RENA

Catalogue of Services

Training and Capacity Building for Renewable Energy and Energy Efficiency
ENERGY THROUGH EDUCATION!

The rapid growth of renewable energy (RE) and energy efficiency (EE) markets worldwide, and the increasing necessity for greenhouse gas mitigation and climate protection, has led to an increased demand for the expertise and qualifications of individuals, industry and organisations. Public, private, finance and training sectors are all building up professional capacities to facilitate the market growth of green energy technologies and fully enhance their respective roles.

RENAC’s vision and mission is to support the market development of green energy technologies (RE and EE) worldwide through capacity building and trainings, consultancy in the training sector, expert exchange and networking.

Since its founding in 2008, RENAC has trained more than 17,000 participants from over 150 countries with online trainings, face-to-face trainings and train-the-trainer trainings.

Have a look at our catalogue to see whether the RENAC services are of interest for you or your organisation.

Your RENAC Team
Public sector officials for legal frameworks, regulation and implementation:
- Ministries
- Regulators
- Local administrations

Private sector:
- Project developers
- System integrators
- Engineers and technicians
- Investors
- Financing institutions
- Grid operators

Capacity building and dissemination sector:
- Public and private training institutions
- Vocational training institutions
- Universities

Multipliers and development organisations:
- Development corporations
- Energy agencies
- International financing institutions
- NGOs
Target groups

We offer trainings and services for most parts of the RE and EE value chains and involved stakeholders, comprising the public, private, finance and training sector. We support companies and institutions like energy agencies, development cooperation agencies, NGOs and think tanks with sharing our experts knowledge and experience.

On an institutional level we target to:

- Public sector: policy setting bodies (ministries, parliamentarians), local administration and regulators
- Private sector: engineering consultants, project developers, installers, IPCs, operation and maintenance companies
- Generation and distribution: utilities, transmission and distribution grid operators
- Finance sector: private and public banks, development banks, funds, investors
- Training sector: TVET (technical and vocational training), training institutions for professionals, universities
- Market promoting institutions: energy agencies, development cooperation agencies, NGOs, think tanks

Value chain

We design and implement tailor-made trainings and services along the value chain in a holistic concept.

Our approach

Our approach to RE & EE is manifold: technology related knowledge is the basis and then each RENAC training and service focus on technical, economic, legal or project related aspects according to the target group. RENAC is also very active in international business matchmaking and market development services.

In our capacity building services we supply a variety of programmes to train trainers, to build training centres and to establish quality assurance processes.
Tailor-made training – what does it mean?

We offer tailor-made trainings according to client needs and participant job requirements in all green energy sectors. Based on an analysis of requested knowledge for specific job tasks and the level of existing knowledge, we develop a training concept proposal.

The concept includes recommendations for online or face-to-face trainings, or both. We develop the training concept taking the given resources on budget and learning time into account. After feedback from the client, we fine-tune the concept for approval.

Depending on the needs of our clients, we offer different levels of trainings (basic, intermediate, advanced).
A whole range of training methodologies helps us design our lessons in different training formats.

**RENAC face-to-face trainings**
RENAC face-to-face trainings are an exceptional opportunity to get an insight into renewable energy and energy efficiency. Employing a blend of up to date theoretical lectures, state-of-the-art practical training and field excursions, RENAC makes learning not only effective but also very exciting.

**RENAC online trainings**
RENAC Online offers extensive support and an interactive learning platform. Participants can learn at any time and from any location and study with flexibility following their own schedule.

**RENAC blended Learning**
Participants can book a combination of online and face-to-face trainings to achieve best learning outcomes. This method combines the advantages of both approaches.
RENAC offers capacity building services (CBS) for organisations interested in establishing or expanding their own services to include courses on renewable energy and/or energy efficiency into their training portfolio. These services can be booked on their own or as a package. The complete CBS package will equip the partner institution with a training centre, locally adapted training schedules and materials, a team of good trainers and a clear quality assurance strategy.

**Capacity needs assessment**

A good understanding of each target group’s needs is essential in order to offer suitable education programmes. RENAC’s capacity needs assessment services can be flexibly applied to the different demands.

