is one assignment per module, covering a range of formats such as multiple-choice quizzes, forum contributions, written assignments, and calculation exercises. All assignments must be submitted by the specified deadlines, which are communicated during the introductory live session.



SCHEDULE & ORGANISATION

MODULE	Module Title	Duration
Warm up (optional)	Intro to energy, electricity, and electrical grids	week 0
Module 1	Introduction to green energy projects	weeks 1-2
Module 2	Political and market frameworks	weeks 3-5
Module 3	Project finance and investment	weeks 6-8
Module 4	Project contracts	weeks 9-11
Module 5	Planning projects I	weeks 12-14
Module 6	Planning projects II	weeks 15-17
Module 7	Special issues in project development	weeks 18-20
Module 8	Energy Efficiency (EE) projects	weeks 21-23
Seminar Week	Seminar Week	3-day seminar

Each module is composed of mandatory, elective, and optional courses. Mandatory courses must be completed, as their content forms the basis of the final examination. Elective courses require participants to choose and complete one or more courses from a designated list within the module, while optional courses are entirely voluntary and serve as supplementary material for those wishing to deepen their understanding.

MODULES OVERVIEW

MODULE 1 – INTRODUCTION TO GREEN ENERGY PROJECTS

MANDATORY COURSES

- Intro to Renewable Energy projects
- Intro to Energy Efficiency projects

ELECTIVE COURSES

- Choose at least two technologies
- PV
 - Wind power
 - Biogas
 - Solar-diesel hybrid technologies

Live virtual session: Introduction to programme

MODULE 2 – POLITICAL AND MARKET FRAMEWORKS

MANDATORY COURSES

- Introduction to Power Systems and Markets
- Policies for RE in the Electricity Sector

ELECTIVE COURSES

- Fact Sheet on Policy and legal frameworks in either
- Kenya, or
 - Colombia, or
 - Brazil, or
 - Indonesia, or
 - Vietnam, or
 - South Africa

Live virtual session: Policy framework and support mechanisms



MODULES OVERVIEW

MODULE 3 – PROJECT FINANCE AND INVESTMENT

MANDATORY COURSES

- RE Project Finance
- RE Feasibility Assessment and Investment Valuation
- Due Diligence and Risk

OPTIONAL COURSES

- Fact sheet on Small Scale RE and EE

Live virtual session: RE project cash flows

MODULE 4 – PROJECT CONTRACTS

MANDATORY COURSES

- Project Contracts
- Power Purchase Agreements for large-scale RE Projects
- Securing Land Rights

OPTIONAL COURSES

- Negotiation Skills

Live virtual session: Due diligence

MODULE 5 – PLANNING PROJECTS I

MANDATORY COURSES

- Intro to Project Development: Site Selection and Project definition
- Wind Power Planning and Measurement
- Planning of Large-scale PV Grid-connected systems – Technical

Live virtual session: Intro to project development

MODULES OVERVIEW

MODULE 6 – PLANNING PROJECTS II

MANDATORY COURSES

- Planning of large-scale PV grid- connected systems - Non-technical
- Environmental and Social Standards

OPTIONAL COURSES

- Small hydro projects: planning, implementation and operation

Live virtual session: Environmental and social impact assessment

MODULE 7 – SPECIAL ISSUES IN PROJECT DEVELOPMENT

MANDATORY COURSES

- Managing a Project Development Portfolio
- Energy Storage - Application and Technology

ELECTIVE COURSES

- Planning of Medium-sized Biogas Plants
- Planning of PV-Diesel Hybrid Systems

Live virtual session: Project development portfolio management

MODULE 8 – ENERGY EFFICIENCY (EE) PROJECTS

MANDATORY COURSES

- Systematic Approaches to Energy Saving
- Financing of EE-Projects and ESCOs

ELECTIVE COURSES

- Energy Efficiency – Buildings (Technology)
- Energy Efficiency – Buildings (Application)
- Energy Efficiency – Industry (Application)

