

# INDO-GERMAN ENERGY FORUM NEWSLETTER

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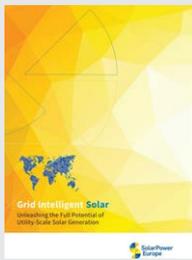


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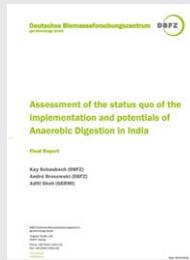
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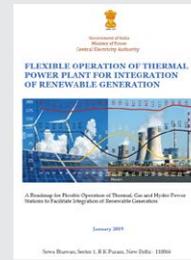
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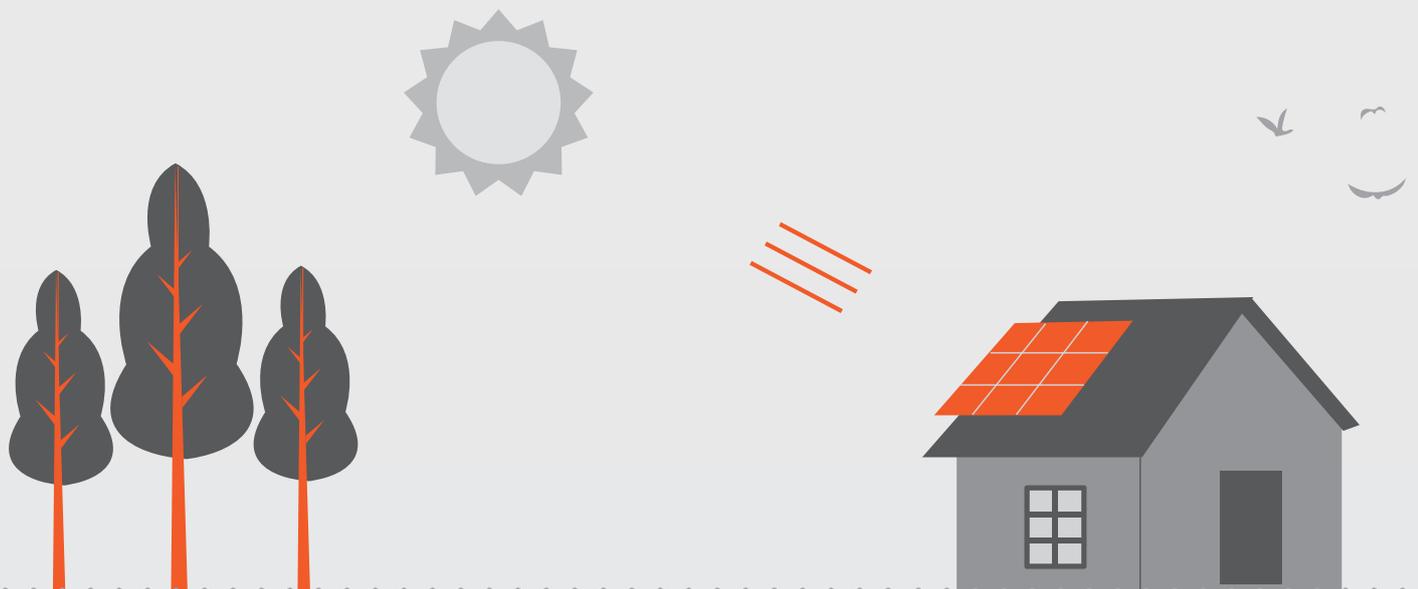
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# 1

## Introduction



Ms. Carolin Gassner

### **Ms. Carolin Gassner**

Director, KfW Development Bank, Germany

Since April 2018, Ms. Carolin Gassner is heading the South Asia Department within KfW Development Bank. Ms. Gassner started her career with KfW in 1996. She occupied different positions in the Development Bank, in the Securitisation Department and in Credit Risk Management. Before taking over the South Asia Department this year, Ms. Carolin Gassner headed the Financial Institutions and Country Risk Department within the Credit Risk Management Unit of KfW. Ms. Gassner holds a Master Degree in Economics from the Eberhard Karls University in Tübingen, Germany. Before joining KfW, she worked for the Institute for Economic Research in Munich.

Ms. Carolin Gassner on the importance of India and its energy sector for KfW Development Bank:



India is a fast growing economy with enormous demand for energy supply and natural resources. Therefore, partnering with India to find solutions to reduce global challenges such as climate warming is essential. KfW is dedicated to support India in finding sustainable solutions for its local context. We work with our Indian partners on expanding supply in modern renewable energies and in increasing energy efficiency, using the German experience and technological know-how as well as KfW financing solutions. The successful partnership is underlined by India being KfW's most important partner country in development cooperation and the Indian energy sector being KfW's single largest sector portfolio."



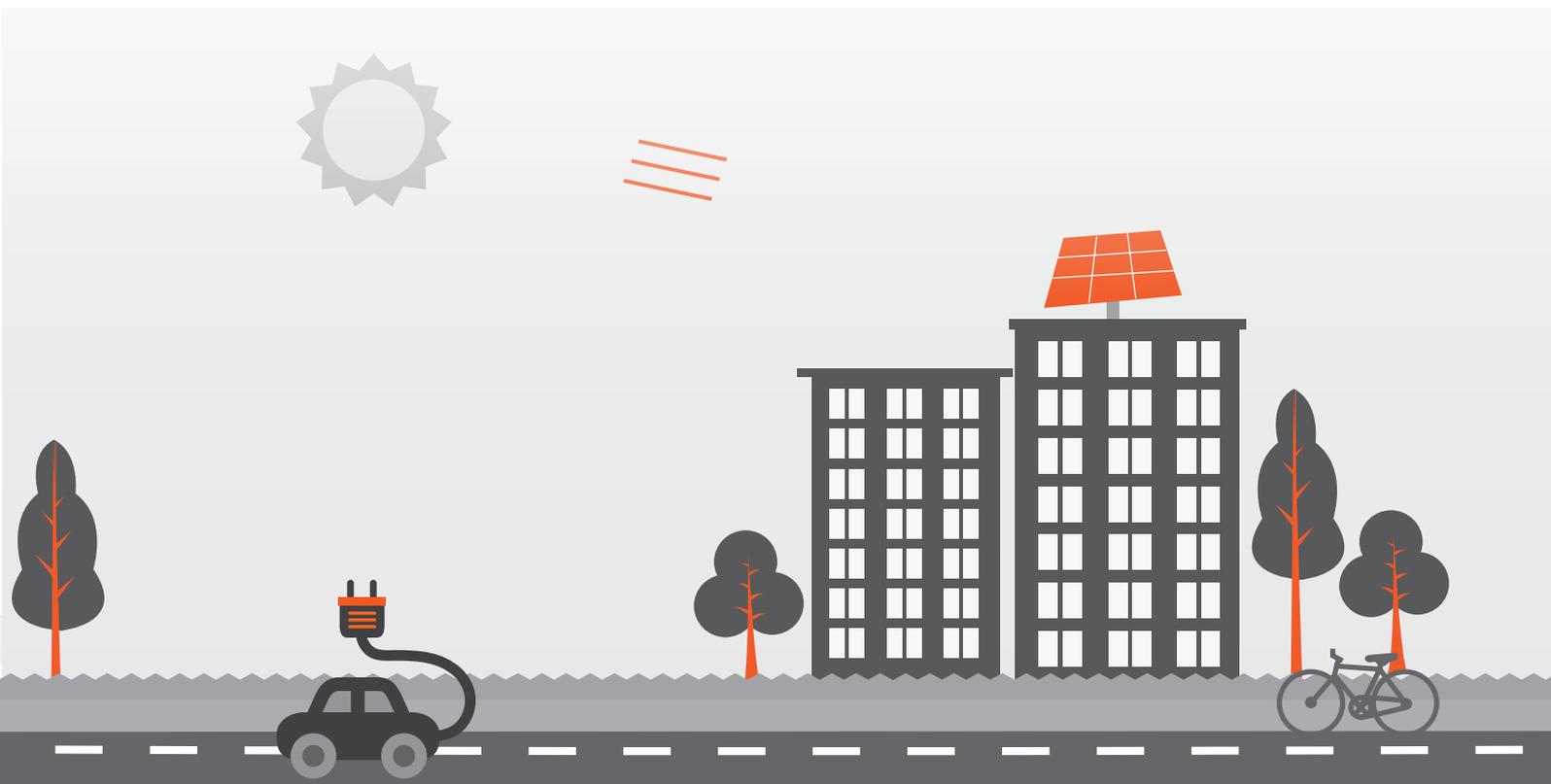


Ms. Sandra Soares da Silva

**Ms. Sandra Soares da Silva**  
Head Energy Cell - KfW India

Starting from September 2018, Ms. Sandra Soares da Silva has taken over as successor of Mr. Stefan Hediger, leading the energy team of KfW at its India Office in New Delhi.