**Assessment includes:**
- Identification of relevant target groups
- Capacity needs assessment workshop
- Mapping the required capacities and skills
- Identifying the training needs
- Outline of capacity building measures/strategies
- Identification of local standards and requirements

Implementing a new course programme in the fast-changing environment of renewable energy and energy efficiency can be challenging and time-consuming work. RENAC can provide client-specific curricula and training materials to ensure that courses are current and of a high quality.

**RENAC offers:**

- Well-composed and logically structured curricula, corresponding to learning targets, with comprehensive explanations, exercises, case studies, images and graphics
- Review and adaptation of existing training materials and integration of local aspects
- Definition of quality standards and evaluation criteria
- Development of specific exercises
- Train-the-trainer courses on the use of the equipment
- Development of instructions
- Regular update of training equipment
CAPACITY BUILDING SERVICES

TURNKEY TRAINING CENTRES

Training with practical equipment plays a crucial role in efficient and sustainable teaching. RENAC offers turnkey training centres with corresponding instructions and exercises for advanced trainings. This is a highly customised service adapted to client requests, local needs, markets and conditions.

**Technologies:**
- Photovoltaics
- Solar thermal
- Wind energy
- Bioenergy
- Hydropower
- Grid integration
- Energy efficiency in buildings
- Energy efficiency in industry

**Services available:**
- Concept and design
- Selection and purchase of components
- Transportation and logistics
- Assembly and installation at location
- Development of specific exercises
- Development of instructions for trainers
- Train-the-trainer courses on the use of the equipment
- Regular update of training equipment

QUALITY ASSURANCE

High quality standards are crucial for the development of green energy markets. This can only be achieved and maintained when professionals in the sector are skilled and reliable. RENAC’s quality refinement services assess the level of know-how of students or employees and improve it with suitable training concepts and measures.

**Services available:**
- Student and/or trainer assessment
- Assessment of course materials, course structures and training equipment
- Train-the-trainer update courses
- Update of training materials
- Training centre equipment updates
- Market trend and trainer demand analysis
- Co-certification (for RENAC provided courses)
- Preparation and execution of exams
CAPACITY BUILDING SERVICES

TRAIN-THE-TRAINER PROGRAMMES

RENAC’s goal is to produce highly qualified trainers, trainers who are able to undertake courses autonomously and, if required, to the standards set by accreditation bodies or professional institutions. At the end, participants will have sufficient skills and materials to allow them to develop their own courses.

Services available:

- Selection and assessment of future trainers for train-the-trainer trainings
- Design and development of content and methodology
- Facilitation of train-the-trainer courses
- Evaluation and recommendations of newly trained trainers
- Support programme for newly trained trainers (twinning programme)

Modules in a train-the-trainer course:

- Technical training
- Didactical and methodological training
- Starter kit of slides, exercises and additional tools for trainers

TRAIN-THE-TRAINER SCHEME

1. Preparatory online training with exam

2. Face-to-face trainings
   - Technical training with experts
     Technologies: technical, legal, economic
     Day 1 + 2
   - Methodology and didactics
     Day 3 + 4
   - Practical training and exercises
     Topic selection for demonstration lesson
     Day 5

3. Teaching experiences and exams
   - Demonstrations
     Demonstration of lessons by participants
     Evaluation of the participant lesson
     Day 1 + 2
   - Experts input on questions
     Day 3
   - Exercises
     Practical and theoretical exercises
     Day 4
   - Exam in theory and practice
     Day 5

4. Optional
   - Shadowing of first trainings
Implementing an online training offer can be the right solution when the audience is geographically spread or not available at the same time. RENAC can be a full service provider to help clients to build an e-learning/online training offer. With an online training the flexibility to study at any time and from any location will be provided.

**RENAC offers:**

- Consultancy services on content development
- Hosting on our learning management system with client’s own branding
- Learning office (training delivery, exam and certificate)
- Certification of training programmes by ZFU (German Authority for Distance Learning)

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**E-LEARNING/ONLINE TRAININGS**

- Needs assessment: Target groups & training needs
- Rough concept: Learning objectives & structures
- Storyboard: Elaboration & media production
- Fine concept: Didactics & detailed outline
- Implementation: Programming
- Roll out: Online training
- Market Development, Communication and Consulting
RENAC offers business matchmaking activities in Germany and abroad bringing together product and service providers with potential clients.

