Indo-German Energy Forum Support Office

INDO-GERMAN ENERGY FORUM NEWSLETTER

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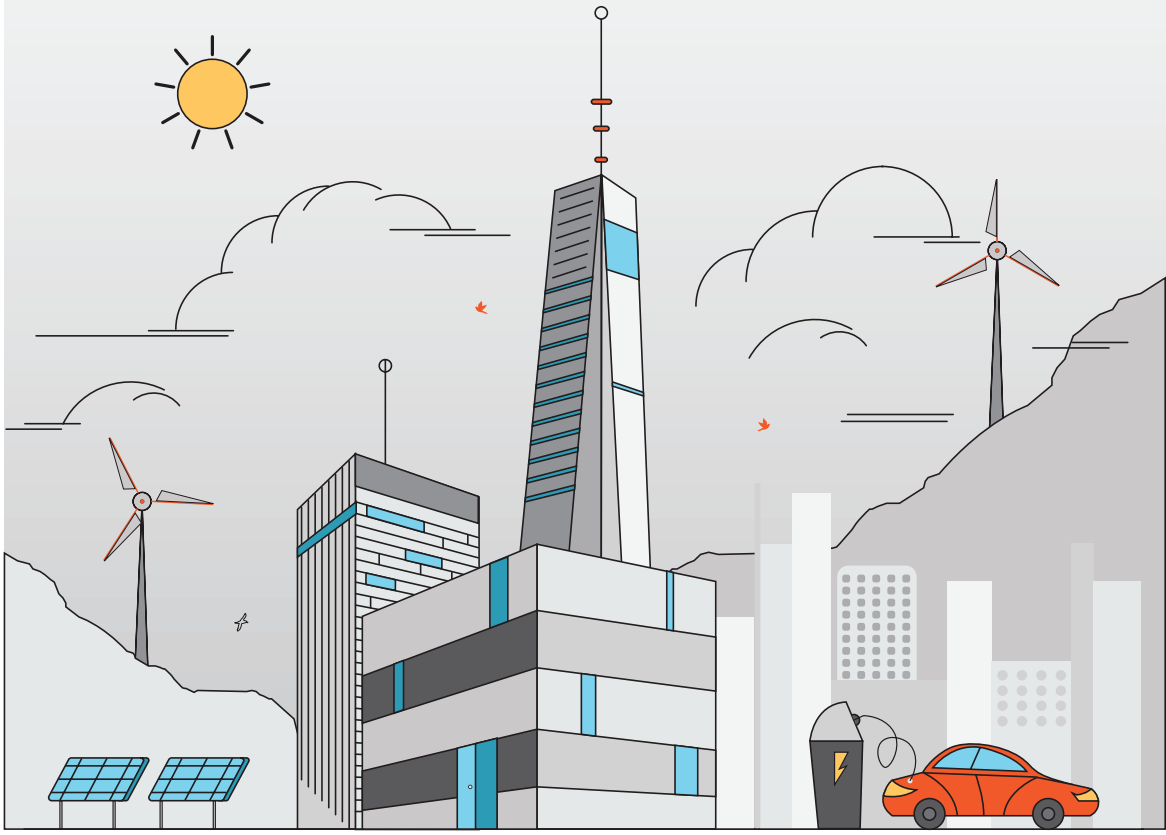

Federal Ministry for Economic Affairs and Energy
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Federal Ministry for Economic Cooperation and Development
KFW
Government of India Ministry of Power
Government of India Ministry of New and Renewable Energy
giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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1 Introduction

Shri Alok Kumar
Hon'ble Secretary, Ministry of Power (MoP), Government of India

Shri Alok Kumar, IAS officer of the 1988 batch of the Uttar Pradesh cadre, has taken over as the Secretary in the Ministry of Power, Government of India in February 2021. By virtue of his position he is now the new Co-Chair of the Indo-German Energy Forum together with his German counterpart State Secretary of Power, Ministry for Energy, Govt. of Germany, Shri Andreas Feicht.

Shri Kumar has obtained his bachelor's degree in Civil Engineering from IIT Roorkee in the year 1983 and has acquired an MBA in Finance. He has held senior positions in U.P. Government and Government of India. Before joining as Union Power Secretary in February 2021, Shri Kumar was the Additional Chief Secretary for Industrial Development and IT & Electronics in the Government of Uttar Pradesh.

Shri Kumar has acquired widely recognized expertise in policy and regulatory affairs of India's electricity sector while working for more than seven years in the sector at the national level and about three years at the state level in Uttar Pradesh. He has been CEO of various public enterprises in the transport and electricity sector. Shri Kumar has also worked in the areas of skill development, handicraft based micro enterprises, apprenticeship programmes and National Career Services. It is with this highly experienced background, that Shri Kumar has authored the book "Electricity Sector in India - Policy & Regulation" which was published by Oxford University Press in 2012 and which quickly became an internationally highly recognised publication.

He has an interest in bird watching and star gazing.

Indo-German Energy Forum stakeholders from public sector entities as well as the private sector are honoured and privileged to welcome the Hon'ble Secretary Shri Alok Kumar as the Co-Chair of the FORUM and look forward to further strengthening the decade long cooperation under his leadership.

2 Events and Activities

German Participation at the 3rd RE-INVEST 2020 with German Pavilion and Indo-German Country Session

26 November 2020 | Virtual

Hosted by the Ministry of New and Renewable Energy (MNRE), the 3rd RE-INVEST 2020 took place virtually from 25 to 28 November. The Hon'ble Prime Minister of India, Shri Narendra Modi, Prime Minister of Israel Mr. Benjamin Netanyahu, Prime Minister of the Netherlands Mr. Mark Rutte and Director General Mr. Thorsten Herdan, BMWi and Mr. Alok Sharma, President for COP26 actively participated amongst many other international dignitaries in this flagship event. Germany was one partner country of RE-Invest. According to MNRE, a total of 27,000 participants from 68 countries and 290 speakers registered. Among others Mr. Max Trommsdorff, Fraunhofer ISE promoted innovative solar technology Agrophotovoltaics (AgroPV), Prof. Dr. Eicke Weber, President of the European Solar Manufacturing Council (ESMC) gave his insights on the future of solar energy and Dr. Jochen Dirksmeyer, wpd offshore solutions GmbH emphasised offshore wind as a reliable resource to cater the power demand especially in the evening and at night when solar energy is not available.

In cooperation with the Indo-German Chamber of Commerce, IGEF-SO organised a virtual German Pavilion with more than 35 German companies and associations present. To increase the visibility of German companies and institutions present in India, the Federal Ministry for Economic Affairs and Energy (BMWi) and MNRE jointly organised a Indo-German Country Session on "Opportunities and Challenges of Decarbonisation" at the conference on 27 November with a comprehensive programme on photovoltaics, grid integration and hydrogen.

Over 400 participants were honoured by the opening remarks of Hon'ble State Secretary, Shri Indu Shekhar Chaturvedi, MNRE, Govt. of India and Director General, Shri Thorsten Herdan, BMWi, Govt. of Germany. A high level panel discussion on opportunities and challenges

Virtual German Pavilion jointly organised by IGCC and IGEF-SO at the 3rd RE-INVEST 2020.

of the ongoing energy transition in India and Germany counted with the active involvement of Shri Abhay Bakre, Director General of India's Energy Efficiency Authority, the Bureau of Energy Efficiency (BEE), Shri Dinesh Jagdale, Joint Secretary International Cooperation, MNRE, Dr. Philipp Stammler, Head of Division Hydrogen, BMWi, Prof. Dr. Eicke Weber, President of the European Solar Manufacturing Council (ESMC) and Dr. Winfried Damm, Head of Energy in GIZ India. One highlight of this Indo-German Country Session at RE-Invest 2021 was the launch of the "COBENEFITS Policy Report for India" with the encouraging words directed to the audience by Dr. Antje Berger, First Secretary, Climate & Environment, Embassy of the Republic of Germany. The report was funded by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

All presentations are available for download here.