She started her career working as a consultant for UNCTAD before joining KfW headquarters in Frankfurt as a Financial Cooperation Trainee in 2010. From 2011 to 2015 Ms. Soares da Silva supported German Development Cooperation with countries in the South Caucasus region as a Project Manager in the urban sector team in Frankfurt. Hence, in summer of 2015, moved to Dhaka, Bangladesh, to support the local KfW Office on urban and energy issues. As part of German Financial Cooperation with Bangladesh, she had the chance to witness successful off-grid renewable energy projects such as solar home systems, solar irrigation pumps and biogas plants. These small-scale experiences were scaled up exponentially when Ms. Soares da Silva joined the KfW India Office in 2017 where, before taking over the local energy team in 2018, she looked after the Indo-German Solar Energy Partnership under which projects of up to 1 billion EUR are to be financed to support India in achieving its ambitious solar targets.



## Events and Activities

# 2

### Indo-German Energy Forum (IGEF-SO) wins the Award for Excellence in Capacity Building and Training

4 January, New Delhi

Indo-German Energy Forum (IGEF), was conferred with CBIP Award 2018 for Excellence in Capacity Building and training for providing state-of-art, specialized training with innovative approach to training and creating a pool of committed and competent professionals equipped with appropriate technical skills to steer India Power Sector. Mr. R.K. Singh, Hon'ble Minister of State (Independent charge) Power and New and Renewable Energy, Govt. of India handed over the award to Mr. Anil Kumar Bellary, Co-Director, Indo-German Energy Forum (IGEF) Support Office, New Delhi.

Indo-German Energy Forum (IGEF) provides a dialogue platform for high-level policy makers, financial institutions, industry and research organizations to deepen and enhance the bilateral

cooperation for the energy transition in Germany and India. Prime Minister Modi and Chancellor Merkel underlined the importance of the Indo-German Energy Forum (IGEF) during the fourth Inter-Governmental Consultations between India and Germany in Berlin, 2017.

Since its establishment in 2006, the Indo-German Energy Forum has successfully intensified Indo-German Cooperation in the areas of energy security, energy efficiency and renewable energies, investment in energy projects as well as collaborative research and development. India and Germany share the concern of adapting energy systems to limit Green House Gas Emissions, while respecting the internationally accepted principle of "common but differentiated responsibilities". For video, please click [here](#).



(L TO R): Shri P.S. Mhaske, Chairperson, CEA, Mr. A.K. Bhalla, Secretary, Ministry of Power, Mr. V.K. Kanjilila, Secretary, CBIP, Shri. R.K. Singh, Hon'ble Minister of State (Independent charge) Power and New and Renewable Energy, Govt. of India, Mr. D. Umamaheshwar Rao, Minister of Water resources, Govt. of Andhra Pradesh.

## IGEF Subgroup IV meeting on “Green Energy Corridors”

14 February, New Delhi

The Subgroup IV meeting on Green Energy Corridors under the Indo-German Energy Forum took place on 14 February 2019 in New Delhi. It was co-chaired by Dr. Wolfram Klein, Head of Division India and South Asia, Federal Ministry for Economic Cooperation and Development (BMZ), Government of Germany and Shri Rajat Kumar Mishra, Joint Secretary, Department of Economic Affairs, Ministry of Finance, Government of India who was warmly welcomed in his new position. Further participants were representatives from MNRE, German Embassy, KfW and GIZ.

Both Co-Chairs highlighted the successful cooperation in the Green Energy Corridors (GEC) programme phase I initiated by the Government of India and are looking forward to further cooperate in upcoming phases II and III.

The strengthening of the transmission grid is of high importance to both governments to enable the integration of high shares of power from renewable energy sources. State transmission companies play a crucial role in terms of required investment to be made,

especially in inter-state transmission lines to transport electricity from renewable rich states to states with higher demand. The Green Energy Corridors programme therefore improves the access to funds by those states. The Government of Germany, through KfW Development Bank, has committed further funds to support the Government of India in the same. Ms. Sandra Soares, Head of Energy Cell KfW, and Ms. Ramya Parijat, Project Leader Green Energy Corridors from KfW, gave insights on progress being made in the ongoing extension of the transmission grid.

All participants in the Subgroup meeting agreed that Government of India has made outstanding progress in constructing transmission lines within the last 4 years. Dr. Winfried Damm, Head of GIZ Energy Division, gave further details on the ongoing technical cooperation with focus on forecasting of fluctuating power generation from renewable energy resources and capacity building measures in the same.

The decisions taken by the Co-Chairs at this Subgroup meeting are as follow:

- to analyse framework conditions allowing economically feasible operation of hydro pumped storage facilities in India
- to support any request from Government of India in terms of future transmission grid requirements and compatibility with planned Renewable Energy capacity additions
- to ensure continues support by Government of Germany through KfW to fund Green Energy Corridors

Dr. Klein, Head of Division India and South Asia, Federal Ministry for Economic Cooperation and Development (BMZ), Government of Germany, hands over a small present to his new counterpart Shri Rajat Kumar Mishra, Joint Secretary, Department of Economic Affairs, Ministry of Finance, Government of India



## IGEF supports Training of Trainers for flexible operation of coal fired power plants in Germany

10 – 15 December, Germany

The Excellence Enhancement Centre (EEC) and the Indo-German Energy Forum (IGEF) Support Office in collaboration with Kraftwerksschule, Essen (KWS) and the international technical association for generation and storage of power and heat (VGB Powertech) offered an intensive train the trainer programme in Germany to empower trainers to teach flexible operation of coal fired power plants in India.

The week-long training in Essen, Germany took place from 10 – 15 December and was attended by senior professionals from power production, consulting companies, and the Central Electricity Authority of India. Organized by the EEC with support from the IGEF, the programme included seminars at the KWS training centre, visits to power plants and to turbine manufacturing facility besides an understanding of digital initiatives in flexible operations. A session on E-Mobility including a demonstration visit to the city of Cologne completed the tour.

The training of the ten senior professionals from the Indian Energy sector at the KWS PowerTech Training Center started with an introduction by Mr. Uwe Moeller, Senior Project Manager for International Activities at the Centre. His presentation on flexible operation was followed by an engaged discussion from the participants about the need for flexibility. Additionally, the group and the presenter discussed the opportunities and constraints in the production process. Afterwards, the participants attended a training on fast load ramping using the simulator at the centre.

The second day of the workshop focused on further theoretical input on the topic. The participants gained relevant insight into the experiences of Germany on minimum load operation of a thermal power plant, ancillary services and moved on to hands-on training in simulated operations.

Participants during the guided tour of power plant in Herdecke witnessing the pumped storage technology



The third day started with a simulator training on turbine bypass operations. The participants were conducted around the facilities for a view of the equipment used in training programmes at the Center. In the afternoon, the group attended a workshop on risk assessment, life time consumption and operational cost of flexible operations. The workshop ended with an engaged discussion on the conclusions and a feedback session.

On the fourth day, the group witnessed the pumped storage technology during a tour of Power Plant Herdecke. The Director gave a detailed presentation on the technology of the plant. In the afternoon, the group visited the lignite power plant of Neurath Kraftwerk in Neurath and returned to Duesseldorf using a fully electric powered high-speed train afterwards.

In Duesseldorf, the group visited the Uniper headquarters for a presentation on different areas of operations of the enterprise. These included flexible operations, digital initiatives in the enterprise to support flexibility and their logistic operations. Subsequently, the group was

introduced to energy trading platforms during a floor walk.

In the afternoon, the participants visited the turbine manufacturing facility of Siemens in Mulheim. While visiting the shop floor, they learnt firsthand about the product and service range relevant to the technology. At the end of the tour, the participants held a discussion with the experts from the firm who assured their support to and interest in India's challenges in the flexibilization of coal fired power plants.