The transfer of energy expertise, the promotion of foreign trade and the facilitation of international development cooperation are part of the German Energy Solutions Initiative coordinated and financed by the German Federal Ministry for Economic Affairs and Energy (BMWi).

**Offered modules:**
- Webinars and information days in Germany and abroad provide an overview on international markets for German companies
- Networking and business opportunities abroad and in Germany
- Together with the international German Chambers of Commerce (AHK), RENAC organises business trips abroad for German units
- RENAC offers delegation tours for interested international stakeholders

**Services available:**
- Research and compilation of RE and EE markets abroad
- Business-to-business (B2B) meetings and networking in Germany and abroad
- Lecturers on renewable energy and energy efficiency
- Travel organisation and support services
- Site visits and field trips to reference projects
- Preparatory readings or online trainings
- Website: www.renac.de/energy-solutions

RENAC offers customised study and delegation tours in Germany and worldwide for RE and EE technologies and applications. Depending on client and participant interests, RENAC compiles ambitious programmes including theoretical input, meeting with high ranking representatives from public and private sector, field trips, B2B meetings and evaluation.

**Services available:**
- Survey on participants and client interests and objectives
- Programme planning of customized study and delegation tours
- Travel organisation and support services
- Organisation of meetings with target organisations and companies
- Compilation of study tour booklet
- Guiding on the study and delegation tours
- Organisation of cultural programme
- Business-to-business meetings
- Lecturers on renewable energy and energy efficiency
- Organisation of site visits and field trips
- Wrap up of learnings and evaluation
RENAC offers consulting services for institutions involved in capacity building and the market development of RE and EE.

**Consulting services on capacity building are:**
- Capacity needs assessments as a basis for developing capacity building programmes
- The establishment of quality assurance schemes in the training sector
- Curricula and sequence plan development, training material development
- Participatory and interactive training methodologies and didactics
- Integration of RE and EE related topics into existing curricula of TVET, universities and further training institutions
- Design of interactive training and workshop formats
- Assessment of trainers
- Development of customised capacity building strategies for in-house staff or extern

**Consulting services for RE/EE market development are:**
- Research on market conditions and opportunities for RE and EE investments
- Energy statistics related to RE/EE market development
- Programming of economic evaluation tools
- Mentoring for business plan development
- Guidance for entrepreneurs and business development
- Prefeasibility studies for RE and EE applications
- Technical and financial due diligence of project proposals

RENAC offers a variety of communication services supporting the market development of RE and EE worldwide:
- Development of technical graphics and charts
- Corporate and graphic design of leaflets, brochures, reports
- Design and execution of social media campaigns
- Development of PowerPoint presentations for energy topics
- Composition of speeches and background information for speakers
- Development of exhibitions and marketing material
- Concept and design of stakeholder portraits
The comprehensive and targeted capacity building, mentoring and networking programmes support accelerated career advancement of women in the green energy sector. The programmes are designed for women who aim for leading positions in the renewable energy industry. The programmes’ theory of change rests on three key pillars:

- Increasing knowledge of renewable energy or energy efficiency technologies, markets and policies.
- Enabling the participants to develop sound, comprehensive and convincing business plans and project ideas.
- Facilitating professional exchanges, peer-to-peer mentoring and networking to finance institutions and/or future project partners.

The overall goal is to contribute to a paradigm shift in the energy sector towards an environment of gender equality and equal opportunity.

RENAC supports international development cooperation organisations and projects with short-term experts specialised in the implementation of renewable energy and energy efficiency.

**RENAC’s short-term experts have:**

- At least 5 years of practical experience in the respective renewable energy technology and/or energy efficiency
- Interest and ability to work internationally for assignments with a duration from one week to several months
- Excellent language skills for the respective tasks (English, Spanish, French, Portuguese, Italian and Russian, among others)
- Profound expertise in technical, managerial, political, legal and financial aspects
- Many national and international project and project management references

Besides the short-term experts abroad, we provide an experience backstop team located at our Berlin headquarters.
Job requirements in green energy markets are complex and manifold. To ensure a company or organisation succeeds, employees need extensive skills and up to date know-how. RENAC’s tailor-made trainings offer the best way to meet participants’ training objectives.