Partners and exhibitors at the German Pavilion.

Partner Ministries

Initiatives and RE-INVEST Partners

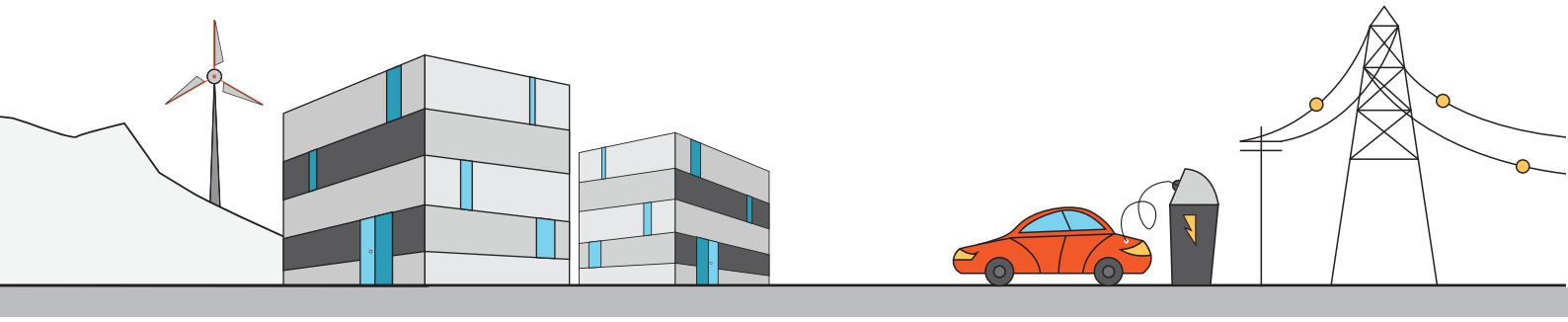
German Participation

IGEF Support Office implemented by

3rd Assembly of the International Solar Alliance (ISA)

14 October 2020 | Virtual

The 3rd Plenary Assembly of the ISA took place from 14 to 16 October, 2020, and was attended by representatives from 55 of the 70 full members, 21 signatories and aspiring member countries, ISA partner organisations and selected guests. On 15 October 2020, energy ministers discussed the ISA regional strategies. On 16 October 2020, technical sessions were held on the ISA Coalition for Sustainable Climate Action and the One Sun, One World, One Grid (OSOWOG) initiative. Hon'ble Minister of Power and New and Renewable Energy, Govt. of India, Shri R.K.Singh, President of the Assembly, appealed to the Member States to actively use the ISA and to contribute technical innovations, financing opportunities and knowledge and expertise. Later in the meeting, the ISA Member States reelected India and France as President and Co-President of the ISA Assembly respectively for a renewed term of two years. India and England welcomed the proposal to establish a "World Solar Bank" to accelerate the deployment of solar energy in ISA member countries. An ISA roadmap for mobilising USD 1 trillion in financing for solar projects by 2030 is under development. The roadmap is being developed with support from the World Resources Institute (WRI) in cooperation with the Kingdom of the Netherlands, Bloomberg Philanthropies and the Climate Works Foundation. In addition to pure solar energy projects, this roadmap shall also look at solar energy applications in the areas of transport, cooling and heating, as well as providing recommendations for the implementation of the vision "One Sun, One World, One Grid". Various ISA initiatives received financial support. 12 companies presented the ISA with cheques worth USD 1 million each. As the incumbent Director General, Shri Upendra Tripathy had withdrawn his candidature for another term, a special meeting was held on the 15 February, 2021 to elect the upcoming Director General. In result Dr. Ajay Mathur, who is presently the Director General of The Energy and Resources Institute (TERI), has been announced as the new Director General of International Solar Alliance (ISA). The 4th ISA General Assembly is expected to be held in India from 20 to 22 October, 2021.



NITI Aayog

Ministry of New and Renewable Energy
Government of India

PV Manufacturing in India

6 October 2020 | Virtual

To promote the installation of state-of-the-art PV manufacturing in India, NITI Aayog, the Ministry of New and Renewable Energy (MNRE) and Invest India organised a virtual global symposium "India PV EDGE 2020" on 6 October, 2020. Technical topics like "Wafers and Cells", "Modules and Production Equipment", "Supply Chain" were discussed and an "Investors Conclave" on PV manufacturing was successfully held. The states of Tamil Nadu, Maharashtra and Andhra Pradesh actively participated in the conference. The Hon'ble Minister of Power and New and Renewable Energy, Shri R.K. Singh as well as Shri Amitesh Kumar Sinha, Joint Secretary, MNRE also Co-Chair of IGEF Subgroup II on "Renewable Energy" were among others giving their highly appreciated inputs. Three German institutions, the Fraunhofer ISE, RENA and ISC Konstanz as well as five European companies participated as speakers in the sessions. The IGEF supported the event through involvement of private sector companies and promotion amongst potential investors and technology providers.

Hon'ble Minister of Power and New and Renewable Energy, Govt. of India, Shri R.K. Singh inaugurating the India PV Edge 2020 highlighting opportunities for potential investors in Make in India.

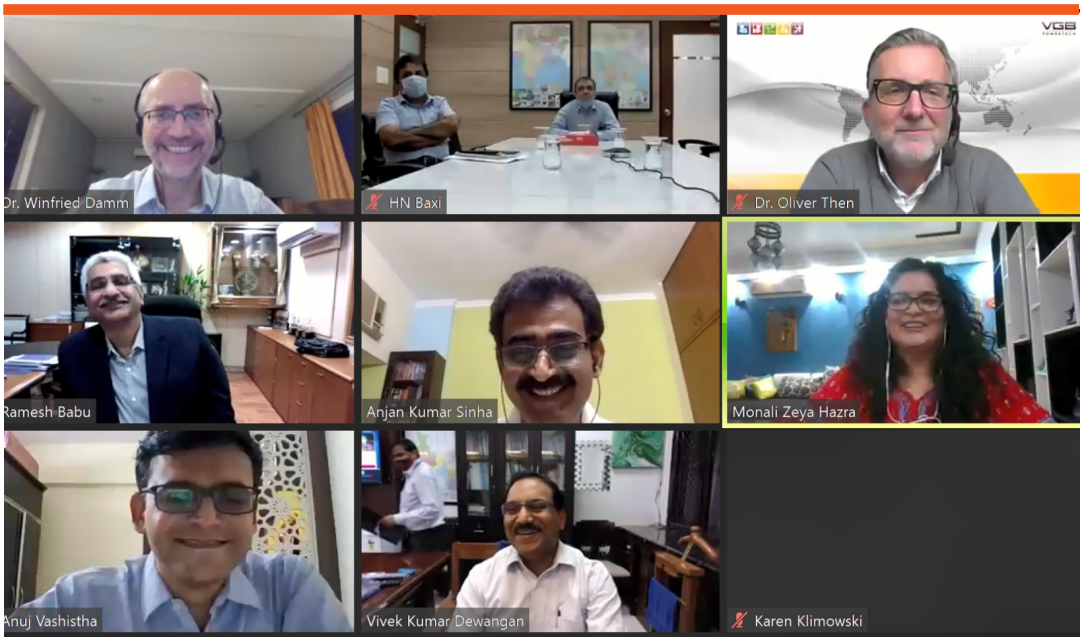
GOVERNMENT OF INDIA
MINISTRY OF POWER

Launch of the "Recipe Book for Flexibilisation of Coal-based Power Plants"

16 October 2020 | Virtual

On 16 October 2020, a webinar on the "Transition Towards Coal Based Flexible Power Generation in India" was organised by USAID under its Greening the Grid (GTG) initiative supported by Indo-German Energy Forum. Shri Vivek Kumar Dewangan, Add. Secretary, Ministry of Power, Govt. of India and Co-Chair of the Subgroup 1 under the Indo-German Energy Forum honoured the participants with his Special Address on the importance of increased flexibility of the power system through flexibilisation of generation assets already existent in the country. Mr. Ramesh Babu, Director Power Plant Operations at NTPC Ltd. and Head of the IGEF Task Force Flexibility assured the commitment given by the largest power generator of India. One highlight of the event was the launch of the "Recipe book for flexibilisation of coal-based power plants" by Ing. Anjan Kumar Sinha, a well known Indian expert in the topic. The book shall serve as a guide for thermal power plant operators interested in making their power plants fit and valuable for a renewable energy oriented future. It has been prepared based on the insights gained through a series of pilot studies, test runs and operational experiences in Indian coal-fired power plants and can indeed be seen as the most practical guide available for power plant operators in India who wish to form an essential part in the ongoing energy transition towards a greener electricity supply for India.