On the final day of the programme, the participants experienced a technical guided tour on e-mobility and the unique charging infrastructure travelers in Germany are blessed with. The tour included transfers in e-buses, trams and the metro and a visit to the city of Cologne. The presentation included a demonstration of high voltage fast charging infrastructure for electric vehicles and buses. The electric car sharing systems "car2go" and "DriveNow" were other demonstrations of mobile App based rent-a-car systems in Germany.

Delegation visiting  
the lignite power  
plant of Neurath  
Kraftwerk



## IGEF supports One-Day Conference Grid Integration organized by STEAG Energy Services India

19 February, New Delhi

STEAG Energy Services India Pvt. Ltd. (SESI) & DiGSILENT with the support of Indo German Energy Forum (IGEF), organized a one-day conference on DiGSILENT products on 19 February 2019 with speakers from DiGSILENT Germany and Steag Energy Services India.

DiGSILENT is a consulting and software company providing engineering services in the field of electrical power systems for transmission, distribution, generation, renewable and industrial plants. STEAG Energy Services India Pvt. Ltd. is an exclusive partner of DiGSILENT in India, Sri Lanka and Bangladesh.

DiGSILENT develops the leading integrated power system analysis software - PowerFactory, which covers a wide range of functionality from standard features to highly sophisticated and

advanced functionalities such as wind and solar generation integration, real-time simulation, distributed generation, simulation of emerging smart grid technologies. PowerFactory also features advanced tools for transfer capacity analysis, power transfer distribution factors and optimization.

This conference focused on benefits of the DiGSILENT PowerFactory simulation tool for Transmission, Distribution, and Renewables sector with an aim to make utilities aware about the use of the software to design and plan studies, engineering analysis, and optimization of networks to increase reliability, security and quality of the power system. A second session was devoted for advanced topics such as dynamic models in PowerFactory or HVDC modelling.



Conference on Grid Integration by Steag Energy Services India and DiGsilent in progress.

## IGEF at 10th Intersolar India 2018 in Bengaluru

11 – 13 December, Bengaluru

2018 marked a special year for Intersolar India celebrating its 10<sup>th</sup> anniversary as the country's most pioneering exhibition and conference for the solar industry with over 230 exhibitors and 10,000 professional buyers on 11-13 December. This year as well, manufacturers, suppliers, distributors, service providers and global partners, such as Germany, focused on latest technologies in the fields of solar, energy storage and electric mobility industries to provide innovative ideas for the growing energy sector.

The Federal Republic of Germany was one out of only four countries worldwide to display its latest technologies and products and therefore remains a strong global partner in energy transition. At the German Pavilion, guests had the chance to find out about newest energy-related trends in Germany, possible business opportunities and the country's presence in India. While leading industry partners, such as the German Engineering Federation (VDMA)

and Fraunhofer, organized special workshops at Intersolar, the Indo-German Chamber of Commerce (IGCC) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) are operating in several fields on the ground to further enhance India's rising solar industry.

The Indo-German Energy Forum SO highly supports Intersolar and its major goal to further connect relevant industries and partners with all its resources and is therefore proud of its broad presence at this year's conference in Bengaluru. In cooperation with our partners, IGEF organized a Networking Dinner on Upcoming Solar PV Niche markets and Investment Opportunities in India and offered its expertise for several workshops and exhibition programmes on solar related topics, such as possible concepts for solar mass distribution or the financial viability of floating solar. IGEF also supported Intersolar's Special Event: 10th Anniversary Networking Reception – Solar Power Developers Night on 11 December.

Mr. Jatindra Nath Swain, Managing Director, SECI, while visiting the German Pavilion



## IGEF co-organizes Networking Dinner at Intersolar India 2018

11 December, Bengaluru

To further exploit business capacities in India's renewable energy sector, IGEF SO and its partners from National Solar Energy Federation of India (NSEFI), The Energy and Resources Institute (TERI), Solar Business Club and Indo-German Chamber of Commerce (IGCC) organized a Networking Dinner on Upcoming Solar PV Niche markets and Investment Opportunities in India with great success. The event took place during Intersolar in Bengaluru at Taj Hotel Yeshwantpur on 11 December 2018.

IGEF and its partners are proud that Mr. Jatindra Nath Swain, Managing Director of Solar Energy

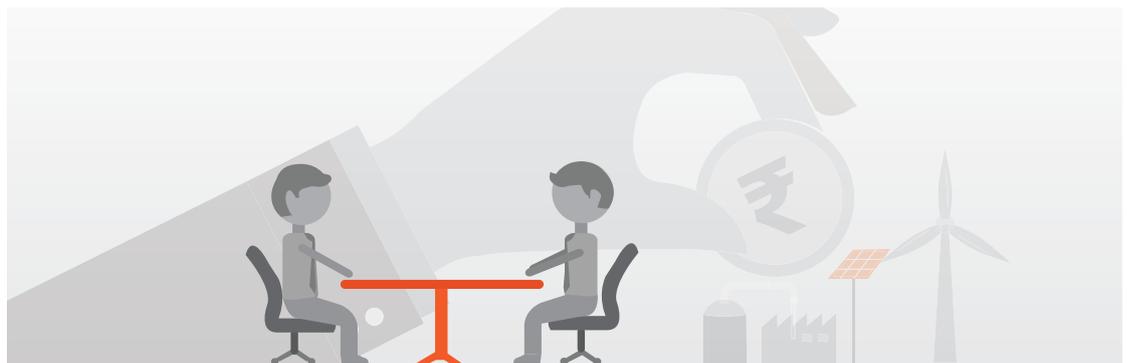
Corporation of India Limited (SECI) attended the networking event as our special guest among several high-ranking guests from related companies and institutions. All had been welcomed by short notes from Mr. Pranav R. Mehta, Chairman of NSEFI, Mr. N.S. Prasad and Mr. Shirish Garud, leading scientists at TERI, Pieter Pietros from Solar Business Club and Mr. Tobias Winter, Director of IGEF SO. After presenting the workshop results on De-risking International Investments in Indian Solar Energy Sector Multi-stakeholder by Mr. N S Prasad, Senior Fellow Renewable Energy Technology from TERI, participants had the chance to discuss and network.



Mr. Jatindra Nath Swain, Managing Director of SECI, is delivering a speech



Panel participants during the inception



## IGEF supported Bioenergy Conference in Chandigarh

23 January, Chandigarh

Aiming to increase energy production efficiency in rural areas in the State of Punjab, UBM India organized the Renewable Energy Growth Forum on 23 January 2019 under the aegis of Punjab Energy Development Agency (PEDA). The main objective is to push development and improve living standards for farmers by processing agricultural waste for local energy production. Therefore, bioenergy offers a unique possibility to cover additional electricity demand without further harming the environment.

IGEF supported the conference with a speaker placement and therefore coordinated the visit of

Ms Alexandra Pfeiffer, scientist in the Bioenergy Systems Department of DBFZ (Deutsches Biomasseforschungszentrum), to Chandigarh. As an expert in the field of bioenergy and supply chain management, Ms. Pfeiffer offered some insight into technological aspects of bioenergy power generation plants and the experiences made with similar projects in Germany. Other speakers dealt with business models, policies and regulatory mechanisms in the of bioenergy field. The conference was also an opportunity for experts coming from different working and research fields to connect and share experiences concerning the use of bioenergy.



Ms. Alexandra Pfeiffer delivering a speech at the Renewable Energy Growth Forum.

## Developments in Indo-German Energy Cooperation

# 3

### First of its kind Photovoltaic Thermal (PVT) Technology inaugurated in the Institute of Medical Sciences, Sir Sunderlal Hospital (SSH) BHU, Varanasi

10 December, Varanasi

Sir Sunderlal Hospital (SSH) Banaras Hindu University (BHU), Varanasi, Uttar Pradesh and GIZ India jointly implemented an innovative Photovoltaic Thermal (PVT) technology with system capacity to generate 18 kW electrical & 43kW thermal equivalent output at the rooftop of Medical Superintendent office building. On this occasion Ms Christiane Hieronymus, Head of Economic Cooperation & Development, Embassy of Federal Republic of Germany, Dr Julie Reviere Country Director GIZ, Dr Winfried Damm, Head of Programme GIZ, Dr Neeraj Tripathi, Registrar, BHU and Dr V N Mishra Medical Superintendent, SSH inaugurated the system on Monday the 10th December 2018. The PVT system is expected to provide two times energy yield - combining electrical and thermal, as compared to the energy yield from PV system only.