**Process:**
- Analysis of participants’ capacity needs
- Selection of training contents and methods according to prior knowledge and needs
- Selection of the most suitable trainers
- Development of comprehensive materials with the highest quality standards
- Implementation of the training worldwide

Additionally, the training can be adjusted in duration and depth, organised for groups of various sizes and adapted to cover various technologies. Clients can determine when and where the training takes place.

The following training course list gives an overview of possible topics we cover in our tailor-made trainings, which can be used as basis to develop a tailor-made training for a company or organisation.
INTRODUCTION AND OVERVIEW

Face-to-face training

Introduction to renewable energy
RE market development, fundamentals of solar energy, bioenergy, small hydropower, wind energy, grid integration of renewable energies

Introduction to energy
Energy supply and demand, RE resources, physical basics, units and conversions

Introduction to electricity
Electricity fundamentals, electric energy, electric power

Overview of renewable energy technologies
RE sources, global trends, electricity generation technologies, heating/cooling, biofuels

Overview of power generation technology
Conventional power generation, renewable electricity generation, cost comparison, LCOE

Introduction to solar resource
Solar energy, solar radiation, measurement equipment, sun positioning

Introduction to wind resource
Wind speed units, power density, power coefficient, Betz limit, and wind shear

Introduction to electric grids
Structure of electric grids, quality and security of energy supply, frequency range, voltage stability

Introduction to energy efficiency projects
Definitions and standards, benefits of energy efficiency, drivers and barriers, economics, energy efficiency financing

Introduction to renewable energy projects
Characteristics of RE projects, life cycle, financial aspects, non-financial aspects, externalities

Market overview of RE and EE financing
RE & EE finance market: volumes, regional markets, technology-based markets, asset classes, league tables

More information: www.renac.de/tailor-made-trainings
Face-to-face trainings

On-grid photovoltaic (PV) systems: from project development to O&M
Feasibility studies, planning, EPC, economics, operation and maintenance

Off-grid photovoltaics: from stand-alone systems to hybrid micro-/mini-grids
Solar home systems, micro-grids, mini-grids, hybridisation

Project development, planning and feasibility of PV systems
Feasibility studies, project partners, main contracts, economics, risk assessment

Off-grid photovoltaics: planning and installing solar home systems
Solar home systems, off-grid, engineering, commissioning, sizing

Design of on-grid photovoltaic systems (1)
Sizing, planning, optimisation, component selection, simulation of the system

Design of off-grid photovoltaic systems (2)
Sizing, planning, optimization, component selection, simulation of the system

Installation of photovoltaic systems
Construction, mounting, commissioning, electrical engineering, health and safety

Operation and maintenance of photovoltaic systems
Performance evaluation, troubleshooting, optimisation of PV systems, maintenance plans, management of operation

Solar pumping
Pipes and pumps, installation, planning, economics, photovoltaic systems

Off-grid photovoltaics: planning (hybrid) micro-/mini-grids
Micro-grids, mini-grids, off-grid, hybridization, solar systems

PV entrepreneurship/business development
Starting a business, business models, business plans, economics, financial aspects

Managing and financing PV projects
Investment, business plans, bankability of projects, economics, management and planning

More information: www.renac.de/tailor-made-trainings
## Online trainings

### Photovoltaic – application
Configuration, components, power output, economics, physical aspects

### Photovoltaic – technology
PV cells, PV modules, shading effects, efficiency, configurations

### PV off-grid systems
Configuration, components, sizing, installation, commissioning and O&M, economics

### Small-scale PV grid-connected systems
FiTs and net metering, components, sizing, installation, commissioning and O&M

### Planning of large-scale PV grid-connected systems
System components, project development, planning, construction, installation, operation

### Business models for photovoltaic projects
Design of business models, business model navigator, development methodologies, roles and activities of different actors in the PV value chain

### Business plans for photovoltaic projects
Development of bankable business plans, business description, SWOT analysis, marketing plans, financial plans, actors in the PV value chain