CONTENT DETAILS OF MODULE 1

INTRODUCTION TO GREEN ENERGY PROJECTS

MANDATORY COURSE

Introduction to Renewable Energy projects

After completing this course, participants should be able to:

- illustrate the steps and tasks of a project life-cycle of renewable energy (RE) projects
- compare different public and private perspectives of RE project life cycles
- assess project attractiveness with standard methods

Content

- | | | |
|--|--|--|
| <ul style="list-style-type: none">• General characteristics of RE projects• The project realisation cycle• The average lifetime of RE projects• Typical players in RE projects• End of life considerations | <p>Financial aspects of RE projects</p> <ul style="list-style-type: none">• Investments and investment appraisal• Investment decision• Assessing an investment's attractiveness• Financial management tasks• Cost structure of RE projects | <p>Non-financial aspects of RE projects</p> <ul style="list-style-type: none">• Introduction• Public and private investment appraisal• Public support mechanism• Externalities of RE projects• Evaluating external effects |
|--|--|--|



CONTENT DETAILS OF MODULE 1

INTRODUCTION TO GREEN ENERGY PROJECTS

MANDATORY COURSE

Introduction to Energy Efficiency Projects

After completing this course, participants should be able to:

- explain what energy efficiency is and why it is important
- understand the benefits of energy efficiency and know how to identify the drivers and barriers to energy efficiency implementation
- analyse the relevance of energy efficiency in different economic sectors
- identify financing options for energy efficiency and the role of financiers

Content

- | | | |
|--|--|---|
| <ul style="list-style-type: none">• The importance of energy efficiency• Energy efficiency to reduce energy demand• Energy efficiency strategies cost• Benefits of energy efficiency• Energy consumption by sectors• Stakeholders in energy efficiency• Drivers of implementation of energy efficiency measures• Barriers in implementation of energy efficiency• Strategic Principles for Implementing Energy Efficiency Policies | <ul style="list-style-type: none">• Definition of Greenhouse Gases (GHG)• Definition of Baseline and Business as usual• Definition of energy consumption and energy baseline• Definition of energy efficiency• Definition of Energy Intensity on the country level• Definition of energy conservation• Differences between EE programmes and EE projects• Concept and types of energy efficiency projects• Energy efficiency projects by investment category | <ul style="list-style-type: none">• Sustainable finance taxonomy and energy efficiency• The economics behind energy efficiency projects• Project cost and revenues• The role of providers of finance in a green economy• Climate finance investment evolution• Internal processes for providers of finance• Special features of energy efficiency finance• Barriers to energy efficiency finance• Financing options |
|--|--|---|



CONTENT DETAILS OF MODULE 1

INTRODUCTION TO GREEN ENERGY PROJECTS



ELECTIVE COURSES

PV Technology

Upon completion of this course, you should be able to:

- explain the principles of photovoltaic electricity generation
- identify the key components of photovoltaic and storage systems and explain their interdependence
- evaluate the quality of a photovoltaic system
- contribute to the successful realisation of photovoltaic projects

Content

- Introduction
 - Photovoltaic cells and modules
 - PV inverters
 - Battery storage
 - Other PV system components
 - How to implement a good PV system
-

Wind Power - Technology

Upon completion of this course, you should be able to:

- explain the design, components, and functionality of wind turbines, including towers, rotor-nacelle assemblies, rotor blades, and power generation systems, and their contribution to turbine performance
- recall technical parameters such as power limitation strategies and tip speed ratio
- name key standards and norms governing the wind energy sector, including IEC 61400, offshore wind turbine standards, and grid connection requirements
- examine operational factors, maintenance approaches (preventive, predictive, and corrective), monitoring systems, and O&M contract structures to ensure the efficient operation of wind farms
- explain the unique aspects of offshore wind energy, including substructure types, foundations, grid connection requirements, and installation processes, along with specialised offshore O&M practices