While giving her inaugural speech, Ms Hieronymus said "we are continuously working with the Government of India (GoI) on several topics. We expect more and more people to benefit from the plant which was planted in the hospital today." Further, she also mentioned one of the flagship projects announced by GoI for Ganga Rejuvenation under the Namami Gange Programme along with the partner ministry in India, the Ministry of Water Resources, River Development.

A PVT panel is a hybrid of the standard photovoltaic (PV) module which includes a polymer absorber in a single panel producing both power and heat. This configuration is expected to lower the temperature of PV cells thus increasing the electrical efficiency by around 10-12 per cent. While the waste heat is captured and transferred to a fluid (hot water) at estimated 30 to 40 per cent efficiency providing fluid temperature of 50-80°C. This results in much higher yields from the same area of a standard PV module. The module technology is a promising option for applications with limited rooftop space and a demand for both hot water and electricity.

(L to R) – Dr. V N Mishra, Professor Neurology, BHU; Dr. S B Patel, Finance Officer, BHU; Dr. Neeraj Tripathi, Joint Registrar (RAC) and Secretary to Vice Chancellor, Banaras Hindu University (BHU); Dr. Julie Reviere, Country Director, GIZ India; Dr. Winfried Damm, Head of Programme, GIZ India; Ms. Christiane Hieronymus, Head of Economic Cooperation & Development, Embassy of Federal Republic of Germany



The system is installed on cost-sharing basis, where GIZ has provided the PVT modules along with all monitoring systems imported from

Germany while the procurement of balance of system, installation and maintenance is carried out by SSH, BHU. The entire system is spread over the rooftop of MS office rooftop building. The system is grid-connected and the consumption of entire generated electricity is being consumed at the building itself. Further, the generated hot water is supplied at the hospital laundry facility and is later connected to the newly ongoing 100 bedded Multi Child Health (MCH) facility adjacent to MS building for serving patient requirement.

The PVT rooftop project is supported by the German Federal Ministry of Economic Cooperation and Development (BMZ) and implemented by GIZ India in cooperation with the Ministry of New and Renewable Energy (MNRE). The system is the first out of six demonstration projects to be established in the eastern part of India to demonstrate its performance in various climate regions. The demonstration project intends to provide "Proof of Concept" of a PVT technology which is already proven and commercially viable in Europe and the USA. On this occasion, Dr Julie Reviere Country Director GIZ India said we are delighted

to partner with BHU on this project. This project is a first step to introduce a proven and simple PVT technology which subsequently needs to be manufactured locally for commercial attractiveness and special technique that can be fully utilized by solar energy. We have completed 60 years of Indo-German Technical cooperation for provide technical assistance in several issues such as Environment, Social issues, clean energy and sustainable energy development to Government of India."

While giving technical detail Dr Winfried Damm Head of Programme GIZ said it is one the best technical solution for utilizing the space and the same time complementing both electrical and thermal demand of the user. He also emphasized that the inception phase of this project is envisaged to reduce the PVT module cost by domestic manufacturing of the PVT panel thereby contributing to "Make in India" – a flagship initiative of the Government of India (GoI).

According to Sir Sunderlal Banaras Hindu University "The project is a first step to introduce a proven and simple PVT technology and we look forward to promising results. The initiatives of the Hospital in marching towards goal of becoming a Green Energy Campus. We would like to have similar technology to supplement our energy demand on the upcoming building under the BHU hospital premises. We look forward to continue the cooperation and support with Government of Germany."

For more information, please contact:  
[sudhanshu.mishra@giz.de](mailto:sudhanshu.mishra@giz.de)

(L to R) – Dr. V N Mishra, Professor Neurology, BHU; Dr. Julie Reviere, Country Director, GIZ India; ; Dr. Winfried Damm, Head of Programme, GIZ India; Ms. Christiane Hieronymus, Head of Economic Cooperation & Development, Embassy of Federal Republic of Germany



## Launch of Certificate program on “Renewable Energy grid integration”

Renewable energy growth is inevitable in India. Backed with ambitious targets from the Government of India, environmental policy on renewable energy already contributes to 20 per cent of installed generation capacity. Renewable generation comes with in-built variability and uncertainty. Grid operators are accustomed to operating, scheduling and balancing their grids with conventional generators, such as coal, gas and nuclear generators. Renewable generators are new entrants in their generation fleet and require management for secure grid operations. At institutional level, the Government of India is setting up 11 Renewable Energy Management Centres (REMC), co-located with existing load dispatch centres. These REMCs are planned to be built in seven renewable rich states namely Andhra Pradesh, Tamil Nadu, Karnataka, Rajasthan, Gujarat, Maharashtra and Madhya Pradesh along with three regional load dispatch centres- Northern, Western and Southern and one at National load dispatch centre.

As a next step, there is a need to build capacity of Indian grid operators to effectively operate these REMCs. Under the Indo - German Energy Programme – Green Energy corridors, the GIZ along with National Power Training Institute (NPTI) and Power System Operation Corporation (POSOCO) has designed a certificate programme titled “Renewable Energy grid integration” for Indian grid operators. This blended training programme keeps track of needs and availability of grid operators who will work in RE grid integration. Following training courses have been established: a detailed, three months training online module and class room module for 6 days training. The course material was developed with the assistance of Fraunhofer IEE, University of Oldenburg, Overspeed GmbH, Energynautics GmbH, C3L and IIT Bombay.

Online modules for first batch of grid operators started in November 2018 and were completed in February 2019. Topics covered in this online module included basics of RE technologies,



Participants receiving certificate from Mr. Markus Wypior, Deputy Director, Indo-German Energy Programme, after the completion of the workshop.



All participants of the  
6-day classroom training  
module

forecasting of RE generation, scheduling and balancing, policy and market mechanisms to facilitate RE integration, grid codes, technical standards and visualisation and control of renewable energy generators.

The 6-day classroom training module was organised at NPTI Faridabad from 18 to 23 February 2019. The programme was inaugurated by Mr. KVS Baba, CMD POSOCO. Lectures were delivered by eminent faculties from Germany and India including Mr. S K Soonee (Advisor, POSOCO), Prof. Hans Peter Waldl (Overspeed), Prof. Bernhard Ernst (Fraunhofer IEE), Prof. Zakir H. Rather (IIT Bombay), Prof. Gunther Arnold (Fraunhofer IEE) and Prof. Thomas Ackermann

(Energynautics). The content of classroom lectures was aligned with topics covered in the online module. In addition some hands-on exercises and best practices case studies were included.

Upon successful completion of the classroom training, the participants were awarded certificates in a ceremony by Mr. K.V.S. Baba, CMD, POSOCO. Mr. S. R. Narasimhan, Director (System Operation), POSOCO, Mr. Markus Wypior, Deputy Director (Indo- German Energy Programme), Professor Dr. R. K. Pandey, DG, NPTI and Dr. N. V. Kumar, Director (Training/R&D) NPTI.

## Indo-German Environment Forum

13 February, New Delhi

The third Indo-German Environment Forum was themed “Cleaner Air, Greener Economy: Capacities and Technologies for Implementing NDCs and SDGs” and focused on air pollution control, waste management, circular economy and sustainable finance. The event took place on 13 February in New Delhi under the Chairmanship of Federal Environment Minister Svenja Schulze and her Indian counterpart Harsh Vardhan.

The forum has been jointly organized by the German and the Indian environment ministry and the Asia-Pacific Committee of German Business and the Federation of Indian Chambers of Commerce and Industry. It provided a platform for the bilateral exchange on environmental challenges and international climate policy. In the run-up to a number of important international summits, such as the UN Environment Assembly in March and the high-level political forum in July, this year’s forum offered both sides the opportunity to develop common positions in advance.

In his speech, Harsh Vardhan, Minister of Environment, Forest and Climate Change, Government of India, mentioned the Indo-German Environment Forum as one of several successful Indo-German cooperations.

Industry-specific business-to-business talks formed an important component of the forum, following the goal to promote private sector cooperation for environmentally friendly and low-carbon growth. Accordingly, Federal Minister Svenja Schulze attended in company of a 17-member business delegation from Germany.