More information: [www.renac.de/tailor-made-trainings](http://www.renac.de/tailor-made-trainings)

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### PV-diesel hybrid systems
Components, sizing, dynamic behavior, economics, case studies

### Planning of PV-diesel hybrid systems
PV-diesel hybrid systems
Feasibility study, technical aspects for conversion, optimisation, economics, installation, commissioning and O&M
TRAINING COURSE LIST

SOLAR THERMAL & CSP

Face-to-face trainings

Solar thermal systems: from design, to installation and operation
Thermosiphon, forced circulation, collector and store sizing, installation, commissioning and fault-finding

Large-scale solar thermal systems
Forced circulation, pressurised systems detailed, system design, component sizing/selection, installation, commissioning and fault-finding project management and economics

Online trainings

Solar thermal
Flat plate collectors, evacuated tube collectors, thermosiphon, forced circulation, open and closed, direct and indirect, system components, basic system design

Planning of large-scale solar thermal systems
Collector configurations, detailed system design, system selection, component sizing and selection, commissioning, frequent faults, economics

Concentrated Solar Power (CSP)
Parabolic trough, power tower, heat transfer fluids, thermal storage, technology comparison

WIND ENERGY

Face-to-face trainings

Applying wind power onshore
Technology, resource assessment, site assessment, environment and economics

Financial due diligence in wind power
Project finance and project contracts, risks, evaluation and financial viability

Wind power financing – fundamentals
Project financing process, financial terms, instruments, contracts, revenues, cost and cash flow

Wind power financing – advanced
Cash flow valuation, sensitivities, scenarios, simulations and due diligence

Understand the financing of wind power projects
Wind resource and technology, annual energy production, uncertainties and risks

More information: www.renac.de/tailor-made-trainings
Wind power application
Large-scale, small-scale, onshore and offshore, wind turbine components, CAPEX, OPEX and LCOE

Wind power technology
Wind turbine components, technical parameters, standards and norms

Wind power planning and measurement
Feasibility study, wind measurement, resource assessment, annual energy production, uncertainties and risks

Small wind application and technology
Applications, wind technology, quality, standards and norms, operation and maintenance and costs

Small wind power planning
Wind resource and site assessment, system sizing, planning steps and annual energy production

Introduction to bioenergy
Biogas, solid biomass, Combined Heat and Power (CHP) plants, biofuels, sustainability aspects

Understanding biogas plants
Anaerobic digestion, input substrates, digestate, design criteria, biogas yield

Biomass heat and power plants
Solid biomass, combustion, district heating, biomass resources, Combined Heat and Power (CHP) plants

First and second generation of biofuels
Biodiesel, bioethanol, lignocellulosic biomass, biomass to liquid (BTL), sustainability aspects

Biogas – application
Anaerobic digestion, input substrates, digestate, biogas yield, biogas utilisation

Planning of medium-sized biogas plants
Feasibility study, design criteria, digestor, planning process, environmental standards

More information: www.renac.de/tailor-made-trainings
### Face-to-face training

**Small hydropower: from feasibility to installation**

Head and flow assessment, permits and contracts, design, civil, mechanical and electrical engineering, intake, penstock, turbines, generators, grid-connection, off-grid, rural electrification, project management, economics

### Online trainings

**Small hydropower**

Power from water, head and flow assessment, energy yield, intro to intakes, penstocks, turbines and generators

**Planning of small hydropower systems**

Project planning, permits, licences, contracts, site assessment, resource assessment, design, construction plan, financial analysis

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### Online trainings

**Geothermal power generation – application**

Global market development, types of systems, suitable locations, project development, finance and economics

**Geothermal power generation – technology**

Geologic control factors, reservoir parameters and modelling, drilling technologies, thermodynamic laws, pumping the reservoir

More information: www.renac.de/tailor-made-trainings
## Face-to-face trainings

Sustainable power system planning overview  
Long-term view, residual load, unit commitment, capacity constraints, flexibility and software

Power system planning and operation with variable renewable energy  
Base/middle/peak load, balancing power, short-term forecast, security of supply and grid studies

Grid integration of variable renewable energy – photovoltaic and wind power  
Grid codes, voltage and frequency control, monitoring, high/medium/low voltage grids