The report is available for download here.



Shri Vivek Kumar Dewangan, Add. Secy Power, Govt. of India with power sector representatives from India, USA and Germany. Here Dr. Oliver Then, MD VGB, the largest power plant association in Europe, Mr. Ramesh Babu, Director(Operations), NTPC Ltd., Ms. Monali Hazra, GTG Rise Senior Clean Energy Specialist, Mr. Anjan Kumar Sinha and Dr. Winfried Damm amongst others.

Operation & Maintenance Best Practice Guidelines for Solar Power Plants in India

9 December 2020 | Virtual

On 9 December, SolarPower Europe (SPE), the National Solar Energy Federation of India (NSEFI) and IGEF-SO jointly organised a conference at the Intersolar India 2020 virtual exhibition, where the "Operation & Maintenance (O&M) Best Practice Guidelines" for solar plants in India were launched. The European guidelines have been adapted to the Indian context by a dedicated task force since March 2020. Amongst others, German companies such as PI Berlin and STEAG, but also the Physikalisch Technische Bundesanstalt (PTB) and KfW made significant contributions. With their on the ground experiences and corresponding inputs, more than 40 Task Force members from 25 European and Indian member companies of NSEFI and SPE made this publication the most valuable guidelines for the sector available in India. The opening speech was given by Dr. Nicole Glanemann from the BMWi emphasising the huge opportunities this market segment offers in terms of increased generation and employment effects. Estimates show that India's O&M market has reached an annual market volume of more than 300 Mio. USD. This without even counting the increased electricity generation achieved through proper O&M.

The report as well as the specific best practice checklists are available free of cost here. Fore more information please write to privatesector@energyforum.in.

The highlight was the launch of the O&M Best Practice Guidelines for solar plants in India.

Federal Ministry for Economic Affairs and Energy

inter solar connecting solar business | INDIA

NSEFI MAKING SOLAR ENERGY AFFORDABLE

AgroPV and KUSUM in Doubling Energy Harvest and Income for Indian Farmers

10 December 2020 | Virtual

As part of Intersolar India, IGEF-SO organised a session on 10 December focusing on Agrophotovoltaics (AgroPV), the dual use of land by agriculture as well as for solar power generation. This type of use helps to further increase the availability of suitable land for solar power generation without compromising the use of fertile land. After the opening remarks by Dr. Nicole Glanemann, BMWi, several presentations highlighted different aspects of AgroPV in Germany and India. Mr. Maximilian Vorast, Project Manager Agrivoltaic at Fraunhofer ISE, reported on the latest developments of the concept in Germany. Mr. Vivek Saraf, CEO of SunSeed APV, elaborated on the potentials of the emerging technology in India and its socio-economic perspectives. Ms. Sohini Gupta, Sustainability Manager at Mahindra Susten, and Dr. Priyabrata Santra, Principal Scientist, Central Arid Zone Research Institute (CAZRI), spoke about rationale and experiences from their respective operational AgroPV pilot projects in Tandur, Telangana and Jodhpur, Rajasthan. The session was concluded with the official launch of the report "AgroPV in India - Overview of Operational Projects and Relevant Frameworks" by Mr. Subrahmanyam Pulipaka, CEO, National Solar Energy Federation of India (NSEFI). This report was developed in collaboration between NSEFI and IGEF-SO and provides a comprehensive overview of the current state of the Indian AgroPV sector. The report also proposes policy measures to reduce barriers to use and promote the implementation of this promising technology on a large scale in India.

All presentations and the report are available for download here.

Dr. Nicole Glanemann, BMWi, inaugurated the session and emphasised the Indo-German cooperation.

Training on "Flexible Operation of Thermal Power Plants"

29 October 2020 | Virtual

On 29 October 2020, VGB PowerTech e.V., the largest power plant association in Europe, in cooperation with the Indian Excellence Enhancement Center organised a technical virtual training on "Flexible Operation of Thermal Power Plants" with the support of IGEF-SO. The flexibilisation of coal-fired power plants enables a short-term reduction of conventional power generation during midday, for example, in order to give priority to cheaper solar power in the grid, with the possibility to ramp up power generation quickly again when solar power and wind power are not sufficiently available especially in the late evenings. During her presentation, Dr. Weise from VGB PowerTech e.V. gave insights into the experiences made by European power plant operators during the last decade especially in Germany. More than 130 engineers participated in the training to gain new insights and experience with flexible power plant operation in India and Europe.

All presentations are available for download here.

Online Training Program for Power Sector Professionals on Floating Solar and Data Communications Infrastructure

23 September 2020 | Virtual

The Government of India is continuously increasing the renewable generation with a target of 175 GW by the year 2022 and a further target of 450 GW by end of 2030.

Photovoltaic energy and has demonstrated to be one of the most promising technology options for achieving this target so far. But the installation of ground mounted solar plants requires huge amounts of land and may increasingly compete with other purposes especially food growth to meet the burgeoning population. However, this concern can be in part mitigated via several alternatives. One promising solution is to install solar plants on water surfaces which will greatly reduce the land requirement.

Because of the COVID-19 pandemic and restrictions on travel, the Central Board of Irrigation and Power (CBIP) and IGEF-SO jointly organised a virtual visit to Banasurasagar Floating Solar Power Plant, Kerala and an online training program on the Floating Solar PV Project and Data Communications Infrastructure from 27 to 28 November 2020.

The program was attended by 112 participants from 40 organisations in India including various State utilities, PSU's, SECI, NHPC, NTPC, SJVNLS, BBMB, PFC, REC, TATA POWER, GEDA, MEDA, BARC, DVC, KSEB amongst others.

The topics of the training included technical and economic feasibility, global best practices, regulatory and other challenges and risks and assessing the role of the Floating Solar PV Projects in the overall renewable energy growth in the country.

The keynote address of the online study tour was delivered by Chief Guest Shri S.K. Mishra Director (PS), Solar Energy Corporation of India Limited (SECI). Shri Mishra complimented both CBIP and IGEF for their excellent initiative in organising an online training program with a virtual visit to a Floating Solar Power plant. He spoke of the plans of SECI to promote FSPV in a big way and gave some details on the pipeline projects in A&N Islands, FSPV on lagoons in Lakshadweep Islands etc. Along with discussing the present and future aspects of Floating Solar Power plant, he also shared experiences in the