Additionally, the forum aimed to enable discussions between representatives from different organizations and institutions. During several panel discussions, participants coming from ministries, companies, research institutes, and non-governmental organizations identified challenges, solutions and framework regulations conducive for implementing the 2030 Agenda and the Paris Climate Agreement.

Dr. Harsh Vardhan, Union Minister for Science & Technology, Earth Sciences, Environment, Forests and Climate Change- Government of India and Ms. Svenja Schulze, German Federal Minister for Environment, Nature Conservation and Nuclear Safety at the Indo-German Environment Forum in New Delhi.



## Greening India's Energy Supply: KfW and the Bank of Baroda join hands to finance Solar Energy Generation in India

Credit Line of  
**EUR 100 Million**

Increased Generation of  
Clean Energy from Solar  
especially Distributed  
Solar Projects

Improved technical,  
environmental and social  
standards for solar project  
development

KfW signed a loan agreement for EUR 100 Million with the Bank of Baroda (BoB) under the Indo-German Solar Partnership on behalf of the German Federal Ministry of Economic Cooperation and Development (BMZ). BoB will on-lend these funds to the private investors and developers as low-interest loans for investments in solar energy generation. These loans will be supplemented by equity contributions to the tune of 30 percent by investors as well as contributions from other banks and financial institutions under syndicate financing packages.

This loan agreement aims to increase the use of solar energy through adequate and improved access to financing for investments in the area of solar energy generation while at the same time complementing the efforts of the Government of India to achieve the target of 100 GW of solar capacity addition by 2022. The

loan agreement will facilitate greater access to clean energy to meet the growing energy needs of the Indian economy and its people and go a long way in slowing the rise of greenhouse gas emissions in the Indian power sector. A unique aspect of this loan is that a minimum of 50 percent of the total loan amount will be channeled for the development of small and distributed solar projects.

A complementary measure will see BoB receiving a grant of EUR 1.2 Million for implementing technical, environmental and social management solutions, which will significantly raise the sustainability and standards to which solar projects are developed in India.

The loan agreement was signed in December 2018.



KfW India and Bank of Baroda Senior management at the loan signing ceremony

## EURO 200 Million Promotional Loan to POWERGRID

In the presence of Mr. Roland Siller, Member of Management Committee, KfW Frankfurt and Mr. K Sreekant, Director Finance, Powergrid Corporation of India Limited (POWERGRID), a promotional loan of EUR 200 million was signed via videoconference on 28 December 2018 between KfW and POWERGRID. This loan will help to further develop the Indian electricity transmission grid at the highest voltage level, linking the different regions and states, while also supporting the evacuation of renewable energy. The project includes the co-financing of various individual projects with an objective

to secure the growing power demand, to enhance the stability and reliability of the power transmission system and energy security in India. The largest single project consists of an 1,850 km long 800 kV high-voltage direct current (HVDC) transmission line to create a modern north-south grid connection with a highly efficient transmission capacity of 6,000 MW. This HVDC line is a crucial component of the entire Indian energy supply system with minimal network losses due to the use of state-of-the-art technology.



Director of Finance, Power grid and other officials on a video conference with KfW Frankfurt for the loan signing agreement

## PM Modi inaugurates KfW financed 110 MW Pare Hydroelectric Plant in Arunachal Pradesh

On 9 February 2019, Prime Minister Modi inaugurated INR 4000 crore worth of projects in Arunachal Pradesh. One of the projects was a 110 MW Hydroelectric Power Plant financed under Indo-German Financial Development Cooperation.

The project which KfW Development Bank had signed loan agreements for in 2008 and 2017 amounting to a total of 100 million Euro comprises of the construction of a hydroelectric power plant with a total plant capacity of 110 MW (2x55 MW) in the Papum Pare District of Arunachal Pradesh. Project partner is NEEPCO (North Eastern Electric Power Corporation Ltd) who took up the project to harness the

hydropower potential of the river Dikrong, a tributary of river Brahmaputra. The project is a run of the river scheme with a 63 m high dam and a 2.8 km long tunnel. The plant was commissioned and both units (2x55MW) were synchronized to grid in the month of May, 2018. The project is expected to generate 506.42 MU of design energy at 95 per cent machine availability and 90 per cent dependable year. The project aims to increase the efficient and ecological as well as climate friendly generation of electric power, contributes to the socio-economic development of the North Eastern Region and to the protection of global climate.



## First of its kind grid-connected rooftop solar project utilizing 1000-Watt Photovoltaic Thermal (PVT) module technology implemented in India

The Indo-German Energy programme of the GIZ is implementing an innovative research and demonstration project on Photovoltaic Thermal (PVT) under the bilateral technical cooperation with Indian Ministry of New and Renewable Energy (MNRE). Under the project six demonstration projects are being established across the country to assess the performance of the PVT technology in various climate types. The GIZ along with local partners inaugurated the initial two PVT systems installed at Government College of Technology (GCT) Coimbatore, Tamil Nadu and Government Multi Speciality Hospital, Sector 16, Chandigarh. Each of the systems has a capacity of 20kWp electrical and 48kW thermal. The PVT system is expected to provide twice the energy yield – combining electrical and thermal, as compared to the energy yield from a Photo voltaic system.

The project intends to establish “Proof of Concept” of PVT technology and aims to evaluate its technical suitability by monitoring the performance for a year. Eventually it is envisaged to reduce the PVT module cost by domestic manufacturing of the PVT panel thereby contributing to “Make in India” – a flagship initiative of the Government of India (GoI).

PVT panel is a hybrid of the “standard” photovoltaic (PV) module and a “polymer absorber” in a single panel producing both power and heat. The configuration is expected

to lower the temperature of PV cells thus increasing the electrical efficiency by around 10–12 per cent. While the waste heat is captured and transferred to a fluid (hot water) at estimated 30–40 per cent efficiency providing fluid temperature of 50–80°C. This results in much higher yields from the same area of a standard PV module. The PVT module technology is promising for applications with limited rooftop space with a stable demand for both hot water and electricity.

The PVT systems are installed on cost-sharing basis, where GIZ has provided the PVT modules while the procurement of balance of system, installation and maintenance is carried out by GCT, Coimbatore and Chandigarh Renewal Energy Science & Technology Promotion Society (CREST) – the state nodal agency for promoting renewable energy in Chandigarh. The system is grid-connected and partially serving the hot water and electricity requirement of hostel students and two operation theatres in GCT and Government Multi Speciality Hospital respectively.

This innovative PVT rooftop project is supported by German Federal Ministry of Economic Cooperation and Development (BMZ) and implemented by GIZ India in cooperation with the Ministry of New and Renewable Energy (MNRE), Government of India.

## GIZ organized five Capacity Building Workshops on Solar Rooftop PV Grid Integration for the Senior Management of Discoms of Uttarakhand, Himachal Pradesh, Jammu & Kashmir, Daman & Diu and Dadra & Nagar Haveli

Under the Indo-German Bilateral Cooperation, GIZ India is implementing a project on Trainings on Rooftop PV in India (TROPHI). GIZ has commissioned Renewables Academy (RENAC) in Berlin and Steinbeis India for implementing the TROPHI Project to carry out direct trainings and seminars for different target groups contributing to skill development of the human resource in the solar rooftop PV sector.

GIZ organized five workshops (one day each) from 3 October to 11 October 2018 for the senior management of Discoms of Uttarakhand, Himachal Pradesh, Jammu & Kashmir, Daman & Diu and Dadra & Nagar Haveli on the grid integration challenges of grid connected solar rooftop PV in India. A total of 152 officers from the Discoms of the above States including, UPCL, HPSEBL, JKPDD, D&DED and DNHPDCL participated in the workshop.