Rooftop and open field photovoltaics in distribution grids  
PV technology, voltage/frequency control, short-term power forecast, low/medium voltage grids

## Online trainings

Generator concepts for renewable generation  
Synchronous and induction generator, double fed induction generator, fully converted generator and inverter technology

Balancing power design  
Purposes, reserves types, stochastic functions, outage model

Grid codes for renewables  
Grid code structure, technical requirements, voltage and frequency control

Generation expansion planning of systems with high share of wind and PV generation  
Generation adequacy, equivalent load carrying capacity, capacity credit, software tools (PLEXOS, WASP)

Storage  
Battery storage systems and applications, technologies (FES, CAES, PHS, SuperCaps, SMES, TES) and costs

Wind and PV grid integration  
Variable renewable energy scheduling and operation, grid congestion, capacity planning and grid code parameters

Flexibility options for power systems  
Variable RE, grid, storage, demand-side integration, dispatchable generation, levelised cost of flexibility, market frameworks

Flexible grid infrastructure and management  
Boundary conditions, limits, infrastructure improvements, congestion management, demand-side management

Flexibility of thermal power plants  
Flexibility parameters, O&M, retrofit measures, operational costs and market environments

More information: www.renac.de/tailor-made-trainings
Online trainings

Digitalisation and smart technologies
Drivers of digitalisation, key technologies, smart generation, risks, cyber security

Coupling to the power sector
Generation of power, heating and cooling sector, transport sector, indirect use of electricity, regulatory framework

The integration costs of wind and solar power
Grid costs, balancing costs, plant utilisation, total costs, economic effects

Inertia requirements for renewable power systems
Stability and control, importance of inertia, inertia gain, dynamics of generators, dynamical modelling

Protection settings in low and medium voltage grids
Behaviour of protection, calculation methods, planning, testing, monitoring

Battery systems for ancillary services
Method for sizing, modelling, time-series simulation, economics, standards

Face-to-face trainings

Overview of energy efficiency in buildings
Active side of the building, passive side of the building, energy performance certificates, energy audits, legal framework

Energy efficiency in buildings and districts
Active side of the building, passive side of the building, district heating, legal framework, economics

Overview of energy efficiency in industry
Energy management, economics, cross-sectoral technologies, procurement and contracting, legal framework

Energy efficiency in industry: cross-sectoral technologies
Energy management, industrial heating and cooling processes, compressed air, pumping and ventilation systems, electric drives

Energy auditing for buildings
Energy audit process, energy audit standards, measurement instruments, data collection and evaluation, case studies

More information: www.renac.de/tailor-made-trainings
## Online trainings

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<tr>
<th>Technology aspects of energy efficiency</th>
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<td>Industrial heating, cooling processes, compressed air, pumping/ventilation systems, electric drives, lighting</td>
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<tr>
<th>Energy efficiency in industry – application</th>
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<tr>
<td>Industrial heating/cooling processes, electricity-based cross-sectoral technologies, energy demand reduction measures</td>
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<th>Energy efficient buildings – application</th>
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<td>Energy consumption, -balance of buildings, energy flows, different climate zones, policies, standards, green buildings</td>
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<th>Energy efficiency in buildings – technology</th>
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<tr>
<td>Passive solar architecture, building envelope, heating ventilation, air conditioning, renewable energies, lighting</td>
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<th>Systematic approaches to energy savings</th>
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<td>Energy management systems, energy audits, qualification of energy auditors, energy efficiency networks, financing</td>
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<th>Financing of energy efficiency projects and ESCOs</th>
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<tr>
<td>Appraisal of the client/ESCOs, technical/financial appraisal, environmental, social, climate performance assessment</td>
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<th>Support mechanisms for energy efficiency projects</th>
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<tr>
<td>Barriers of energy efficiency, regulation policy, information policy, economic incentive, bundling of policies</td>
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<th>Heat pumps</th>
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<td>Coefficient of performance, environmental parameters, application in climate zones, refrigerant fluids</td>
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More information: www.renac.de/tailor-made-trainings