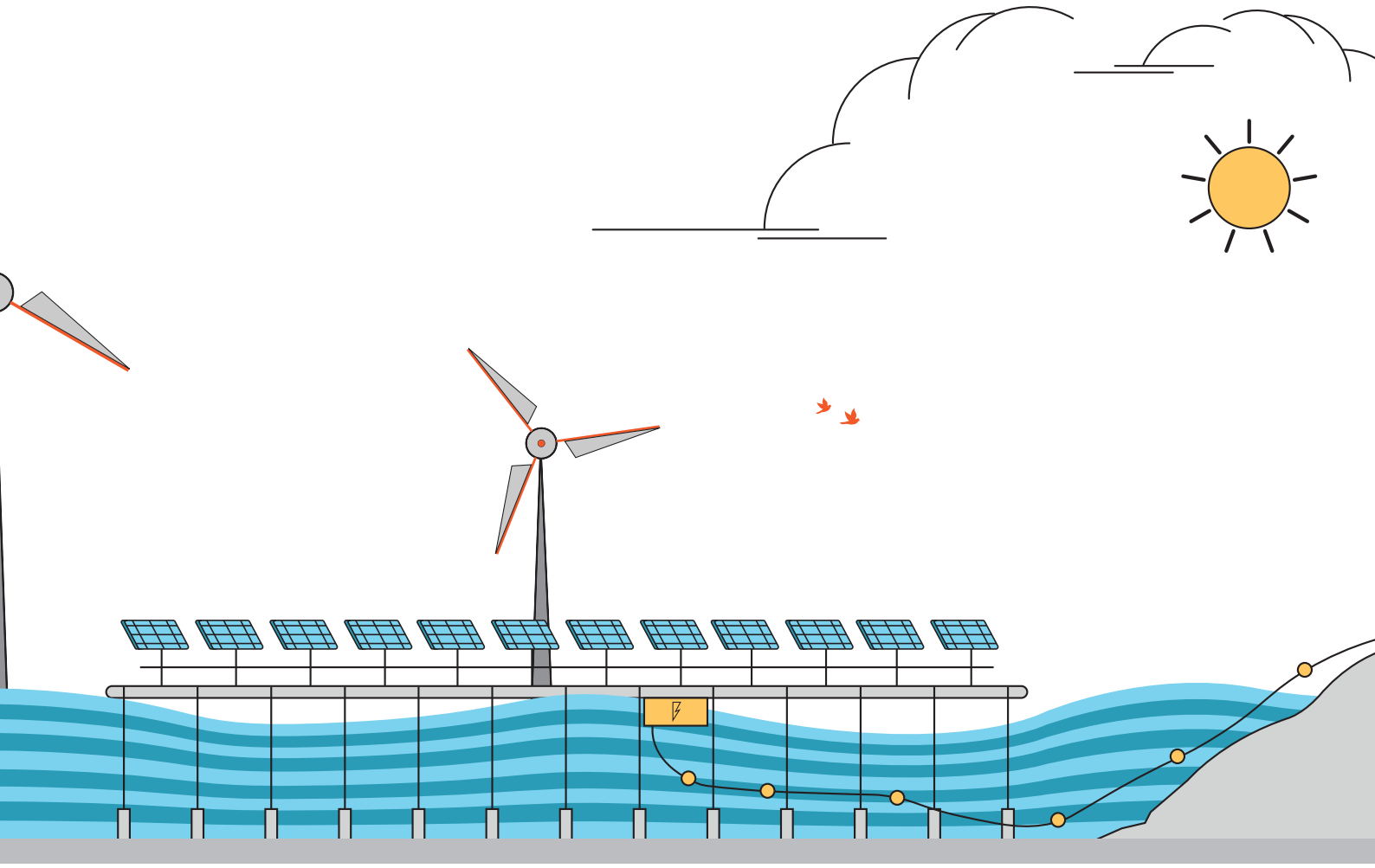
(Top R) Shri. S.K. Mishra, Director (PS), Solar Energy Corporation of India Limited (SECI), delivering the keynote address.

regulatory process for tariff fixation and the need to include land and water savings in the project documentation.

The participants expressed their satisfaction with the comprehensive lectures and the virtual visit covering technical aspects of the 500 kWp Floating Solar Power Plant and civil infrastructures, grid integration, storage etc. The NTPC GM, Mr. S S Mishra emphasised the Make in India for floats since importing will be prohibitive. Also, he spoke on the need for a third-party agency with experience in the sector who could certify and validate the FSPV projects.

A lively interaction among the speakers and participants through chat and verbal discussions made all the sessions interesting and thought provoking. Positive feedback from the participants made the event a success. The delegates were also happy with the organisation of the virtual study tour and the knowledge and experience shared by the domain experts. Both CBIP and IGEF are committed to continuing the professional training series covering other topics.

All presentations are available for download here and a special information on environmental impact assessment with focus on fish population can be accessed here.

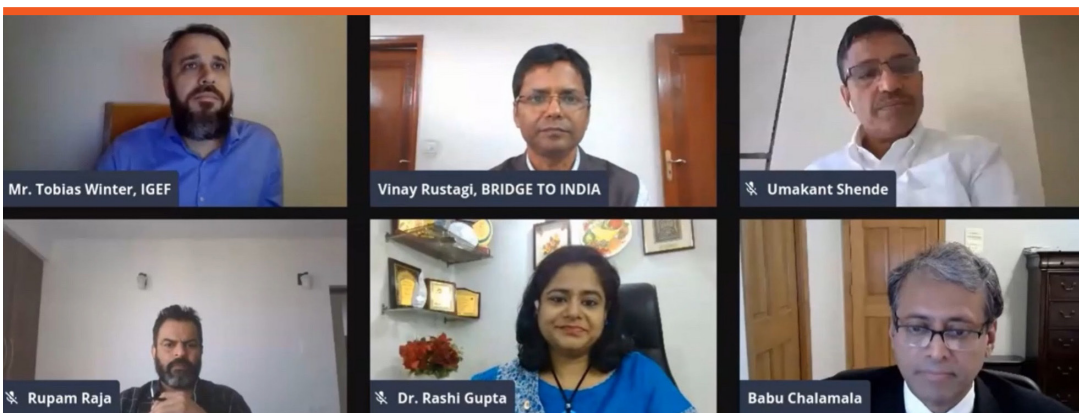


Enhancing ROI in Commercial and Industrial Rooftop Solar & Stabilizing the RE Dominated Utility Grid Through Storage

10 December 2020 | Virtual

On 10 December, IGEF-SO invited to learn more about "Enhancing ROI in Commercial and Industrial Rooftop Solar & Stabilizing the RE Dominated Utility Grid Through Storage" at the International Trade Fair The Smarter E India. Attendees enjoyed cutting-edge presentations on emerging topics in India's energy sector. The keynote speech on "Energy Storage and Evolution of the Electric Grid" was held by Dr. Babu Chalamala, Head of the Energy Storage Technology at Sandia National Lab. For Industrial and Commercial (C&I) consumers paying high electricity tariffs, solar offers significant savings. However, infirm solar generation, with availability in the day time and peaks in the noon can not cater the demand during the evening peaks. Therefore, storing the excess energy during peak generation for use during the evening would be required to make this green source of energy also available at night. For the utility companies, storage helps maintain stability of the grid during high injection of Renewable Energy (RE), helps reduce transmission losses and defer infrastructure upgrades. However, especially large scale battery storage has not been economically viable in many end-use cases. A newer generation of batteries is now available at ever increasing attractive prices and the adoption of energy storage especially by consumers from the Commercial and Industry (C&I) sector but also by more and more utilities is on the rise. In this session, acknowledged specialists shared their insights on how battery storage will increasingly transform the C&I rooftop market and the RE dominated distribution and transmission grid of India. Special insights on the sector came from Mr. Rupam Raja, Market Director at Fluence Energy India - a Siemens and AES company, focusing on the topic of "Effectively Combining Battery Storage with Roof Top Solar in C&I Sector in India".

The entire session can be watched here.



(L to R) Mr. Tobias Winter, IGEF-SO, Mr. Vinay Rustagi, Bridge to India, Mr. Umakant Shende, Cleantech Solar, Mr. Rupam Raja, Fluence, Dr. Rashi Gupta, Vision Mechatronics, Mr. Babu Chalamala, Sandia National Lab.

Official Inauguration of Germany's largest commercial vertical AgroPV Power Plant

12 October 2020 | Germany

On 12 October, the solar plant Donaueschingen-Aasen, the largest commercial Agrophotovoltaic plant utilising vertical bifacial modules in Germany was inaugurated. The project has been commissioned by Next2Sun GmbH, a German enterprise specialising in this new type of application of photovoltaics. Covering 14 hectare, the plant has a capacity of 4.1 Megawatt peak (MWp) while still allowing for agricultural cultivation of more than 90 % of the area. Particularly the combination with precision farming methods, as demonstrated by CLAAS Württemberg GmbH and 365FarmNet GmbH, showed astonishing results in terms of productivity.