Content

- Introduction
 - Wind turbine components
 - Technical features and parameters
 - Standards and norms
 - Wind farm operation and maintenance (O&M)
 - Offshore wind energy
-

CONTENT DETAILS OF MODULE 1

INTRODUCTION TO GREEN ENERGY PROJECTS



ELECTIVE COURSES

Biogas and solid biomass

Upon completion of this course, you should be able to:

- define bioenergy and understand regional aspects when designing, implementing and managing bioenergy projects
- assess the range of applications for biogas and solid biomass systems
- describe the key factors in biogas production and its use to generate heat and/or power
- name the key factors in heat and power generation from solid biomass
- describe the main economic and legal aspects of biogas and solid biomass projects
- specify risks and risk mitigation strategies

Content

- | | | |
|--|--|---|
| • Introduction | • Biogas feedstock considerations | • Market opportunities for solid biomass projects |
| • Overview of Bioenergy applications | • Biogas generator issues | • Production configurations |
| • Supply chain and value chain approach | • Biomethane production and utilisation | • Remaining challenges |
| • Key feasibility criteria for Biogas and Biomass projects | • Greenhouse Gas emission reduction from biogas | • Electricity generation configurations |
| • Market opportunities for biogas projects | • Key economic considerations in biogas projects | • Project integrated planning |
| | | • Regulatory framework |
| | | • Risks and risk mitigation |



CONTENT DETAILS OF MODULE 1

INTRODUCTION TO GREEN ENERGY PROJECTS

ELECTIVE COURSES

Solar PV-diesel hybrid technologies

Upon completion of this course, you should be able to:

- explain the advantages of the hybridisation of solar energy systems, and their applications
- explain the main elements of PV-diesel hybrid systems and their working principles
- review market opportunities and trends for hybrid systems
- analyse the key aspects in PV-diesel hybrid system design, including: environmental impact, project implementation risks, economic parameters, operation, maintenance, and monitoring

Content

- Review the context and applications of diesel hybrid technologies
- Addition of renewable energy sources (RES) for hybridisation
- Fundamentals of PV-diesel hybrid systems
- Off-grid PV-diesel hybrid systems
- On-grid PV-diesel hybrid systems
- PV-diesel hybrid systems with storage
- Current market situation of hybrid systems
- Environmental Impact Assessment (EIA)
- Risk analysis
- Design of PV-diesel hybrid systems
- Dimensioning of energy storage in PV-diesel hybrid systems
- Costs and economic analysis
- Economic optimisation and sensitivity analysis
- Operation and maintenance rules
- Monitoring of parameters



CONTENT DETAILS OF MODULE 2

POLITICAL AND MARKET FRAMEWORKS

MANDATORY COURSE



Introduction to Power Systems and Markets

After completion of this course, participants will be able to:

- describe the elements of a power system
- distinguish and characterise the five models of power system design
- explain what role competition plays in each of the five models
- identify principles of power market design, architecture, and respective rules

Content

- | | | |
|---|---|---|
| • Introduction to the characteristics of the electricity system | • Introduction: Current Structures of the Power Sector Models | • The retail competition model |
| • Planning characteristics | • The vertically integrated market model | • Further characteristics of a market model |
| • Dispatch approaches | • The single-buyer model | • Reliability standards and options |
| • System operation | • The partially unbundled (unbundling) model | • Energy Only Market (EOM) |
| • Pricing approaches | • The whole sale market model | • Capacity Market |
| • Market clearing price | | |
| • Zonal vs nodal pricing approach | | |



CONTENT DETAILS OF MODULE 2

POLITICAL AND MARKET FRAMEWORKS

MANDATORY COURSE



Policies for Renewable Energies in the Electricity Sector

After completion of this course, participants will be able to:

- understand the overall framework conditions required to reach high shares of renewables in the electricity sector
- recognise the key procurement mechanisms and support policies for renewables, including auctions, feed-in tariffs, and self-consumption policies
- identify key flexibility options for power systems with high shares of solar PV and wind energy, including grids, dispatchable power plants, batteries, demand side flexibility, and electricity market design
- understand key permitting and planning elements for renewables, as well as industrial policies to harness socio-economic benefits.