## Face-to-face trainings

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<th>Policy framework and energy planning</th>
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<td>Energy market concepts, energy planning, policy instruments, financing mechanisms, sustainable energy transition</td>
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<th>Decarbonisation roadmap development</th>
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<td>Power system modelling, design thinking, role play, decarbonisation roadmap</td>
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<th>Sustainable cities: energy planning for municipalities</th>
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<td>RE, EE, power, heating, cooling, transport, political instruments, governance, multi-stakeholder participation, roadmap</td>
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<th>Procurement of renewable energy projects</th>
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<td>Tendering process, tendering documents, evaluation of results, contract development, case studies</td>
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## Online trainings

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<tr>
<th>Co-benefits of RE in climate change mitigation – overview</th>
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<td>Definition, environmental, economic, social, political, co-benefits indicators</td>
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<tr>
<th>Policies and instruments to mobilize the socio-economic (co-)benefits of RE</th>
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<td>Climate policy framework, SDGs, Paris agreement, NDCs, leverage points</td>
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<th>Methods and tools to assess co-benefits of RE</th>
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<td>Modelling tools, CGE, cost-benefit analysis, multi-criteria analysis, key socio-economic co-benefits</td>
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<th>Political and market frameworks for specific countries</th>
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<td>Mena, Southeast Asia, Latin America</td>
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Face-to-face training

Green energy finance
RE technologies, due diligence, project finance, project contracts, financial modelling

Online trainings

Methodology of project valuation
Time value of money, NPV, IRR, LCOE, risk and uncertainty

Policy frameworks for RE power generation
Physical basics, net metering, feed-in tariff design, auctions, quota systems

Renewable energy project finance
SPV, business planning, bankability assessment, financial engineering, case studies

Project contracts
EPC, PPA, supply agreements, land lease contracts, O&M contracts

Environmental and social standards for RE projects
Equator principles, ESIA, sample standards, practical implementation guidance

Bankable insurance cover for international RE projects
Construction insurance, operational insurance, scope of cover, typical clauses, insurance as credit collateral

Greening the bank
Climate change, greening bank operations, green finance definition, green credit cycle, project environmental performance monitoring (EPM)

Portfolio management in renewable energy
RE as asset class, risk management, quantitative basics, portfolio diversification, portfolio management

Debt financing process and credit risk management
Project finance credit risk analysis, term sheet, loan documentation, due diligence, contract options

Loan syndication for RE project
Originate-to-hold model, originate-to-distribute model, syndication process, pricing, syndication risks

Bankable O&M strategies for RE projects
O&M PV-Wind-Biogas, contractual arrangements, guarantee schemes, incentives, maintenance strategies

Measures for competitive power markets
Market structure, associated opportunities, single buyer market, provision of flexibility, centralized vs. decentralized

More information: www.renac.de/tailor-made-trainings
## Online trainings

**RE investment vehicles and the aggregation of projects**  
Rationale for project bundling, YieldCos, infrastructure investment funds, FinCos, bank portfolio financings

**Climate finance**  
Principles of climate finance, UNFCCC, sources of climate finance, carbon pricing, NDC implementation

**Accessing the Green Climate Fund**  
Introduction to GCF, investment criteria, accredited entities, accreditation process, project approval

**Green microfinance**  
Introduction to microfinance, country case studies, checklist for implementation

**Climate finance options for South-East Asia**  
Climate finance overviews for: India, Indonesia, Philippines, Thailand, Vietnam

**Carbon pricing mechanisms**  
GHG Emission Landscape, emission trading, carbon taxes, offsetting mechanisms, effectiveness evaluation

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## Face-to-face trainings

**Green energy for agriculture (powering agriculture)**  
Energy-Food-Nexus, energy efficiency, solar applications, solar thermal, wind, small hydro, biomass, biogas, water security, renewable energy business models for food investment

**Rural electrification: renewable energy solutions**  
Photovoltaics, wind, hydro vs. diesel, hybrid solutions, batteries, off-grid, mini-grids, economics

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## Online trainings

**Social and gender aspects of energy projects**  
Gender and Energy Nexus, gender concepts, considerations in project cycle/energy interventions

**Negotiation skills**  
Benefits, formal and informal negotiations, BATNA, anchoring, creating and claiming value

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More information: www.renac.de/tailor-made-trainings
Trainers can cooperate in various ways with their participants to transfer knowledge. All methods have advantages and disadvantages. Nevertheless, from RENAC’s experience, nothing can be more tiring than monologues and non-stop PowerPoint presentations. RENAC wants to equip trainers with a concept for interactive and participatory approach to teaching.