The solar plant was inaugurated by the Governor, Mr. Winfried Kretschmann, who called the technology "genius" and "earth-shattering" with respect to its global outlook. Among others, Dr. Gunter Erfurt, CEO of Meyer Burger, AG and Dr. Radovan Kopecek of ISC Konstanz e.V. gave their insights on the topic.

At the opening of the vertical AgroPV plant in Donaueschingen with Dr. Gunter Erfurt, Meyer Burger AG, Mr. Sascha Krause-Tünker, Next2Sun GmbH and IGEF-SO. ©Next2Sun

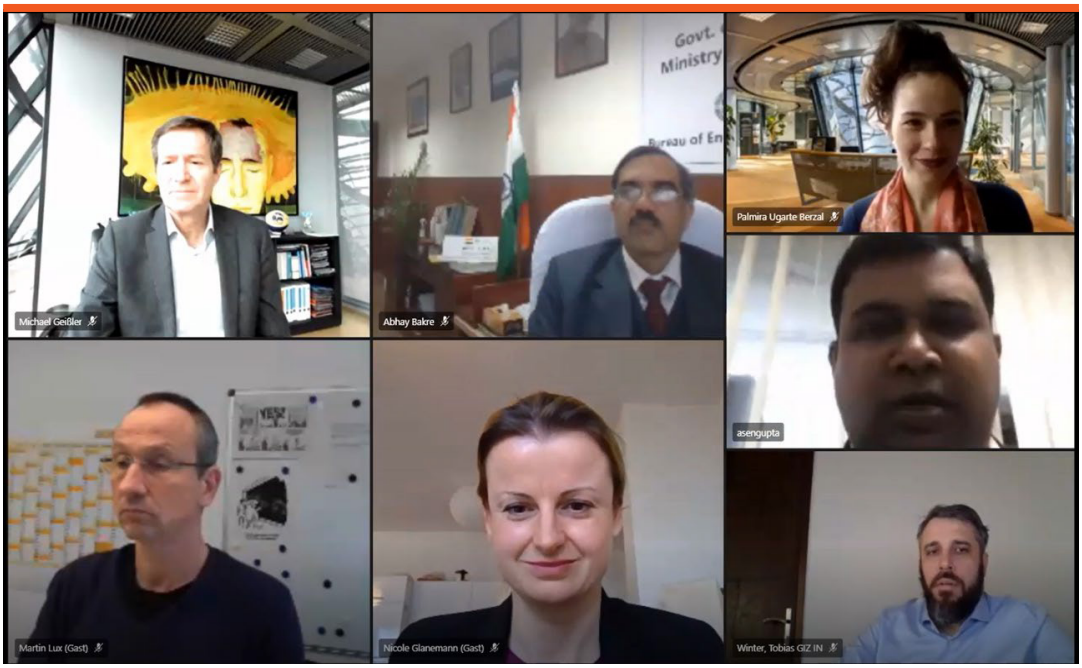
Dual use of farm land with farming and photovoltaics. ©Next2Sun

Federal Ministry for Economic Affairs and Energy

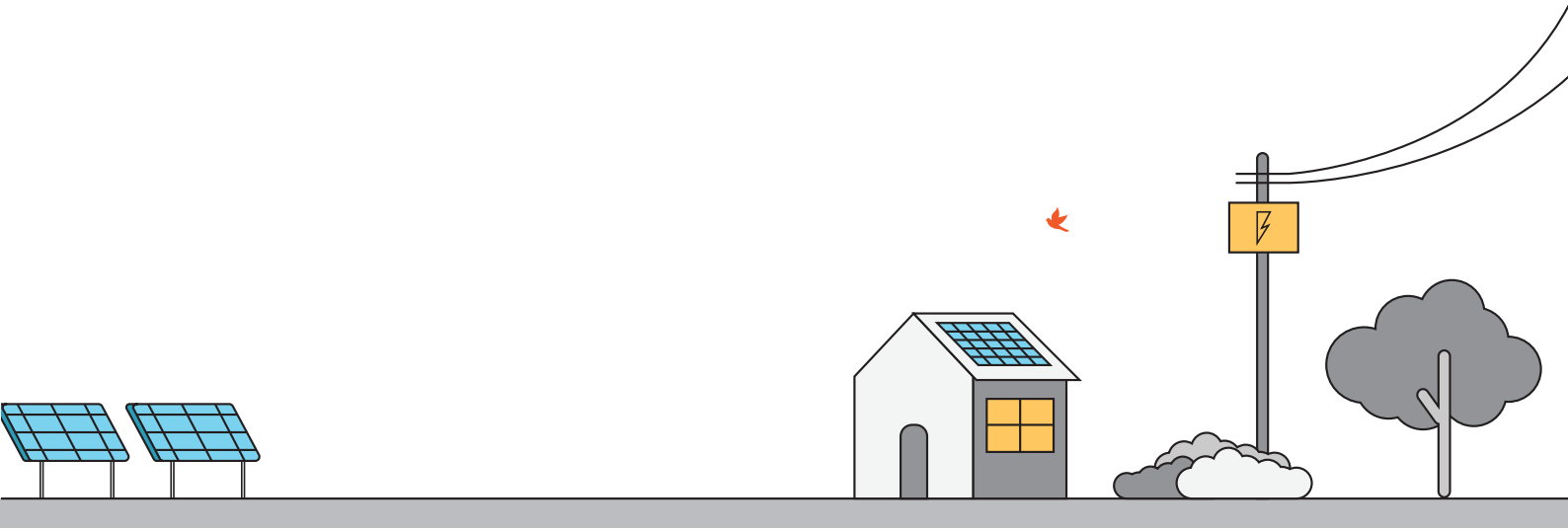
Knowledge Exchange on Financing Models for ESCOs

28 January 2021 | Virtual

On 28 January 2021, a bilateral knowledge exchange took place with the participation of Shri Abhay Bakre, Director General, Bureau of Energy Efficiency (BEE), the Co-Chair of IGEF Subgroup III "Energy Efficiency" and German experts on business models from Berliner Energieagentur. Dr. Nicole Glanemann, BMWi and Dr. Martin Lux, KfW joined the knowledge exchange. The focus of the exchange was on the topic of best practice models for Energy Service Companies (ESCOs) and promising financing models.



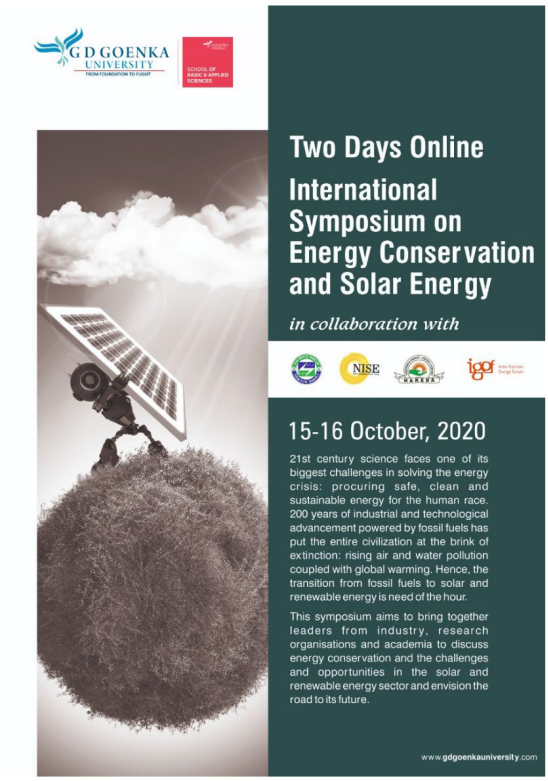
(L to R) Mr. Michael Geissler, Berliner Energieagentur, Shri Abhay Bakre, BEE, Ms. Palmira Ugarte-Berzal, Berliner Energieagentur, Dr. Martin Lux, KfW, Dr. Nicole Glanemann, BMWi, Mr. Arijit Sengupta, BEE and Mr. Tobias Winter, IGEF-SO.