The training was delivered by the highly experienced expert on Grid integration challenges

from Germany. The training aims to help the senior management of the Discoms in better understating of the technical challenges with grid management issues such as steady state voltage control and security of supply and frequency control with high shares of solar rooftop PV in the distribution grid. A brief overview of the schedule and locations of the workshops can be found below:

Date	Distribution Licensee	Location	No. of Participants
3 Oct, 2018	UPCL	Dehradun, Uttarakhand	30
5 Oct, 2018	HPSEBL	Dharamshala, Himachal Pradesh	24
8 Oct, 2018	JKPDD	Jammu and Kashmir	47
10 Oct, 2018	DDED	Daman and Diu	27
11 Oct, 2018	DNHPDCL	Dadra and Nagar Haveli	24

Senior management officers of HPSEBL, Himachal Pradesh participating in the capacity building workshop on GRTPV grid integration challenges and opportunities in Dharamshala



For more details, kindly contact Kuldeep Sharma,  
[Kuldeep.sharma@giz.de](mailto:Kuldeep.sharma@giz.de)

## GIZ India, GEDA and GUVNL form Strategic Alliance to promote grid connected solar rooftop photovoltaics

21 January, New Delhi

Indo-German Energy Programme (IGEN) of Deutsche Gesellschaft für Internationale Zusammenarbeit – German Development Cooperation (GIZ India), Gujarat Energy Development Agency (GEDA) and Gujarat Urja Vikas Nigam Limited (GUVNL) have signed a tri-partite MoU on 20 January, third day of the Vibrant Gujarat Summit in Gandhinagar, Gujarat. The MOU was signed as part of strategic alliance activity for Vibrant Gujarat Summit 2019 in the presence of Shri Saurabhkhai Patel, Hon'ble Energy Minister, Government of Gujarat, Shri Kaushikbhai J Patel, Hon'ble Revenue Minister, Government of Gujarat and Shri Raj Gopal, Additional Chief Secretary to Government, Energy and Petrochemicals Department, Government of Gujarat.

Through this strategic alliance the Energy project of GIZ India endeavors to work together with GEDA and GUVNL to discuss and explore collaboration opportunities with respect to the promotion of grid connected solar rooftop photovoltaics, energy storage

systems, electric vehicle, smart grid initiatives, vocational education training and other areas of achievements on a state level. The MoU was signed by Shri. Pankaj Joshi, MD – Gujarat Urja Vikas Nigam Limited, Smt Saisingpuii Chhakchhuak, Director Gujarat Energy Development Agency (GEDA), Dr. Winfried Damm, Cluster Coordinator, Indo-German Energy Programme, GIZ India and Mr. Joerg Gaebler, Principal Advisor, Solar Projects, GIZ India. Shri Anand Kumar, Secretary MNRE and Shri Jatindra Nath Swain, MD SECI were also present on this occasion.

The potential collaboration in short term will mainly focus on digitization of rooftop solar application processes and rooftop solar photovoltaics system monitoring aspects and capacity building of officers from power distribution companies and GEDA, among other focus areas listed in the MoU.

Mr. Joerg Gaebler said that “Working with the team at GUVNL and GEDA on further developing the promising solar rooftop sector is an exciting opportunity. We will provide best possible support from an international perspective on solar markets”.

All partners are motivated to jointly coordinate research and demonstration projects which will be implemented through individual bilateral agreements.

(L to R): Dr. Winfried Damm, Cluster-Coordinator – Indo German Energy Programme (IGEN); Mr. Joerg Gaebler, Principal Advisor – IGEN Solar; Shri Saurabhkhai Patel, The Energy Minister of Gujarat; Shri Anand Kumar, Secretary Ministry of New and Renewable Energy (MNRE); Shri Pankaj Joshi, Managing Director – Gujarat Urja Vikas Nigam Limited (GUVNL); Smt. Saisingpuii Chhakchhuak, Director – Gujarat Energy Development Agency (GEDA)



## Leveraging the 'Co-benefits' of Renewable Energy in India

11 February, New Delhi

The session was a part of the Energy and Resources Institute's (TERI) annual flagship event, the World Sustainable Development Summit (WSDS). It focused on integrating the co-benefits presented by climate change mitigation action into policy, through a project initiated by the Institute of Advanced Sustainability Studies, Germany. The co-benefits, in the context of India, were narrowed down after several stakeholder discussions with key Indian ministerial representatives including the Ministry of Finance, NITI Aayog, Ministry of Power and the International Solar Alliance. Dr. P.C. Mathani, Ministry of New and Renewable Energy, Government; Dr. Karsten Sach, Federal Minister for the Environment, Nature Conservation, and Nuclear Safety and Ms. Sylvia Borbonus, Institute of Advanced Sustainability Studies and Ms. Charlene Rossler, Renewables Academy acted as speakers at the event. The discussions on the co-benefits are as follows:

**1. Air Pollution and Health:** Gauging the regional impacts of shifting to renewable energy on mortality, quality of life and the improvement in ambient air quality. The estimated PM10 emissions decrease between 2031- 2051 due to LPG penetration in the residential sector, adoption of BS-VI fuel and technology in transport sector, and introduction of stringent standards for industries and power plants. It was also found that the health impacts due to air pollution are felt the most in IGP- Delhi, Punjab, Bihar, Rajasthan, West Bengal and Uttar Pradesh.

**2. Employment:** Estimating net jobs created across renewable energy generation value chains,

and gauging consequent capacity building and skilling needs evolving in job markets. Here, we saw that renewable energy technologies tend to be more labour intensive than conventional technologies and that the rooftop solar sector, given the small and distrusted installation creates significantly higher job-years per MW than any other technology. As we shift from coal-based generation to renewables, the coal-mining sector would be impacted the most. However, as Dr P C Maithani (Advisor, MNRE) reiterated, coal will still remain a part of the growth trajectory.

**3. Energy Access:** Making an economic case for electricity access provisioning through off-grid renewable energy solutions versus grid-based electricity. The findings included the fact that mini-grid consumers pay significantly higher per unit charges, and in some cases, in the absence of grid connectivity or poor connectivity, they fall back to using limited lighting services. This systemic failure never allows for capturing latent demand.

According to Dr. Karsten Sach "Co-Benefits provide an argument with the jobs and health benefits and drives policy for sustainable development."

Mr RR Rashmi, in conclusion, highlighted the need for conducting studies on the co-benefits of climate change mitigation action, above and beyond the aforementioned co-benefits.



## Fluence Energy inaugurates India's first grid-scale 10MW/10MWH battery energy storage project

13 February, New Delhi

India's first grid-scale lithium-ion battery energy storage system officially went into service. It has been inaugurated on 13 February in Rohini, Delhi. The project is regarded as a milestone for India's entire energy sector. The system is based on the technology from Fluence Energy, a Siemens & AES Company. The system has a maximum capacity of 10 MW and can deliver up to 10 MWh at present. The facility is ready to be upscaled to 20 MWh at any time. "Fluence is proud to support Tata Power-DDL in their efforts to continuously improve their network by adopting new technologies such as Fluence's Advancion energy storage platform," said Stephen Coughlin, CEO of Fluence. "This historic project is a major step forward and will showcase the valuable role energy storage will play in enabling India to achieve its sustainable energy goals." Fluence brings to the project more than a decade of experience deploying and operating grid-scale battery-based energy

storage projects, with over 730 MW deployed or contracted around the world. Located at a Rohini, Delhi substation operated by Tata Power Delhi Distribution Limited (Tata Power-DDL) on 6000 sq. feet, the facility has no air pollution, no water consumption or noise pollution. It will provide grid stabilization, better peak load management, add system flexibility, enhance reliability and protect critical facilities for 2 million consumers served by Tata Power-DDL.

Shri Pradeep Kumar Pujari, Chairperson CERC honoured the inauguration with his presence. CERC is committed to have the most cost efficient and reliable options forming part of India's power system to further guarantee affordable power for all. Mr. Praveer Sinha, MD Tata Power pointed out that this storage facility now has to prove its economic viability and that he is expecting further supporting framework conditions to commission more such facilities:

10 MW lithium-ion  
battery energy  
storage in Rohini,  
Delhi



“Grid-scale energy storage will pave the way for ancillary market services, power quality management, effective renewable integration and peak load management of Indian grids.” Mr. Andres Gluski, CEO AES as well as Mr. Rajendra Shrivastav, President AES India expressed gratitude to their partners from Mitsubishi and Siemens for having made this project possible. Industry leaders from India and abroad participated in the event.

The inauguration took place at the Rohini substation owned by Tata Power Distribution, the grids and networks business of India's Tata Group. Fluence, a market-leading supplier of energy storage technology jointly owned

by Siemens and AES, supplied its state-of-the-art technology for the project. Owned and operated by AES and Mitsubishi Corporation who have delivered the project, the system will help provide flexibility to the local grid mainly through frequency control. Battery-based energy storage enables electricity to be stored and then delivered within milliseconds, reducing instability of the electric grid and enabling more energy to be captured and delivered on demand.

