



Supporting innovative Technologies within the International Climate Initiative (IKI): Concentrated Solar Power (CSP)

Concentrated Solar Power (CSP) is an innovative technology that countries with appropriate solar conditions can use to decarbonise their economic development. Through the International Climate Initiative (IKI), the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) funds eight projects supporting CSP technologies in partner countries around the world and has committed more than EUR 81 million for technical and financial support. Financial assistance provided to these projects has mobilised concessional loans amounting to EUR 424 million. These have contributed to the implementation of commercial CSP plants with total investment costs of at least EUR 1.6 billion.

Through the IKI's commitment to the development of CSP technology and together with commercial and political partners from India, Morocco, Brazil and Chile, around 640MW of electrical power capacity will be installed. Advisory, capacity building and awareness raising programmes for stakeholders are essential tools of IKI projects as they improve political and regulatory frameworks and market development in partner countries.

SELECTED HIGHLIGHTS FROM IKI PARTNER COUNTRIES

India – Solar Thermal Power Plant “India One”

India has ambitious targets for renewable energy growth, aiming to install 100GW of solar power capacity and 60GW of wind power capacity by 2022. The solar thermal power plant “India One” will be the country's first utility scale solar thermal power plant with storage designed to run 24/7. The plant can draw on 16 hours of energy storage provision in addition to the regular operation of approximately eight hours on sunny days.

For further information please visit: www.comsolar.in

Morocco – Solar Power Complex Ouarzazate

The Moroccan Government is pursuing an ambitious energy strategy, with the country's electricity sector undergoing a transformation comparable to the German “Energiewende” (energy transition). Several climate projects financed by the German Government aim to support Morocco in achieving this goal. Germany is contributing to the funding of the innovative solar power complex in Ouarzazate for which additional, private funding is being mobilised through a PPP structure.

The IKI project provided financing for the construction of the first 160MW power plant within the Ouarzazate solar complex. It consists of one photovoltaic and three solar thermal power plants with a combined capacity of 580MW, and is the largest solar power plant currently under construction. NOOR I was inaugurated on 4 February 2016 in the presence of King Mohammed VI. In its first six months in operation, the plant led to a net saving of 115,000 tonnes of CO₂. By using a parabolic trough and salt storage technologies, the project also serves as a model for the commercial launch of a forward-looking technology with strong potential for protecting the global climate.

Germany is also supporting Noor III, planned to be the biggest solar tower worldwide (at 240 metres). The CSP plant allows energy storage of up to eight full load hours. The final solar complex will generate environmentally friendly electricity for at least 1.3 million people and will achieve CO₂ emission savings of a minimum 600,000 tonnes per year.

Brazil – SMILE – Solar-Hybrid Micro-turbine Systems for Cogeneration in Agroindustrial Electricity and Heat Production

Brazil aims to reduce CO₂ emissions by increasing the use of renewable energy and improving energy efficiency. The country offers high solar irradiation levels which can efficiently be used for solar heat and electricity generation. This approach holds great potential for the Brazilian agro-industry, which is seeking environmentally friendly means of meeting its energy and heat demands. CSP can play an important role in this respect. With this in mind, the aim of the IKI-funded SMILE project, run by the German Aerospace Center (DLR), is to build two highly innovative hybrid solar thermal towers (100kW_{el} solar/biodiesel) for the co-generation of electricity and heat. As a secondary objective, the project aims to give Brazilian stakeholders and experts a better understanding of this innovative technology in order to put them in a position to scale it up.

For further information on the heliostat project please visit energiaheliotermica.gov.br and www.csp-ceisa.com



Chile – Large Scale Solar Energy

In Chile, strong economic growth and the development of large-scale industrial projects, especially in the mining sector, are driving an annual rise of approximately 6% in energy demand. Germany, through the IKI and other funding mechanisms, has been very active in promoting solar energy in Chile. The objective of the current large-scale solar energy project is to promote power generation through large solar plants and to identify instruments and methodologies capable of improving the grid injection of variable renewable energies. The emphasis lies on electricity generation using photovoltaics (PV) and concentrated solar power plants (CSP/CST).

The projects comprise capacity building and training, technology transfer, identification and analysis of innovative applications for solar energy as well as the dissemination of results and experiences gained at an international level. The initiative also supports the efforts of the Chilean Government to launch a national strategy for establishing a strong solar industry and promoting the sustainable development of solar projects in the country. In addition, it is helping to design a solar roadmap as part of the national steering committee. The project includes a financing component funded by the German Kreditanstalt für Wiederaufbau (KfW), which aims to help finance the first Latin American CSP plant, which is to be built in northern Chile.

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