

Renewables Academy Online

# Applying Green Energy Finance – Renewable Energy and Energy Efficiency

Online training on aspects of project finance of renewable energy and energy efficiency projects



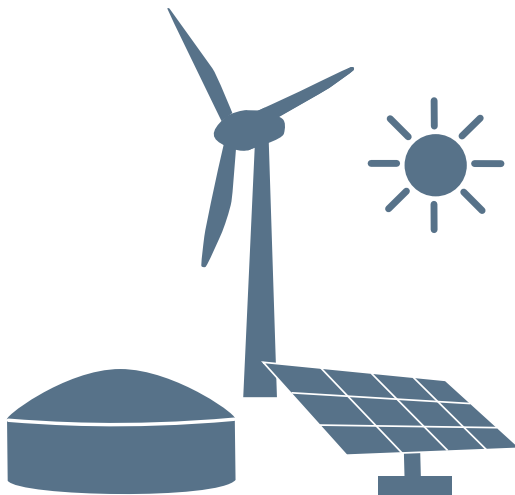


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Renewables Academy Online

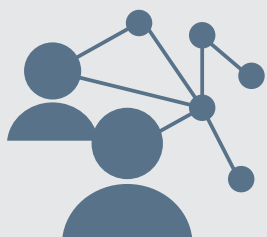
Applying Green Energy Finance – Renewable Energy and Energy Efficiency

Online training on aspects of project finance of renewable energy and energy efficiency projects



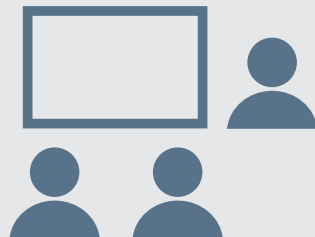


## RENAC Online



### RENAC Online helps you:

- Boost your professional career
- Study with flexibility following your own schedule
- Learn at any time and from any location



### RENAC Online offers extensive support & interactive learning:

- Videos
- Graphics
- Exercises for self-evaluation
- Discussion forum
- Live lectures (webinars)



### RENAC Online staff are:

- Certified e-learning trainers
- Experienced professionals
- In direct contact with the industry



## What is the “Applying Green Energy Finance – Renewable Energy and Energy Efficiency” Online Training?

Applying Green Energy Finance is tailored to deliver a comprehensive, general introduction into green energy finance topics. It provides fundamentals of renewable energy (RE) and energy efficiency (EE) technologies and details about financing of RE and EE projects. The international perspective of climate finance is covered as well.

### Introductory courses

Each participant will have access to short introductory courses on energy and electricity topics to learn or revise the basics.

### This training suits you if you:

- Need to know more on RE and EE project financing
- Would like to get introduced to the green energy financing sphere
- Want to specialize as a finance person in green energy projects

### After the online training, participants will be able to:

- Assess risks in the lifecycle of a RE or EE project
- Discuss bankability criteria and apply them to RE and EE projects
- Identify project finance structures and procedures for RE and EE projects
- Explain principles of climate finance mechanisms and its landscape

## Course packages

This course provides fundamentals of renewable energy (RE) technologies and energy efficiency and details about financing of Renewable Energy projects.

### RE finance package

This online training provides insights into renewable energy project finance. The courses comprised in this package are:

- Introduction to RE projects
- Greening the bank
- Technology: PV application, Wind power, Biogas application
- Methodology of project valuation
- RE project finance
- Project contracts
- Policy frameworks for RE power generation
- Climate finance

**Fee:** 1.071,00 Euro

**Duration:** 3 months

**Study time:** approx. 80 hours

### EE finance package

This online training provides insights into energy efficiency finance schemes. The courses comprised in this package are:

- Introduction to EE projects
- Greening the bank
- Technology: EE industry – application, EE buildings – application
- Methodology of project valuation
- Systematic approaches to energy saving
- Financing energy efficiency projects and ESCOs
- EE support mechanisms
- Climate finance

**Fee:** 1.071,00 Euro

**Duration:** 3 months

**Study time:** approx. 80 hours

Two course intakes per year:  
1st April and 1st October!





Why choose RENAC Online?

Self-study material

1 Text and Images

Courses are structured in small, illustrated units of instruction; learners are guided through the material step-by-step.