Content

- Introduction
- Drivers for renewable energy deployment and targets
- Procurement Mechanisms: Auctions and feed-in tariffs
- Incentives for Distributed Generation: Self-consumption, prosumers and rooftop solar PV
- Power System Flexibility for RE integration
- Grids
- Planning and permitting for RE projects
- Industrial policies and socio-economic benefits (Just transition)

ELECTIVE COURSES

The following are fact sheets on policy and legal frameworks in a selection of different countries:

- Kenya
 - Colombia
 - Brazil
 - Indonesia
 - Vietnam
 - South Africa
-

CONTENT DETAILS OF MODULE 3

PROJECT FINANCE AND INVESTMENT



MANDATORY COURSE

Renewable Energy Project Finance

After completion of this course, participants will be able to:

- demonstrate the different financing options of renewable energy projects in principle and the project finance option in more detail
- perform a risk assessment for renewable energy projects
- interpret a bank's view of the risks related to PV, wind, and biogas plants
- collect the data required for a bankability assessment of a renewable energy project

Content

- | | | |
|-------------------------------|--|---|
| • Introduction to the course | • Bankability assessment | • Example B: PV projects in France |
| • Available financing options | • Financial engineering | • Example C: Biogas projects in Romania |
| • SPV-contract negotiation | • Example A: Wind farm projects in Germany | |
| • Business planning | | |

Renewable energy feasibility assessment and investment valuation

After completion of this course, participants will be able to:

- illustrate basic financial principles including the time value of money and the determination of cost of capital
- increase understanding of capital budgeting tools to assess renewable energy investment attractiveness
- perform calculations of important economic parameters to assess the viability of a renewable energy project
- demonstrate concepts of risk and uncertainty as well as risk assessment instruments.

Content

- | | |
|---|---------------------------------------|
| • Introduction to the course | • Financial performance indicators |
| • Basic financial principles and concepts | • RE Projects risks and uncertainties |

CONTENT DETAILS OF MODULE 3

PROJECT FINANCE AND INVESTMENT



MANDATORY COURSE

Due Diligence and Risk

After completion of this course, participants will be able to:

- explain the relevance of due diligence in renewable energy investment decisions
- describe the relationship between risk, financing structures, and governance
- outline the structure and learning approach of the course.

Content

- Fundamentals of due diligence, risk and uncertainty
- Information asymmetries and moral hazard in renewable energy projects
- Quantifying and prioritising risks
- RE project risks and mitigation measures
- Practical aspects of conducting DD assessments in the context of RE projects

OPTIONAL COURSE

- Fact Sheet on Small Scale RE and EE



CONTENT DETAILS OF MODULE 4

PROJECT CONTRACTS

MANDATORY COURSE

Project Contracts

After completion of this course, participants will be able to:

- Distinguish between different types of project contracts and the corresponding contract partners,
- Prepare different types of contracts required in renewable energy project finance.
- Critically assess various project contracts, ensuring each contract's terms align with the project's stakeholders' goals while maximising the renewable energy project's feasibility and sustainability,
- Apply these project contracts in order to achieve a bankable project finance structure and minimise the project risks,
- Analyse the requirements of international financial institutions on project contracts

Content

- Introduction to project contracts
- Contractual and legal considerations in international projects
- Contracts in renewable energy projects
- Potential risks for investors
- Requirements of financing entities



CONTENT DETAILS OF MODULE 4

PROJECT CONTRACTS

MANDATORY COURSE

Power Purchase Agreements for large-scale RE Projects

After completing this course, participants should be able to:

- understand market drivers and institutional prerequisites for power purchase agreements (PPAs)
- highlight the importance of stable offtake regimes and full output marketing for project finance
- differentiate PPA types and analyse the various pricing and volume structures available in the market
- explain how to allocate and manage PPA risks and to evaluate PPA pricing components,
- understand the contract structure and important contract clauses of PPAs
- recall different applications for PPAs based on real world case studies.

