



# Renewable energies

## Advisory Service

### The challenge

An increasing population growth with growing prosperity and industry, digitalisation and technologies such as Power-to-X are causing electricity demand to skyrocket. Large financing institutions are already no longer promoting fossil-fuelled power plants – not least because the electricity generation from wind and solar energy is often significantly cheaper than from fossil fuels.

This trend will continue. Due to an even greater relevance of the climate topic and in order to achieve the goals of the Paris Climate Convention, the amount of greenhouse gases emitted must be reduced substantially.

For this reason, the future power generation must be exclusively generated by renewable energies (RE). However, most of the hydro and geothermal power generation potential has already been tapped; bioenergy is in a direct conflict of use with food production. Hence, the real potential is considered to come from solar and wind. However, these sources of energy are volatile renewable energy (vRE) – they only generate electricity when wind is blowing or the sun is shining. In contrast to conventional generation of electricity, vRE cannot be planned and predicted directly. As a consequence, the power grids of the future will need to be designed and operated differently in order to integrate the vRE into the grid and benefit from their cost advantage.

Digital approaches, methods and technologies can make this integration considerably more effective and efficient. In the energy system of the future, electricity consumption will increasingly follow electricity supply. In such a smart grid, all energy system participants will be integrated through algorithms.

### Our approach

In order to achieve the national and international targets, an integrated approach is required that links all areas of sustainable development. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH supports its partner countries in creating framework conditions for pursuing a comprehensive energy system transformation from fossil to renewable power generation. The concrete contents of this solution approach are changing over time: the technical development of electricity or heat generation plants from renewable sources are hardly contents of our projects anymore. The design of a legal framework for renewable energy is currently being replaced by the grid integration of vRE in transmission and distribution grids as the primary focus of our work. In the foreseeable future, questions concerning the digitalisation in the electricity sector and our definition and design of the future systems (e.g. smart grids) will be central contents of our projects. This includes the coupling with other sectors, especially e-mobility and power-to-x.

### Our services

We support to apply RE in the partner regions through methodological, technical and financial competence. We enable partner organisations to implement a sustainable energy supply by using their own potential. Our services are among others in the following areas :

- › Policy advice on energy transformation and to apply RE
- › Strengthening or development of local competencies through tailor-made training and the promotion of training programmes in the field of RE
- › To increase knowledge about a transformation to apply renewable energy, e.g. through studies intended either for policy makers or for public debate



- › Stimulating public discourse for an energy system transformation
- › Implementation of model and demonstration projects
- › Initiation of cooperation projects between the public sector and private companies
- › Organization of technology cooperation

The TOPIC Renewable Energies deals with the general system transformation from fossil to renewable energies with a focus on larger electricity grids. The decentralized off-grid power generation, which also uses RE, is dealt within the TOPIC Basic Energy Supply.

### The benefits

It is only by making a fundamental transformation from fossil-based energy economy to renewable energy sources that the impact of climate change can be mitigated and eventually repressed. In addition, local emission will also be reduced. The use of RE and the development of a long-term security of supply reduces dependencies on energy imports, stabilises energy prices and creates added value.

### An example from the field

Vietnam's annual economic growth in the last 10 years was about 5 to 7 percent. The average annual increase in energy consumption over the same period was about 11 percent. For this reason, the government is increasingly focussing on RE and energy efficiency. At the end of 2018, the installed RE capacity amounted to 676 MW (wind 192 MW, solar 84 MW, biomass 400 MW).

On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) and the European Union (EU), GIZ supports the Vietnamese Government and other relevant stakeholders in the public and private electricity sector. GIZ's advisory services are aimed in particular at improving the legal framework for RE, strengthening their technical and methodological capabilities, promoting technology transfer, raising awareness in public institutions and improving instruments for target group-oriented communication. GIZ also heads the secretariat of the Vietnam Energy Partnership Group (VEPG), which is intended to strengthen cooperation in the country's energy sector.

Through the developPPP-Project "Photovoltaic Rooftop Pilot Project in Vietnam", a pilot plant has been installed to demonstrate the advantages of PV technology. It is also used for trainings. The capacity of the pilot power plant is 850 kW<sub>p</sub>, which requires about 2,560 PV modules (4,400 m<sup>2</sup> roof surface).

With the support of GIZ, numerous impacts have already been achieved. For example, the installed capacity of grid-connected solar PV systems rose from 84 MW in January 2019 to 4,440 MW in June 2019. In addition, the Vietnamese Ministry of Industry and Trade has launched the Rooftop Solar PV Promotion Programme in Vietnam with the aim of installing 100,000 solar roof top systems (or 1,000 MW<sub>p</sub>).

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