2 Videos

Video lectures explain some of the most important topics in a visual and entertaining way.

3 Tests

Many self-assessment tests within each course help participants to test their knowledge.

Features

Interactive learning platform

Multilanguage platform

Self-testing / online exams

Live lectures

Stream / download videos

Feedback questionnaires

Forum for participants

Integrated glossary

Webinar in English

Live lectures (webinars) for the whole class and exams are held in English language only.

Webinar in Spanish (upon request):

- Course texts and self-tests in Spanish
- Videos with Spanish subtitles
- Support by a Spanish-speaking tutor

Extensive support

1 Forum

Support and communication take place in a discussion forum. RENAC monitors the forum constantly. RENAC experts are ready to give assistance and discuss the course topics.

2 Assignment

After studying each course, participants are asked to answer an assignment question. RENAC gives individual feedback for these assignments.

3 Live lectures

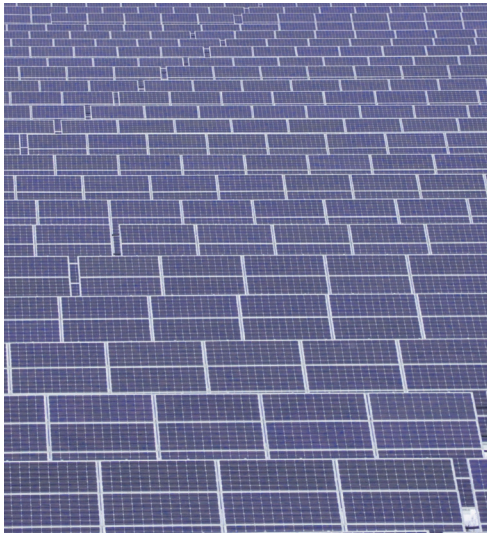
Participants should attend the live lectures (webinars). These are conducted by renewable energy experts. During and after the presentation, participants are invited to discuss in the live chat.



Certificate

All participants who score above 70% in the final online exam will receive a printed RENAC certificate. All others will receive a certificate of attendance per e-mail.







Schedule

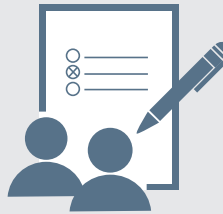
**The courses will be online:**  
Spring and fall semester each year  
Start date: 1 April / 1 October

**Recommended study time:**  
5 – 10 hours per week

**Resulting duration:**  
3 to 6 months for the entire training depending on your own pace.

**Assignments:**  
The courses are designed for a continuous participation from the beginning of the semester until the exam. There is an assignment for each course, which counts towards the final grade. Participants are asked to write a short statement regarding an important topic of each course. Assignments need to be handed in by the deadlines.

**Scheduled exam dates:**  
Participants can take the exam after 3, 4, 5 or 6 months



Spring semester / fall semester

	April / Oct	May / Nov	June / Dec
RE package	Intro to RE projects	PV	Methodology of project valuation
		Wind	
	Greening the bank	Biogas	Business case studies
EE package	Intro to EE projects	EE industry	Methodology of project valuation
	Greening the bank	EE buildings	Business case studies
		RE project finance	Project contracts
			Policy frameworks
			Climate finance
		Systematic approaches	Finance EE / ESCOS
			EE support mechanisms
			Climate finance


Registration and discounts

**Registration:**  
You can register for the online training via the registration form at:  
[www.renac.de/trainings-services/trainings/renac-online](http://www.renac.de/trainings-services/trainings/renac-online)

**Deadlines:**  
Early bird deadline: 20 August / 20 February  
Registration deadline: 31 March / 30 September

**Discount:**  
Early bird 10%; group (2 or more) 5%; combination of both 15%; Alumni 10%

**Payment:**  
VISA, MasterCard, American Express, invoice

**Technical information**  
  
You need to provide an e-mail address, which you check regularly. Furthermore you need a computer with a stable internet connection (at least 2 Mbit/s). For webinars, the AdobeConnect add-in or app should be installed, and a headset or speakers are required to listen to the presentation.

Live lectures (webinars)

Three live lectures (webinars) are part of the Applying Green Energy Finance online training. These live events are not mandatory, but participation is strongly recommended.