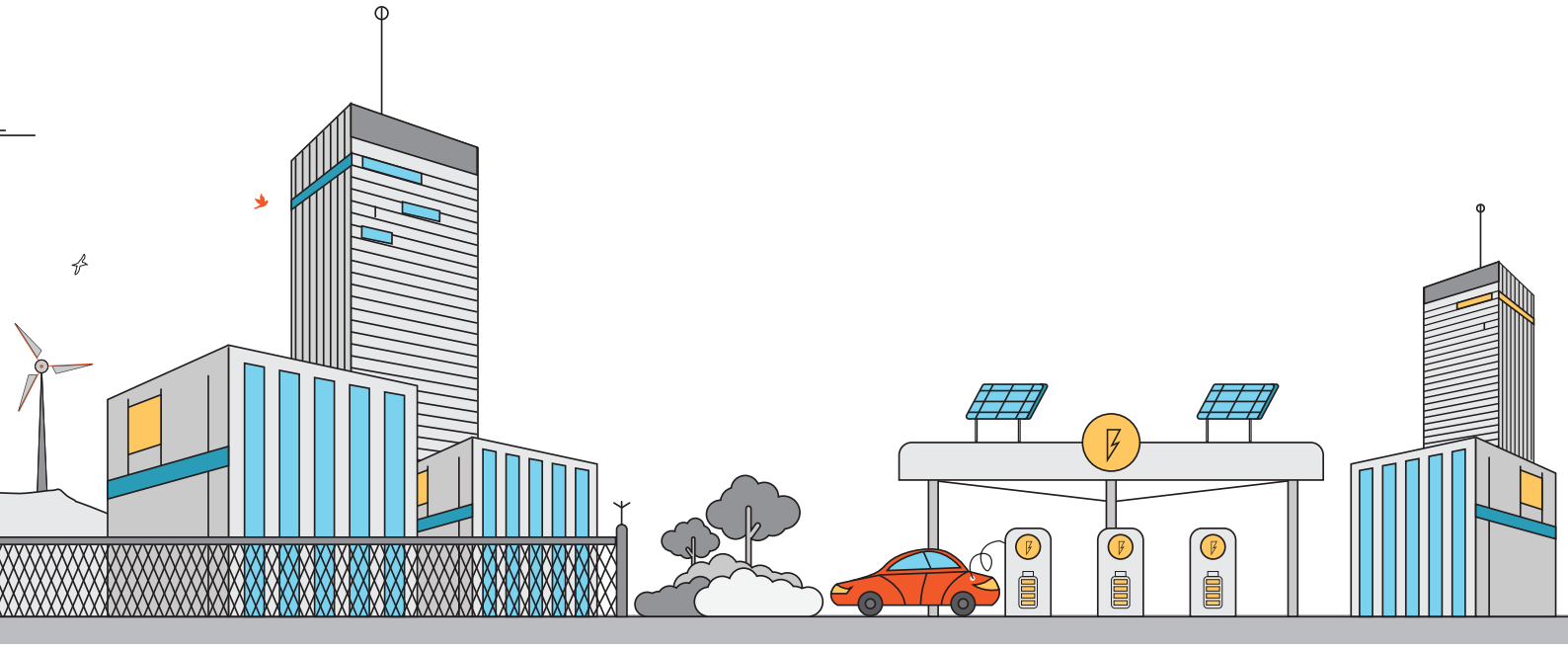


Symposium on Energy Conservation and Solar Energy organised by GD Goenka University

15 October 2020 | Virtual

The School of Basic & Applied Sciences (SoBAS), GD Goenka University, Gurugram, India, organised an online International Symposium on Energy Conservation and Solar Energy (ISECSE-2020) on 15 and 16 October, 2020. The event was held in collaboration with the Bureau of Energy Efficiency (BEE), National Institute of Solar Energy (NISE), Department of New & Renewable Energy, Government of Haryana (HAREDA) and Indo-German Energy Forum (IGEF). The Symposium was inaugurated by Dr. Nicole Glanemann, BMWi. Mr. Tobias Winter, Indo-German Energy Forum (IGEF) Support Offices gave a presentation on the status of the worldwide energy transition with focus on Germany. The aim of this symposium was to bring together international and national participants, including experienced and young researchers, industry representatives and decision-makers on a common platform to raise awareness and responsibility for energy saving and solar energy use among young, prospective students. During the two-day symposium, panel discussions, keynote sessions, four power talks, two technical sessions and various events for students were organised.





"Phase Shifting Transformer - Optimising the Transmission Network Infrastructure" by Maschinenfabrik Reinhausen

8 October 2020 |Virtual

On Thursday, 8 October 2020, the virtual round table discussion on "Phase Shifting Transformers: Optimising the transmission network infrastructure" took place. The event was supported by the Indo-German Energy Forum Support Office (IGEF-SO) and addressed both the German and Indian grid planner perspectives. The opening speech was given by Mr. Günter Panzer, Head of Business Development Actuators at Maschinenfabrik Reinhausen (MR) GmbH. He thus paved the way for the lectures, which dealt with the topic of optimising the transmission grid infrastructure. Prof. Martin Wolter from the University of Magdeburg gave latest insights on the topic of phase-shifting transformer requirements in the optimal utilisation of the existing grid infrastructure. Mr. Laurenc Kirchner gave a presentation on phase shift transformer control, explaining a key component in optimising overall transformer design. The activity was part of the work under IGEF Subgroup IV on Green Transmission Grid Infrastructure. Relevant stakeholders from public and private sector entities of India actively participated in the discussions held.

(L to R) Mr. Ajay Nilakantan, Maschinenfabrik Reinhausen GmbH, Mr. Laurenc Kirchner, Maschinenfabrik Reinhausen GmbH, Prof. Dr.-Ing. Martin Wolter, University of Magdeburg and Mr. Günter Panzer, Maschinenfabrik Reinhausen GmbH on the panel of the webinar.

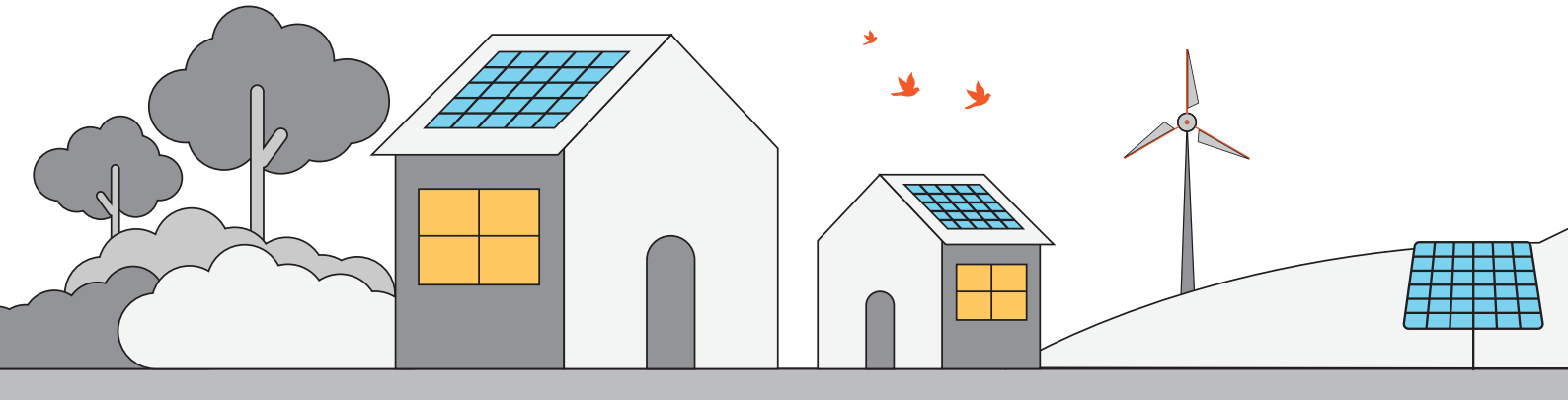
Renewable Energy Power Supply for Commercial and Industrial Consumers at the German Days Digitales

3 October 2020 | Virtual

The Indo-German Chamber of Commerce (IGCC) organised the "German Days Digitales - The Digital Experience" from 3 to 7 October. IGEF-SO not only presented itself with a virtual Pavilion but also organised a conference session on "Renewable Energy power supply for commercial and industrial consumers" on 6 October 2020.