The trainings on methodology and didactics that are part of the train-the-trainer programmes provide potential trainers with a toolkit for different teaching methods. Through examples, group work, interactive exercises and information, trainers increase their understanding of both a successfully conducted training and the role of the trainer. The guidelines offered also provide didactical methods and ways on how to plan a training session.

**Face-to-face training**

Train-the-trainer – seminar for didactics and training methods

Learning styles, role of a trainer, communication, teaching methods, effective seminar planning

Technology (one elective): PV application/wind power/biogas application, principles of PV, wind power, biogas

More information: [www.renac.de/tailor-made-trainings](http://www.renac.de/tailor-made-trainings)
In cooperation with several universities, RENAC offers RE and EE related university degrees in English and Spanish. They are designed for students with some years of professional experience who want to upgrade their career.

**MBA Renewables**

MBA Renewables is the first distance learning programme worldwide that offers the opportunity to obtain the Master of Business Administration (MBA) degree with a focus on renewable energy and energy efficiency.

In cooperation with:
Beuth University of Applied Sciences
www.mba-renewables.de

**Global Production Engineering**

The international Master of Science Global Production Engineering is a two-year academic programme offered by the Technische Universität Berlin (Germany). In the GPE programme, RENAC offers the module Renewable Power Technologies and Grid Integration (RPTG). It provides students with a comprehensive overview of the main, commercially-viable and upcoming renewable power technologies and the incorporation of renewable power capacity into electricity grids.

In cooperation with:
Technische Universität Berlin
www.renac.de/gpe

**Especialización en Energías Renovables**

The one-year distance learning programme Especialización en Energías Renovables (Specialisation in Renewable Energy) is offered by RENAC in cooperation with Earth University in Costa Rica. It covers fundamental knowledge on renewable energy technologies as well as advanced knowledge on the technical and economic aspects of planning renewable energy projects.

In cooperation with:
Earth University, Costa Rica
www.renac.de/especializacion
In addition to our trainings tailored to individual or client needs, RENAC has also developed a large number of ready-made trainings and courses. They are offered as online or face-to-face trainings, and as a combination (‘blended learning’).

Ready-made trainings cover a variety of topics related to renewable energies and energy efficiency – from introductory courses that provide an overview of RE and EE to advanced training courses for specialists who want to expand their knowledge.

The training courses are suitable for all those who are interested in furthering their professional or private development in this special field. These are mainly professionals who look for compact, specific and practice oriented knowledge on technical, legal, financial or project development related aspects.

RENAC is a certified provider of high quality, up to date trainings that encompass the latest and newest knowledge and technology. The ready-made RENAC trainings are regularly expanded.

For more information please check the RENAC catalogue on ‘ready-made trainings’.

You can also find an overview here:
www.renac.de/ready-made-trainings
“If you want to be a renewable energy project developer, RENAC is the best place to start. I learned a lot in easily manageable ways with much important materials”
Tadesse Tujuba Kenea, Certified Renewable Energy Project Developer, 2018

“It has been recommended by a colleague because it provides an excellent insight in and overview about renewables. And he was right.“
Markus Lücke, Germany, Introduction to Renewable Energy Technologies, 2017

“Worth every single penny. Very well organised course and professional trainers.”
Mohamad Mneimneh, Lebanon, GESS IIa: Grid-connected and off-grid Photovoltaics, 2018

“I’m very impressed by the professionality and luxury of the seminar. The lecturers are very enthusiastic and friendly. It’s exceed my expectations.”
Nguyen Truong Son, Vietnam, 2017

“Energy Efficiency has not been given the attention and importance it deserves in the Philippines. The training provided by RENAC highlights the need and opportunities available.”
Ms D. Valeros, Philippines, 2017

“Great training with a very experienced training institution.”
Ms Lohr, Germany, Introduction to Renewable Energy Technologies, 2017
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