**Webinar 1**  
Introduction to RENAC Online  
First week of the semester  
(1 hour)


**Webinar 2**  
Energy yield of renewables  
Mid of the semester  
(1 hour)

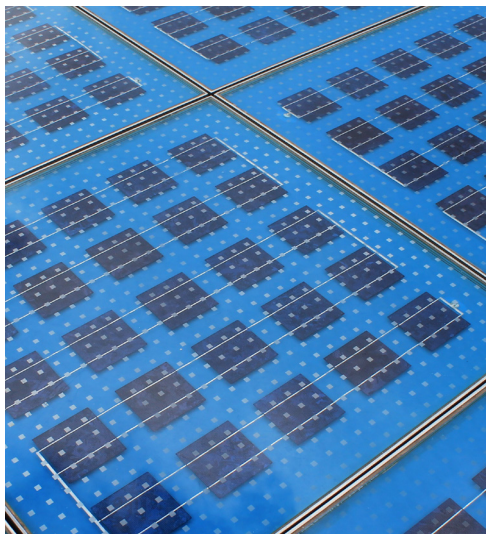
**Webinar 3**  
Financial aspects of RE projects  
End of the semester  
(1 hour)

Demo course and introduction

For a first impression of our online platform, have a look at our demo course:  
[www.renewables-online.de/blocks/demologin/logindemo.php?course=Demo](http://www.renewables-online.de/blocks/demologin/logindemo.php?course=Demo)

An introduction to the RENAC online platform:  
[https://www.youtube.com/watch?v=n\\_bjaFfxFog](https://www.youtube.com/watch?v=n_bjaFfxFog)







## Introduction to renewable energy projects



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

- Illustrate the steps and tasks of a project life-cycle of RE projects
- Compare different public and private perspectives onto RE projects
- Assess project attractiveness with standard methods

### Content

#### Introduction

- General characteristics of a project
- The project realization cycle
- The average lifetime of RE projects
- End of life considerations
- Typical players in RE projects

#### Financial aspects of RE projects

- 'Investment' and 'Investment appraisal', investment decision
- Assessing an investment's attractiveness
- Financial management tasks
- Cost structure of RE projects

#### Non-financial aspects of RE projects

- Public and private investment appraisal, public support mechanisms
- Externalities of RE projects
- Translating external, non-monetary effects



## Methodology of project valuation



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

- Describe the principal setting of a renewable energy project, incl. relevant stakeholders, development processes
- Project appraisal structure
- Explain the most important economic parameters used in renewable energy project planning
- Perform some example calculations of the basic economic parameters, e.g. the internal rate of return (IRR)

### Content

#### Introduction to REP financing options

- REP financing options, equity and debt capital
- Corporate (balance sheet) and project financing, corporate financing versus project financing
- Special financing considerations for REPs, example REP financing structures

#### REP risks and uncertainties

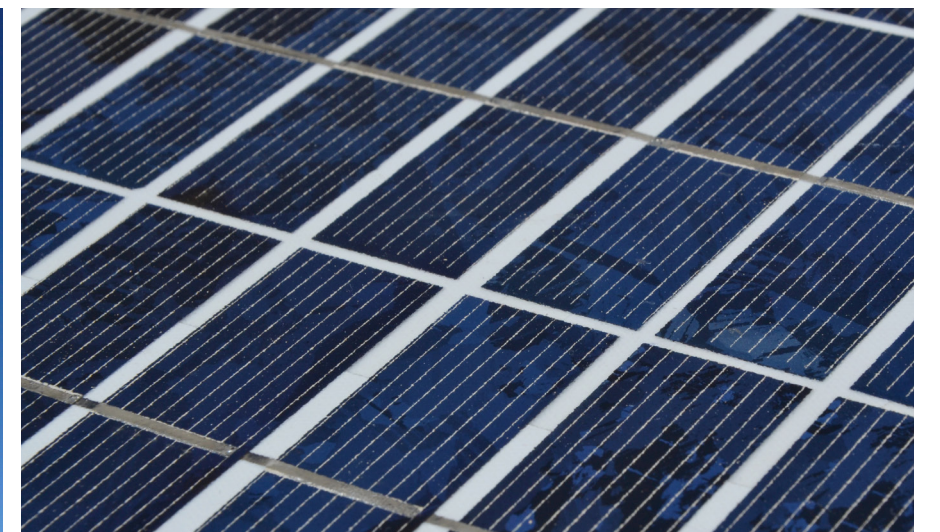
- Introduction to REP risks and uncertainties
- The concepts of risk and uncertainty in investment appraisal
- Typical sources of risk and uncertainty in REPs, general risk assessment instruments
- Mark-ups / Sensitivity analysis / Simulation / Scenario analysis
- Risk reduction in practice – 'operational treatment of risk'