Content

- | | | |
|---|--|---|
| • Definition and basic objectives of power purchase agreements (PPAs) | • General PPA models | • Contractual architecture of a sample PPA and PPA-related financial agreements |
| • Market drivers and types of PPAs | • PPA Pricing structures | |
| • Institutional prerequisites to conclude PPAs | • PPA Volume structures | • PPA case studies |
| • The importance of stable offtake structures for RE projects | • Allocation and management of price and risk components | |
| | • Impact of PPAs on project bankability and financing structures | |



CONTENT DETAILS OF MODULE 4

PROJECT CONTRACTS



MANDATORY COURSE

Securing Land Rights

After completing this course, participants should be able to:

- recognise the critical aspects of accessing and securing land and logistical corridors for RE facility development
- familiarise with national and regional regulatory provisions relevant to land rights and permitting
- outline a plan for land access and permitting obtention from a RE project developer point of view.

Content

- Introduction to Land rights, security and acquisition in the context of RE development; typical actors and their roles.
- Key Regulatory aspects that define access to Land
- Key Permitting provisions that define RE facility construction, operation and dismantling (EoL)
- ESIA aspects
- Grievance mechanisms
- Example of Regulatory framework – the EU
- Specific provisions for Solar PV plants
- Specific provisions for Solar PV plants
- Specific provisions for Bioenergy developments – feedstock corridors
- Wrap-up guideline: Decision tree for RE facilities developers

OPTIONAL COURSE

Negotiation Skills

After completing this course, participants should be able to:

- make the pie bigger, i.e. to create value, claim value
- develop sustainable relationships with business partners, colleagues and third-party stakeholders.

Content

- Negotiation and negotiation training
- Distributive negotiations: Claiming value in zero-sum games
- Integrative negotiations: Creating (and claiming) value in variable-pie contexts

CONTENT DETAILS OF MODULE 5

PLANNING PROJECTS I



MANDATORY COURSES

Intro to Project Development: Site Selection and Project definition

After completing this course, participants should be able to:

- understand the fundamentals of developing renewable energy (RE) projects, such as goals and objectives, activities to be performed, business models to be applied, and the different types of developers
- describe the project life cycle phases and critical location factors
- get an advanced knowledge of technology-specific development factors and reflect on how process flows work in project development from the initial idea to implementation
- focus on efficiently screening sites and identifying the commercial technical potential of project locations.

Content

- Introduction
 - Overview of renewable energy project development
 - Identification of suitable locations and technologies
 - Site selection in RE project development
-

Wind power – planning and measurement

Upon completion of this course, you should be able to:

- identify fundamental wind farm planning and construction steps,
- estimate the duration of the wind farm planning steps,
- identify software for different purposes around wind power generation,
- state the purpose of measured wind data and explain why it is important to measure the wind resource at the project site.

Content

- Wind farm planning and design
 - Wind measurement
 - Software
-

CONTENT DETAILS OF MODULE 5

PLANNING PROJECTS I

MANDATORY COURSE



Planning of Large-scale PV Grid-connected systems – Technical

After completing this course, participants should be able to:

- explain the importance and global impact of large-scale PV projects, including market trends and sustainability goals
- identify and describe the components, configurations, and technical considerations of large-scale PV projects
- define performance modelling techniques and outline grid integration requirements for PV systems
- evaluate the economic and financial aspects of PV projects, including funding sources and financial metrics
- explain the legal and regulatory requirements, including necessary permits and agreements for PV projects
- manage and oversee the construction phase of PV projects, ensuring compliance with project schedules and resource allocation
- conduct effective O&M activities, optimise system performance, and implement risk management strategies
- assess and mitigate risks throughout the lifecycle of a large-scale PV project.
- develop and apply essential soft skills for effective project management and stakeholder engagement in PV projects.