IGEF Support Office and IESA are currently planning special site visits with training for their stakeholders and members. In case of interest please email at [projects@energyforum.in](mailto:projects@energyforum.in).



LtoR: Shri Pradeep Kumar Pujari, Chairperson CERC; Mr. Praveer Sinha, MD Tata Power; Mr. Andres Gluski, CEO AES; Mr. Rajendra Shrivastav, President AES (India) inaugurating the facility.

For more information on the storage project itself please visit following website:  
<https://blog.fluenceenergy.com/south-asia-largest-energy-storage-system-india>

# 4

## Quote of the month from India and Germany

### Quote of the month from India



“Our commitment to promote renewable energy is reflected in setting up the International Solar Alliance, the first treaty based international inter-governmental organisation headquartered in India. This sector is now creating lakhs of new age jobs.”

Piyush Goyal, Minister of Railways & Minister of Coal in the Government of India, on presenting interim budget 2019-20

Source - PIB Delhi

### Quote of the month from Germany



“The large-scale electricity highways will be the life-blood of the energy transition. To make this happen, we need everyone to support us – the federation, the Länder and the municipalities. And, crucially, our citizens living close by.”

Peter Altmaier, Federal Minister for Economic Affairs, on his latest grid-expansion trip to Hesse.

Source - BMWi Newsletter

# 5

## Energy Transition News

### Commission on Coal recommends completing the phase-out by 2038

The Commission on Growth, Structural Change and Employment has tabled its proposals for ending the use of coal-fired power in Germany, saying that all plants should go offline by 2038.

Following intensive discussions, the 28 members of the Commission on Growth, Structural Change and Employment, aka the Commission on Coal, have now reached a near-unanimous decision in favour of terminating the use of coal for electricity generation, and of doing so in a way that allows the people and companies affected by this to plan ahead with certainty and opens up prospects for sustainable development following the age of coal. The Commission handed over its Final Report (in German only) to the Federal Chancellor at the end of January.

Its membership had been designed to ensure representation of the relevant groups: experts from industry and environmental groups, members of trade unions and citizens' initiatives, and representatives of Germany's coal-mining regions. A large number of scientists and interest groups were also heard.

#### A balanced solution to a complex task

The task set for the Commission on Coal had been everything but straightforward:

- draw up a proposal for an incremental termination of the use of coal for electricity generation (complete with a final deadline) to ensure that the energy industry will reach its emission reduction target for 2030 (sector-specific target).
- In addition to this, the Commission was asked to develop specific plans on how to create new and future-proof jobs in the

regions affected by the phase-out.

- And, just as importantly, to ensure energy security for Germany, and at affordable prices for electricity.

It took the Commission on Coal little more than six months after its establishment to come up with a Final Report on which all of its members, except one, were able to agree. Federal Minister for Economic Affairs and Energy Peter Altmaier stated that the Commission had succeeded in "presenting a balanced overall solution". In their report, the Commission highlights the importance of having its various proposals put in practice all at the same time, given that they all depend on each other. Progress reviews on individual steps are to take place in 2023, 2026, and 2029. Read on for the most important points:

#### For our climate: terminate the use of coal for electricity generation by 2038

The members of the Commission have recommended the phase-out of coal-fired power plants to be completed by 2038, and by 2035 if certain conditions are met. In either case, the number of coal-fired power plants is to be halved by 2030. This is to ensure that Germany is able to meet its climate targets for the energy sector, whilst making a successful transition to renewables and gas-fired power plants.

#### For Germany's coal-mining regions: financial support

The Commission has recommended that a programme for regional development be launched instantaneously to support the regions

affected in their structural change. "We are already working on this", said Minister Altmaier. The Commission wants the Länder which have coal-mining regions to receive €40 billion for specific projects to be completed over the next 20 years. This would apply to some parts of North Rhine-Westphalia, the Lausitz and the wider region of Leipzig and Halle, which all still have lignite mines. Lignite is used for electricity and heat generation and in the chemical industries.

#### **For employees working in the lignite sector: create new jobs**

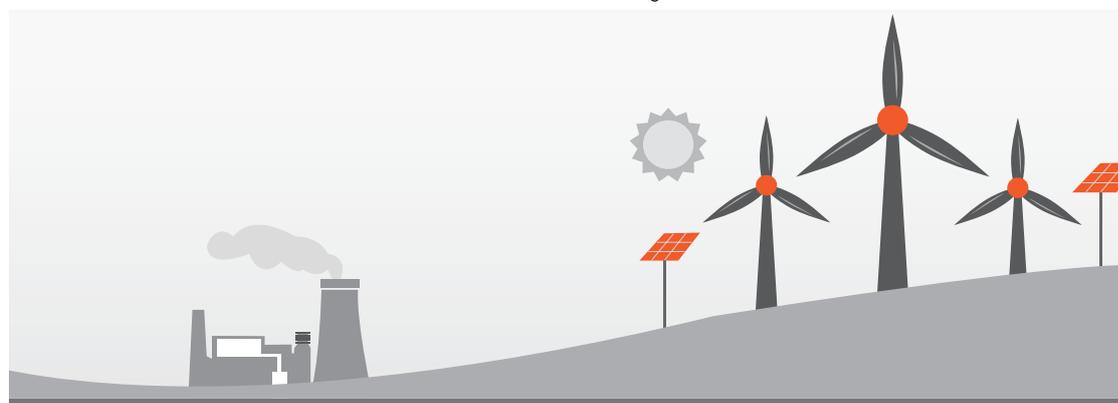
At present, there are around 20,000 people working in the German lignite industry: 15,000 in mining and another 5,000 in power plants. The Commission has recommended that they should be given safeguards. Furthermore, they are to receive better training and continuing training. Innovative technologies are to drive the creation of new jobs, particularly in industry. Minister Altmaier: "It has been very important to the Commission to ensure that there is a chance that there will be more jobs, not less, than prior to the beginning of the transformation."

#### **For customers: ensure a secure and affordable supply of electricity**

Minister Altmaier has named the ensurance of a secure supply of electricity as one of his a key tasks, given his position as Federal Minister for Economic Affairs and Energy. He said that phasing out coal does not risk harming Germany's energy security. Furthermore, it is also not to put a financial burden on electricity customers. "The Government will do everything that is necessary to protect consumers from price hikes caused by the replacement of coal with renewables." The Commission on Coal has recommended that energy companies should be compensated for having to take their power plants off the grid.

#### **What will the next steps be?**

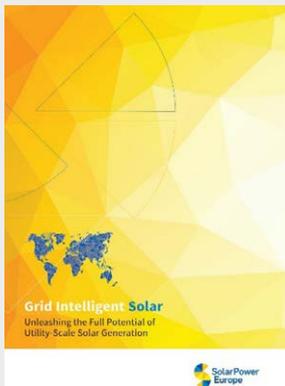
"Now the hard and intense work will begin for the Federal Government. We will take the Commission's recommendations seriously and work on their implementation", said Minister Altmaier. "We are currently looking at how we are going to do this." Chancellor Merkel has announced that legislation on action to be taken in the regions affected is to be drafted over the coming months.



# 6

## Publications

### Frequency control by Utility-Scale Solar – Grid Intelligent Solar

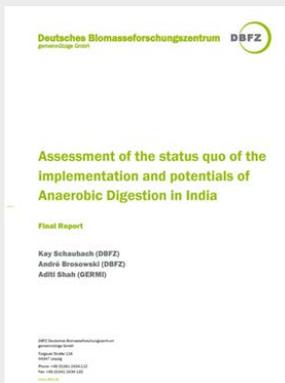


SolarPower Europe launched its “Grid Intelligent Solar – Unleashing the Full Potential of Utility-Scale Solar Generation” report, which shows that solar is not only the lowest cost power source in many regions and crucial to meet climate targets, but also a reliable partner that helps to keep the grid stable and supports Europe’s security of supply. Utility-scale solar plants are controllable and can provide flexible grid services like frequency regulation that allow system operators to respond quickly and strategically to changing conditions.