#### Basic financial principles

- Introduction to basic financial attractiveness
- "Profit" as indicator of project attractiveness? "Cash flow" as proper indicator of project attractiveness
- Time value of money: interest, components, the concept of discounting
- Interest and cost of capital, weighted Average Cost of Capital (WACC)

#### Financial performance indicators

- Introduction to financial performance indicators
- Net Present Value (NPV); internal Rate of Return (IRR)
- Simple Payback (SPB) and discounted Payback (DPB)
- Benefit-to-Cost Ratio (B/C)
- Levelized Cost of Electricity (LCOE)
- Debt Service Cover Ratio (DSCR)





## Renewable energy project finance

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

- Know the different financing options of REprojects in principle and the project finance option in more detail
- Perform a risk assessment for renewable energy projects
- Understand 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

Three different financing options

- Financing options - overview
- Balance-sheet and project finance, capital markets

Business planning

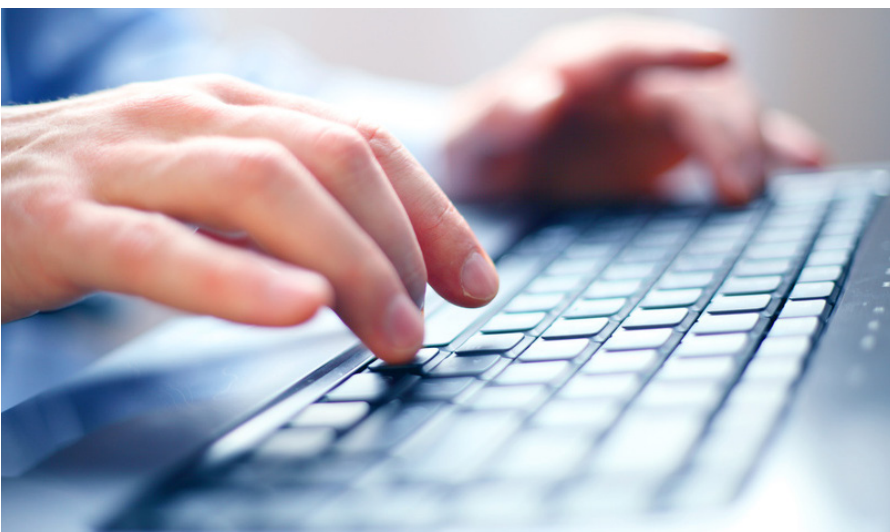
- Estimation of a project's cash out-flows and in-flows
- Cash flow "waterfall " concept; calculation of project revenues
- Operational cost calculation and taxes payable
- From CADs to ECF; decommissioning costs and terminal values

Bankability assessment

- Bankability assessments, information asymmetries as a reason for bankability assessments
- Setting credit limits to prevent moral hazard
- Differentiating between risk and uncertainty, financial value of risk and ABC-analysis
- RE project risks during construction
- Technology and operational risks and mitigation measures
- Market, resource and regulatory risks and mitigation measures
- RE project due diligence advisors
- Scopes of work for the advisors, design of a "project data rooms"

Examples: PV project in Germany, wind project in France and biogas project in Romania

- Assessment of annual energy generation
- Revenues from support systems / the energy market
- Risk analysis (identification, assessment and mitigation) and due diligence; cash flow analysis



## Policy frameworks for RE power generation

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

- Contrast the concepts of grid parity and fuel parity
- Analyse the most widely used support mechanisms for renewable energy
- Recommend specific support mechanisms for certain RE projects
- Demonstrate the basic principles of electricity markets

### Content

Introduction to renewable energy policy and target setting

- Objectives of renewable energy policies
- Cost-competitiveness of RE technologies
- RE target setting I and II
- RE targets and quota-based mechanisms
- Categorisation of support mechanisms for renewable energies
- Combining support mechanisms: (FITS and auctions)