Content

- | | |
|--|---|
| • Fundamentals of large-scale PV projects | • Life Cycle of Large-Scale PV Projects |
| • Large scale PV Plant Configurations and Components | • Development phase |
| • Large scale PV projects with energy storage systems (ESS) and green hydrogen (GH2) | • Construction Phase |
| | • Operation & Maintenance Phase |

CONTENT DETAILS OF MODULE 6

PLANNING PROJECTS II

MANDATORY COURSES



Planning of large-scale PV grid-connected systems - Non-technical

After completing this course, participants should be able to:

- evaluate the economic and financial aspects of PV projects, including funding sources and financial metrics
- explain the legal and regulatory requirements, including necessary permits and agreements for PV projects
- assess and mitigate risks throughout the lifecycle of a large-scale PV project
- develop and apply essential soft skills for effective project management and stakeholder engagement in PV projects.

Content

- Commercial and financial aspects of large-scale solar plants
- Legal aspects of large-scale solar plants
- Risk assessment and mitigation in large-scale SPV plants
- Stakeholder management and engagement strategies

Environmental and social standards

After completing this course, participants should be able to:

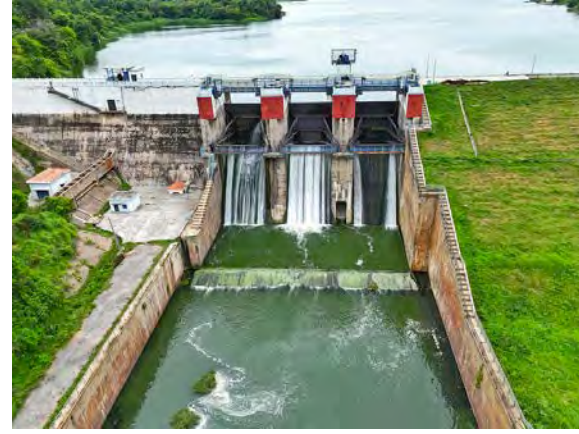
- compare different internationally recognized standards for environmental, social, climate change, gender or cultural issues
- explain environmental, social, climate change, gender or cultural standards in renewable energy project financing
- organise procedures and processes in order to comply to these standards from a project perspective
- assess in how far renewable energy and energy efficiency projects comply with these standards from a bank's perspective

Content

- The Equator Principles for the financial industry
- Environmental and Social Impact Assessment (ESIA) process
- Content of an ESIA report
- The Environmental and Social Management Plan

CONTENT DETAILS OF MODULE 6

PLANNING PROJECTS II



OPTIONAL COURSE

Small hydro projects: planning, implementation and operation

After completing this course, participants should be able to:

- distinguish different types of hydropower plants and their main components
- calculate the power from a flow of water and describe different methods of measuring flow rate and head
- explain the civil and electro-mechanical engineering system design
- present specific costs as well as a cost breakdown of a sample scheme.

Content

- Different types of hydro plant
- Resource assessment
- Civil engineering components
- Electro-mechanical equipment
- Costs



CONTENT DETAILS OF MODULE 7

SPECIAL ISSUES IN PROJECT DEVELOPMENT



MANDATORY COURSE

Managing a Project Development Portfolio

After completing this course, participants should be able to:

- summarise the green finance approach to energy project development and assessment
- demonstrate an understanding of the key operational and financial output parameters of renewable energy (RE) projects used in project assessment
- locate key output parameters (operational and financial) of energy projects and connect them with the larger green finance context
- analyse case studies on PV grid-connected, PV-diesel hybrid, biogas, and solid biomass technologies
- compare application results from these technology case studies and recommend specific technologies accordingly for commercial and industrial use.