In this conference session, best practice business models for Renewable Energy power procurement were presented and constructively discussed. The event was inaugurated by Dr. Nicole Glanemann, BMWi.

All the presentations can be downloaded here.



EU Zone at RE-Invest 2020

26 November 2020 | Virtual

The Delegation of the European Union to India actively participated in the 3rd Global Renewable Energy Investment Meeting and Expo (RE-Invest 2020), with a dedicated EU session and an EU Zone. The EU Zone included virtual booths from the European Union, Indo-German Energy Forum (IGEF), Agence Française de Développement (AFD), SolarPower Europe, WindEurope and AVERE (The European Association for Electromobility). On 27th November 2020, the EU session was organised, titled 'EU-India Cooperation of Renewable Energy with a focus on Off-shore Wind'. The EU-India Clean Energy and Climate Partnership Dashboard was launched at the EU Zone.

The virtual session provided a platform to discuss the cooperation between the EU and India in the area of renewable energy, in particular the offshore wind sector. The new EU Strategy on Offshore Renewable Energy was presented and the future of the Indian Offshore wind industry was discussed, focusing on the required supply chain. The session aimed at identifying the current gaps in a potential off-shore supply chain in India and assessing how Indian and European businesses can best tap into this promising renewable energy market.

A report on "Supply Chain Study for Off-shore Wind in India" drafted under the 'Business Support to the EU-India Policy Dialogues' project was also released during the session. The report identifies the challenges and opportunities to India's off-shore wind industry and highlights the developments that are needed to achieve the desired cost reduction and scalability in the off-shore wind industry.

The session was supported by the EU-India Clean Energy and Climate Partnership (CECP) project and was attended by various participants, representing policymakers, regulators, project developers, manufacturers, port operators, system integrators, EPCs, think tanks, consultants and academia from across the globe.

BRIDGE TO INDIA

Webinar on Political Framework Conditions for Rooftop Solar Systems

3 December 2020 | Virtual

On 3 December 2020, Bridge to India, an Indian consultancy firm valued by many European and German companies, hosted a panel discussion that discussed the status of rooftop solar policies at the national and state levels in India. IGEF Support Office (IGEF-SO) supported the event as a strategic partner. Shri Amitesh Kumar Sinha, Joint Secretary Solar, Ministry of New and Renewable Energy (MNRE) and Co-Chair of IGEF Subgroup II, actively participated in the event. Much of the discussion revolved around the regressive changes in the net metering policies of several states. States have gradually withdrawn net metering from commercial and industrial consumers and reduced benefits for banks. As a result, the rooftop solar market has stagnated or even declined. Just under 1 Gigawatt (GW) was installed in 2020, a 35% decline from the previous year. The panelists agreed that policy inconsistency and sometimes retroactive changes to regulatory frameworks in individual states have damaged the market. A persistent bottleneck for the industry continues to be financing. Mr. Shah from the Indian Renewable Energy Development Bank (IREDA) assured that MNRE is working with IREDA on new types of credit lines of USD 100-125 million with funds from development banks. The credit lines are particularly targeted at households and SMEs. Depending on market response, the lines could be increased to USD 500 million or more in the future. As the lack of a nationwide branch network limits IREDA's market presence (only 40 MW of rooftop solar projects have been financed so far), the aim is to channel these financings to system aggregators and other lenders with a stronger distribution network.

The above article is based on or taken from https://bridgetoindia.com/.

3

Developments in Indo-German Energy Cooperation

Visit to Kochi on 5th Year Anniversary of the Paris Agreement

12 December 2020 | Kerala

The Ambassador of Germany to India, H.E. Walter J. Lindner, the Ambassador of France to India, H.E. Mr. Emmanuel Lenain, and the Ambassador of the European Union to India, H.E. Ugo Astuto, undertook a joint visit to the city of Kochi, the dynamic port city and economic capital of Kerala, on 12 December 2020, on the occasion of the fifth anniversary of the Paris Agreement on climate change.

Confronted with challenges common to many Indian cities, especially in urban development, mobility and climate change impact, taking the example of recent floods, Kochi illustrates how the Indo-European partnership is helping to address these challenges, in particular by supporting ambitious low carbon urban development policies that help to reduce greenhouse gas emissions in line with the Paris Agreement.

During the visit, the three Ambassadors visited several key sites of Kochi's innovative, low carbon mobility network. They witnessed the ongoing works at various boat terminus as well as the under-construction hybrid-electric water metro ferries at the Cochin Shipyard. The Water Metro project including 78 boats and 38 terminals across 15 routes, is financed by KfW Development Bank, Germany. These new hybrid-electric boats are envisaged to reduce the carbon and greenhouse gas emissions. Following this, the envoys visited the Vytilla multi-modal transport hub, took an electric bus ride, experienced the Kochi Metro Rail network financed by AFD, the French Development Agency, as well as the last mile connector, the e-rickshaw.

Mr. Alkesh Kumar Sharma, Managing Director, Kochi Metro Rail Limited, highlighted the organisation's initiatives with respect to gender and social inclusion, and their work on flood mitigation measures, rainwater harvesting and solar power-integration. The visit concluded with planting of saplings by the delegation members at the Muttom Depot.

Delegation witnessing the ongoing works at boat terminus of Water Metro project, financed by KfW.

KfW | Federal Ministry for Economic Affairs and Energy | german cooperation DEUTSCHE ZUSAMMENARBEIT | giz

KfW Signed a Loan Agreement for 210 million EUR

16 December 2020 | New Delhi

On behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), KfW signed a loan agreement for 210 million EUR on 16 December 2020, with the Government of India for the COVID-19 Social Protection Crisis Response Programme.

This is the second and final tranche of an overall package amounting to EUR 460 million, with the first loan for 250 million EUR being concluded in August.

The FC assistance is tailored towards supporting both immediate assistance for poor and vulnerable households that have been among the worst hit by the COVID-19 pandemic, while at the same time promoting institutional reforms to widen and deepen the coverage of social protection schemes. The first phase of the operation was rolled out through the Pradhan Mantri Garib Kalyan Yojana (PMGKY), the Government of India's emergency social assistance program aimed at providing vulnerable groups and migrant workers with a mix of direct cash transfers, food security, and medical insurance cover through established national platforms.

Early results from household panel surveys across India indicate that 84% of India's poorest households received at least one benefit under PMGKY. However, the surveys also reveal that a significant proportion of poor households have been unable to access benefits under the PMGKY. The second phase of the FC assistance program aims at tackling these gaps in coverage through long-term institutional reforms. The objective is to integrate the plethora of different social security programs at both national and state levels into a flexible and adaptable system that provides portable benefits to India's vast migrant worker population.

The COVID-19 Social Protection Crisis Response Programme is parallel financing with the World Bank and includes the participation of other bilateral and multilateral donors. The World Bank is the lead agency.

Signing Ceremony of KfW loan agreement COVID-19 Social Protection Crisis Response Programme. ©KfW

INTERNATIONALE KLIMASCHUTZINITIATIVE (IKI)

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

E-launch of Report on E-mobility & Low Carbon Passenger Road Transport

4 February 2021 | Virtual

India has the second-largest road network in the world, with a total length of 5.89 million km, road transport contributes towards 64.5% of the country's overall goods' movement, and caters to 90% of India's total passenger traffic. Yet, India also has the lowest motorisation rates in the world (22 cars per 1,000 people), and it is among the fastest-growing countries in the transportation sector. From 2011 to 2020, India's domestic vehicle sale (2W, 3W, Passenger Vehicle, Commercial Vehicle) has grown at ~4% CAGR. With rising income and rapid urbanisation, the Indian mobility market is expected to expand rapidly. Transportation, however, has contributed significantly to India's overall GHG emission. During the year 2016, the transport sector contributed to 270.6 MT CO2e of GHG emission, third-highest, only after the power industry and industrial combustion.