Net-metering for distributed generation (prosumers/ self-consumption)

- Cost developments for distributed generation (roof-top PV)
- Grid parity and self-consumption, net-metering
- Program and project size caps in net metering schemes
- Roll-over provisions in net metering schemes
- Pricing methodology
- Increased risks for prosumers to finance projects based on self-consumption
- Outlook: Rate design options for electricity pricing

Feed-in tariffs for distributed generation and large-scale projects

- Introduction to feed-in tariff ( FiT) design
- Long payment duration under FiT regimes
- Tariff calculation methodologies for FiTs (value based, cost based)
- Challenges of FiT calculation
- Input data for cost-based FiT tariff calculation: CAPEX and OPEX parameters; financing costs
- Tariff degression in FiT schemes
- Capacity caps in FiT schemes
- Feed-in premiums
- Location-specific FiTs
- Advantages and disadvantages of FiTs

Competitive procurement/auctions for large-scale projects

- Introduction to auction mechanisms
- Recent auction results for wind and PV around the world
- Frequency of Procurement; technology neutral versus technology specific
- Price-finding mechanism, penalties for non-compliance, pre-qualifications

Additional incentives

- Fiscal incentives
- Financial incentives
- Low interest loans



## Climate finance

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

- Compare the roles and respective contribution of the main players and institutions involved in the climate finance landscape
- Distinguish between the different sources and mechanisms of climate finance
- Assess the suitability of various sources and mechanisms for specific projects
- Analyse practical examples of climate finance concepts

### Content

#### Principles of climate finance

- Climate finance after Paris
- Climate finance definitions; climate finance commitments by developed countries
- Climate finance needs and flows, sources and instruments
- Climate finance uses: mitigation and adaption

#### Sources and mechanisms of climate finances

- Financial mechanisms of the UNFCCC
- Access modalities: via intermediaries, direct access
- Multilateral Development Banks
- Bilateral finance: relevance, landscape
- Domestic climate financing sources
- Private financing in climate finance, carbon pricing, green bonds

#### Frameworks to deliver finance for climate action

- Nationally Determined Contributions
- Low Carbon/Emission Development Strategies
- Nationally Appropriate Mitigation Action
- Project-based climate financing / Example

#### Measurement, Reporting and Verification

- MRV – concept and purpose
- Monitoring and Evaluation: characteristics
- M&E compared to MRV



## Financing energy efficiency projects and ESCOs

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

- Distinguish the nature of energy efficiency projects from conventional investments
- Organise an energy efficiency project assessment from the perspective of a bank
- Analyse different concepts of ESCOs as a new innovative business model in the energy sector
- Determine the special aspects of ESCO financing

### Content

#### Energy efficiency vs. conventional investment finance

- Energy flows and energy balance of buildings (heating, cooling)
- Selecting the right financing instrument
- Characteristics of energy efficiency project finance
- Attractiveness of energy efficiency project financing for POF
- Risks of energy efficiency finances

#### Appraisal of client/investor

- Energy efficiency assessment of the investor/client
- Questions to assess a client's energy management
- Financial incentives for energy efficiency in buildings
- More than energy efficiency: certificates of sustainability

#### Financial appraisal

- Estimated project costs
- Sources of finance
- Financial performance
- Financial viability parameters
- Static models
- Dynamic models
- Designing financial investment scenarios

#### Monitoring

- Monitoring tools
- Precautionary measures

#### Energy service companies

- Introduction to energy service companies
- Energy supply contracting
- Energy performance contracting
- Financing ESCO investments
- Advantages and barriers of ESCOs
- ESCOs in Asian countries

#### Appraisal of ESCO

- Special features of ESCOs
- Appraisal of an ESCO's business experience and conduct
- Appraisal of technical skills
- Financial appraisal of an ESCO
- Summary of ESCO appraisal





### Contact

Raquel Cascales  
Project Director E-Learning  
Renewables Academy (RENAC) AG  
Schönhauser Allee 10-11  
10119 Berlin (Germany)  
Email: [cascales@renac.de](mailto:cascales@renac.de)  
Tel: +49 (0)30 58 70870 46

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