Content

- Overview of the green finance approach
- Step-by-step guide for defining RE projects
- Key operational parameters that define RE projects
- Key financial parameters that define RE projects
- Analytical approaches
- Analytical approach 1 – Ceteris Paribus Analysis (One-Variable Sensitivity)
- Analytical approach 2 – Multi-Variable Sensitivity Analysis
- Analytical approach 3 – Scenario analysis
- Analytical approach 4 – Monte Carlo Simulation (with energy example)
- Modelling tools: purpose, main inputs, and main outputs
- PV tools (grid-connected, off-grid, or hybrid)
- Biogas tool
- Biomass gasification to electricity tool
- Micro-hydro tool
- Decision tree for RE project assessment and recommendations for further steps

CONTENT DETAILS OF MODULE 7

SPECIAL ISSUES IN PROJECT DEVELOPMENT

MANDATORY COURSE

Energy Storage - Application and Technology

After completing this course, participants should be able to:

- describe the purpose and future role of energy storage systems (ESS)
- classify storage technologies
- calculate specific costs and compare different economic aspects of ESS
- explain how different energy storage technologies complement each other.

Content

- Storage systems: components, technologies, and integration strategies
- Terminology and definitions
- Energy storage system classification
- Storage applications in different sectors
- Mechanical energy storage systems
- Electrical energy storage systems
- Electrochemical and chemical energy storage systems
- Thermal energy storage (TES)
- Economics of energy storage systems
- Competition among technologies



CONTENT DETAILS OF MODULE 7

SPECIAL ISSUES IN PROJECT DEVELOPMENT

ELECTIVE COURSE

Planning of Medium-sized Biogas Plants

Upon completion of this course, you should be able to:

- describe the anaerobic digestion process and relevant process parameters,
- discuss special substrates and technologies for biogas production in connection with sustainability issues,
- explain all necessary steps from planning to operation and maintenance
- present the functioning of system components and their respective applications.

Content

- The anaerobic digestion process – types of process and process parameters
 - Special substrates and sustainability
 - Special technologies for biogas production
 - Main components
 - Biogas applications
 - Treatment of digestate
 - Example biogas plant
 - Operation and maintenance
-

Planning of PV-diesel hybrid systems

After completing this course, participants should be able to:

- distinguish different system designs and their preferable application,
- lead a feasibility study to integrate PV into an existing diesel power system,
- explain functioning of system components, operational strategies and optimising potential and
- assess and supervise the planning and implementation of a PV-diesel power plant.

Content

- Introduction to PV-diesel hybrid power stations
 - Introduction to feasibility case study
 - Feasibility study – PV integration and conclusions
 - Technical aspects of conversion from diesel-only to PV-diesel hybrid
 - Additional options to optimize system
 - Financial analysis – key parameters
 - Installation, commissioning, operation and maintenance
 - Final conclusions
-

CONTENT DETAILS OF MODULE 8

ENERGY EFFICIENCY (EE) – PROJECTS

MANDATORY COURSE

Systematic Approaches to Energy Saving

Upon completion of this course, you should be able to:

- list key standards that set the framework for energy management systems and energy audits
- explain the plan-do-check-act cycle and its role in continual energy efficiency improvements
- describe the importance and benefits of an energy management system
- elaborate on the purpose and types of energy audits
- describe the different energy audit process stages.

Content

- Energy management
- Energy audit objectives
- Learning energy efficiency networks
- Best available techniques

Financing of energy efficiency projects and ESCOs

After completing this course, participants should be able to:

- distinguish energy efficiency projects from conventional investments
- explain the different financing options for energy efficiency projects
- analyze new innovative business models in the energy sector, such as utilizing energy efficiency experts, energy performance contracts, energy service companies, and collaborative de-risking mechanisms
- identify important stakeholders in energy efficiency finance besides financial institutions
- develop an energy efficiency finance portfolio/combine it with existing customer offers
- organize an energy efficiency project assessment from the perspective of a bank.