The report was initiated by First Solar and produced by SolarPower Europe with support from BayWa, Tesla and SMA with the aim of providing facts and figures about the benefits of utilising low-cost utility scale solar to keep the European grid stable and reliable for the European Union to meet its 2030 renewable energy targets.

Download report [here](#)

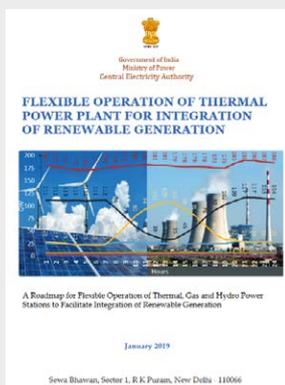
### New assessment of potential for biogas in India



This study identifies hotspots for the implementation of biogas projects in India and is now available on the public domain. It is an outcome of the associations partnership between the German Biogas Association and the Indian Biogas Association (IBA) which formally started in December 2015. This partnership is financially supported until end 2021 by the German Federal Ministry for Economic Cooperation and Development (BMZ) and managed by sequa gGmbH. The goal of this partnership is to improve the framework conditions for biogas in India and to establish an association structure that is economically sustainable.

Download report [here](#)

## New assessment of potential for biogas in India



Central Electricity Authority on behalf of Ministry of Power has released a study on Integration of Renewable Generation and the role of coal fired power plants for the same. The Integration of renewable generation into the Indian electricity grid is described as a challenge as well as an opportunity. In anticipation of the changing role of thermal power in the Indian power sector and its crucial role in making best use of renewable sources, this report has been brought out. It covers technical capability and economic feasibility of power stations for flexible operation. Further, it includes an analysis of a framework required to facilitate and incentivize flexibilization of thermal power stations.

The study can be downloaded [here](#)

# 7

## Upcoming Events

### 2nd International Conference on Large-Scale Grid Integration of Renewable Energy

**Date:** 4 – 6 September

**Place:** New Delhi

2nd International Conference on Large-Scale Grid Integration of Renewable Energy is being organised in New Delhi, India from 4-6 September 2019

This is the second edition of the international conference, the first one in September 2017 had more than 400 participants including energy experts, practitioners and academicians from 18 different countries. 60 invited national and international speakers presented papers and 120-plus organizations including private and public companies, research institutions and universities attended the three-day long International Conference.

The purpose of the 2nd International Conference on Large-Scale Grid Integration of Renewable Energy in India is to connect international and Indian experts and stakeholders to jointly discuss the latest technological, regulatory and conceptual developments in this field. In light of the Government of India's very ambitious goal to install 175 GW of renewable energy generation capacity by 2022, grid integration is a major challenge.

The conference provides the perfect opportunity to discuss the implications for the Indian grid with international experts, practitioners and researchers.

The partner event of the renowned Solar and Wind Integration Workshops is organized by:

- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
- United States Agency for International Development (USAID)
- Department for International Development, United Kingdom (DFID)
- Energynautics, Germany

**For more info:** <http://regridintegrationindia.org/>



## German Chancellor Fellowship for tomorrow's leaders at German Solar Association BSW in Berlin

The Alexander von Humboldt Foundation is searching for the leaders of tomorrow from India. The German Chancellor Fellowship offers you an opportunity to take the next career step in Germany – irrespective of your field of work. In order to apply, develop your own project idea and find the host of your choice to mentor you. Once your host has confirmed, you can apply for a fellowship. German Solar Association BSW in Berlin has already offered to be a host for you. The Chancellor of the Federal Republic of Germany is the patron of this fellowship programme. The Foundation grants up to 50 German Chancellor Fellowships annually – up to ten for each country.



If you are interested in a fellowship with the German Solar Association BSW you should get in touch with **Mr. Knaack**, [knaack@bsw-solar.de](mailto:knaack@bsw-solar.de).

## Retired German energy experts offering their support to Indian institutions

You are a fresh retired German engineer with experience in Energy Efficiency and already familiar with India's rich culture? Become part of the largest retired expert's database of the world, a group of more than 10,000 experts offering their German know how free of cost to the world.



You are an Indian based company or institution and looking for a German expert to lower your expenditures for Energy?

Senior Experten Service (SES) India is constantly matchmaking German experts and Indian institutions in several fields of potential support and is also able to finance such expert visits. Senior Experten Service (SES) is the worldwide leading organization for voluntary assignments carried out by retired specialist and executives.

For further information please contact **Mrs. Sharon Mogose**: [sharon.mogose@indo-german.com](mailto:sharon.mogose@indo-german.com) or visit the website <https://www.ses-bonn.de/en/startseite.html>.

All upcoming events in 2019 – save the date!

**Intersolar Europe**

<https://www.intersolar.de>

Date: 15 -17 May 2019 | Place: Munich, Germany

**HUSUM Wind Trade Fair**

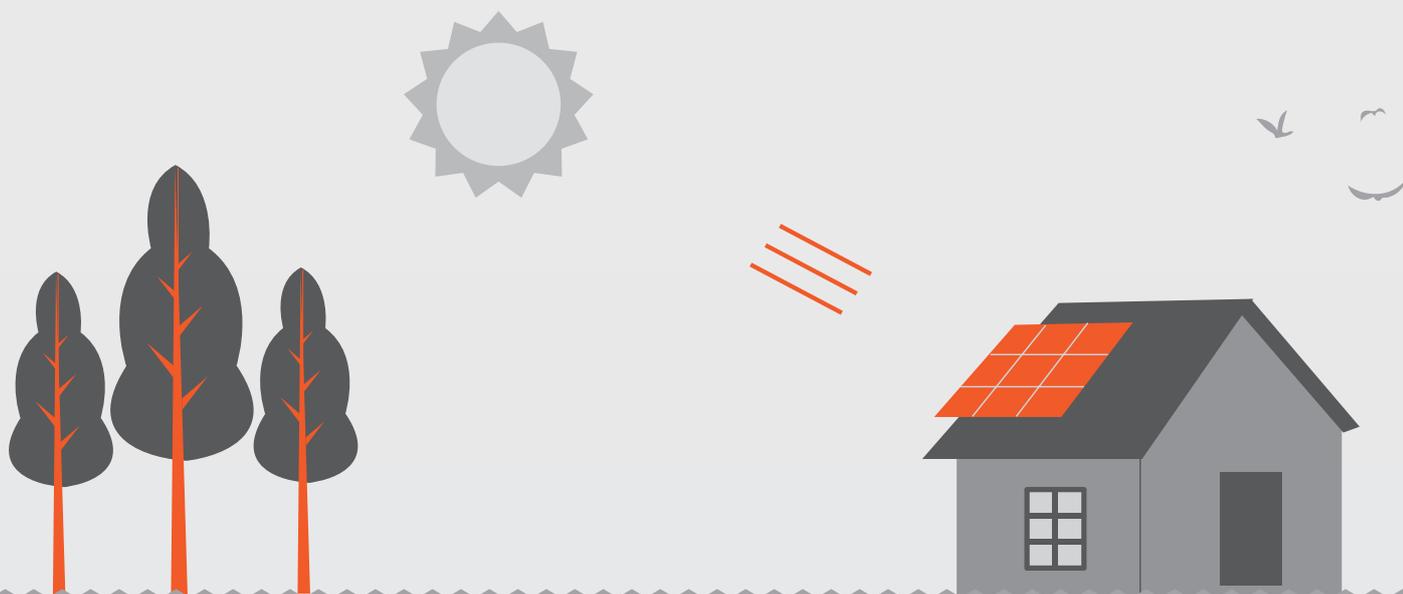
<https://www.husumwind.com/husumwind/en/>

Date: 10 - 13 September 2019 | Place: Husum, Germany

**RE- Expo 2019**

<https://www.renewableenergyindiaexpo.com/>

Date: 18 - 20 September 2019 | Place: Greater Noida, India



# 7

## Disclaimer

The views expressed in this newsletter are solely those of the Indo-German Energy Forum (IGEF) Support Office team. The IGEF Support Office cannot assume any responsibility for the contents of other websites linked in this newsletter.

The Support Office of the Indo-German Energy Forum provides liaison services for all stakeholders. It serves as a first point of contact both to the Indian and German governments as well as companies seeking to get involved in the process. The Support Office answers queries regarding proposals for the IGEF dialogue or IGEF projects and any other subject relevant to the private sector.

# 8

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