Content

- Types of EE finance
- EE financing mechanisms and framework conditions
- Technology de-risking in EE projects – collaboration with EE experts
- Project lifecycle and project development: The technical side
- Project development — financial model
- Underwriting process I—contractual structure, monitoring and verification, and creditworthiness
- Underwriting process II—risk assessment, ESIA, investment decision, and implementation
- Global EE Financing support



CONTENT DETAILS OF MODULE 8

ENERGY EFFICIENCY (EE) – PROJECTS

ELECTIVE COURSE

Energy efficient buildings - technology

Upon completion of this course, you should be able to:

- get familiar with the energy-efficient building typologies and classifications and standards such as of Near Net Zero Energy Buildings, low energy buildings, positive energy buildings, a Passivhaus building
- understand the laws of thermodynamics that apply to buildings – known as physics applied to buildings – as a basis for understanding construction and being able to perform energy balance analyses in buildings
- learn about the design measures that apply to energy-efficient buildings, understand their theoretical concepts, and be able to apply formulas to design shading elements and calculate ventilation systems, Trombe walls, Canadian well systems, as well as understand the influence of the colour of façades and roofs on the energy efficiency of buildings
- understand how the application of physics to improving the building envelope helps increase energy efficiency by optimising insulation, eliminating thermal bridges and enhancing airtightness
- understand the main characteristics of active energy consumption systems in buildings such as lighting, boilers, HVAC, heat pump systems, and the air conditioning and heating systems
- learn about the main components of the most common renewable energy technologies in buildings – solar thermal and photovoltaic energy – and their basic calculation methods for application in energy efficiency projects.

Content

- Types, standards and concepts for energy-efficient buildings
- Thermodynamics in buildings
- Energy balance
- Design technologies for energy efficiency in buildings
- Physics applied to the improvement of the building envelope
- Engineering systems and appliances
- Sustainable materials, natural materials and nature-based solutions
- Renewable energy integration
- Digital models for energy efficiency in buildings
- Quality control in construction, project life cycle and management



CONTENT DETAILS OF MODULE 8

ENERGY EFFICIENCY (EE) – PROJECTS

ELECTIVE COURSE

Energy efficient buildings - application

Upon completion of this course, you should be able to:

- explain the relevance of buildings in the context of climate mitigation
- identify barriers and drivers for energy efficiency in buildings
- state the energy efficiency principles in buildings
- compare different building energy efficiency standards
- explain how climate factors affect structural measures and buildings' energy consumption
- describe the benefits of energy efficiency in buildings
- compare the economics of green buildings with that of conventional types of buildings.

Content

- Status quo of the buildings sector
- Barriers and drivers in energy efficiency in buildings
- Energy efficiency policies and building standards
- Benefits of “green” buildings
- Energy efficiency in buildings principles
- Thermal comfort, climate data, and heating and cooling degree days
- Reducing energy demand
- Reducing energy consumption
- Reducing fossil fuel consumption
- Digitisation



CONTENT DETAILS OF MODULE 8

ENERGY EFFICIENCY (EE) – PROJECTS

ELECTIVE COURSE

Energy efficiency in industry - application

Upon completion of this course, you should be able to:

- demonstrate the basic functions of cross-sectoral technologies in industry
- determine areas of application for cross-sectoral technologies in industry
- prepare technical measures to enhance energy efficiency with regard to the respective cross-sectoral technology
- classify the saving potential of the technical measures to enhance energy efficiency.

Content

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|--|---|---|
| • Energy efficiency in industry | • Energy efficiency potential for industry | • Pump systems industrial application |
| • Drivers and barriers for energy efficiency in industry | • Electric drives: areas of application in industrial sectors | • Compressed air systems |
| • How to measure energy efficiency performance in the company/industry | • Heating | • Ventilation systems |
| • Corporate social responsibility and sustainability | • Cooling | • Lighting in industry |
| | • Heating and cooling from renewables | • Role of innovation, renewables, and digital solutions |
| | | • Trends in industry |