The Nationally Determined Contribution – Transport Initiative for Asia (NDC-TIA) is a regional initiative funded by the International Climate Initiative (IKI) of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). It is a joint project of seven organisations and with the engagement of China, India, and Vietnam. It aims at promoting a comprehensive approach to decarbonising transport, i.e., a coherent strategy of effective policies that are coordinated among various sector ministries, civil society, and the private sector. Under the regional technical assistance programme NDC-TIA, this study "Status quo analysis of various segments of Electric mobility and low carbon passenger road transport in India" was undertaken. The main objective of this study was to examine the Low-Carbon Road Transport (LCRT)/E- mobility development, accomplishments so far, supported by the policy, schemes, and regulatory interventions in India.

This report was released in an e-launch event on 4 February 2021 in the presence of dignitaries: Mr. Sudhendu Jyoti Sinha, Advisor, NITI Aayog, Dr. Winfried Damm, Head of Indo-German Energy Programme, GIZ India and Dr. Indradip Mitra, Coordinator India Component, NDC-TIA, GIZ India. The participants in this event lauded the efforts of the project team for developing an excellent knowledge product for all the stakeholders engaged in the e-Mobility mission.

Dr. Winfried Damm began by emphasising the importance of the knowledge hub Digital Library on Green Mobility, where the executive summary and the full report were available for download. He congratulated the Deloitte and GIZ team respectively for their efforts in preparing these reports. Through the presentation, he presented several facts which supported the mega-trend predictions for EV growth in the near future. A couple of his key messages were that e-mobility is crucial for sustainable mobility, but it has to be implemented in a holistic approach and the higher the share of Renewable Energies in the electricity mix, the bigger the benefits from e-mobility.

Mr. Sudhendu Jyoti Sinha congratulated GIZ, all the six consortium partners and the team which had worked assiduously on this insightful report. He reiterated that NITI Aayog was providing full support to all the line ministries to develop a full-fledged ecosystem for electric mobility at the earliest. Manufacturing, demand creation, research and development activities along with fiscal incentives, regulatory support and awareness creation were some thrust areas of focus for the government. India is all set to herald a common, connected, congestion-free and convenient transport system that is also clean and advanced. The report was released and the links to access the full report and the executive summary report were shared with the audience.

Mr. Anish Mandal, Director, Deloitte and Mr. Chandan Dixit, Manager, Deloitte presented the key findings from the report. The gaps in existing policies and schemes, key challenges, and barriers for EV adoption and the recommendations for the uptake of EVs were discussed in the presentation. Dr. Indradip Mitra ended the event with a token of gratitude to NITI Aayog, Deloitte team, consortium partners who had reviewed the report and the GIZ team for their efforts in developing the report and organising the launch event. He emphasized the support from all the stakeholders to overcome the challenges and make use of the opportunities in transitioning from ICE vehicles to EVs.

This study explores the overall status of Low-Carbon Road Transport in India such as achievements, supporting policies and gaps, government schemes, incentives, regulatory mechanisms, implementation challenges, financial interventions, business models, research advancements, other key challenges, and way forward. Special focus was given to the electric mobility sector for fulfilling this objective. It also distinguished the present clean-mobility landscape, critical challenges, emergent technology research advancement that are on the way of LCRT/ E-mobility systems electrification.

The findings from this report could enable policy makers, regulators, services, business models, and hence the Government of India to assess the need for actions, reform, and amendments required to increase the market uptake of LCRT/E-mobility in India.

The executive summary can be downloaded from here, and the full report can be downloaded from here.

Development Cooperation Financing 125 MW Ground-Mounted Solar Power Plant in West Bengal

22 December 2020 | New Delhi

- KfW and the Government of India have entered into a loan agreement for EUR 75 Million
- The finance would be utilized to implement a ground-mounted solar power plant in West Bengal
- The solar power plant is expected to generate 162.5 MU p.a. & reduction of greenhouse gas emissions by 151.000 tons CO2eq. p.a

On behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), KfW has entered into a loan agreement with the Government of India for EUR 75 Million. Dr. Christoph Kessler, Director KfW Office India and Dr. CS Mohapatra, Additional Secretary Department of Economic Affairs, Government of India have exchanged the agreements. The available financing would be utilised to implement a 125 MW ground-mounted solar power plant in East Medinipur district of West Bengal. In terms of capacity, the solar power plant would be the largest in the State built at a single location.

The solar power plant is expected to generate approximately 162.5 million units of electricity yearly and shall contribute to reducing greenhouse gas emissions by approximately 151,000 tons of CO2eq annually.

The promotion of Renewable Energy is one of the prime agenda of the Government of India and the proposed solar power plant shall contribute to meeting the target of the Government of India envisaged as a part of the National Solar Mission.

Those interested, may contact Dr. Martin Lux, Head of Energy Team, KfW India for further details via email to martin.lux(at)kfw.de.

Mrs. Christiane Hieronymus, Head of Economic Cooperation & Development - German Embassy (New Delhi), Dr. Christoph Kessler, Director, KfW Office (New Delhi), Dr. CS Mohapatra, Additional Secretary, Department of Economic Affairs, Mrs. Aparna Bhatia, Advisor, Department of Economic Affairs, Mr. Rai Mahimapat Ray, Deputy Secretary, Department of Economic Affairs, Mr. Hemant Bhatnagar, Senior Sector Specialist KfW Office (New Delhi), Mr. Ashish Sharma, Under Secretary, Department of Economic Affairs.

Risk Management and Supply Chain Analysis and Optimisation for Offgrid Energy Projects

9 -10 December 2020 | Virtual

On 9 and 10 December 2020, a 2- day webinar, and on 17 and 18 December another 2-day webinar on "Supply Chain Analysis and Optimization" for off-grid energy projects were conducted by the Indian Renewable Energy Development Agency (IREDA). The IREDA manages a credit line of 20 million EUR with an investment grant of 4 million EUR for financing "Access to Energy" projects from KfW. These webinars were conducted as a part of the accompanying measures grant for this credit line. Access to reliable and modern energy remains a challenge in rural India and approximately 100 million people are estimated to be without reliable access to electricity. The IREDA would deploy the loan through financing entrepreneurs to scale up their access to energy operations, e.g. using mini- and micro-grids, solar pumps or other access applications. Both workshops were organised for off-grid Renewable Energy (RE) sector organisations active in India and were attended by more than 30 participants on each day.

The risk management workshop covered wide-ranging topics and was designed to provide advisory support to access energy organisations to help them in optimising their risks by following a streamlined process starting from risk identification to risk assessment & prioritisation and finally to risk mitigation in their business operations. The webinar was conducted by PwC in partnership with Mr. William Greene, Senior Advisor at Multiconsult Norge AS – a multidisciplinary, limited engineering consultancy firm headquartered in Norway focused on energy, environment and natural resources, industry, etc. and Dr. Kjetil Roine, Partner/Co-Founder at Differ AS. Some key financial risks discussed during the session include cost forecasting, technology selection and design, tariff risk, financial planning and modelling risk, project bankability, etc. The Experts also discussed the most pronounced technical risks including grid arrival, workforce unrest, environmental & social risks and regulatory & policy risks. The experts also discussed the principles for risk management and operational challenges.

The "Supply Chain Analysis and Optimisation" webinar was designed to provide advisory support to such organisations to identify the present status of the supply chain in the access to energy sector, highlight challenges and suggest strategic measures to ensure sustainable, robust and cost-effective supply chain processes with a focus on business expansion for sub-borrowers and energy security enhancement for customers. The webinar was conducted by PwC in partnership with Mr. Mark Simmons and Mr. Michel Battikh, Senior Advisors at Multiconsult Norge AS. Some key topics covered included raw material requirement and sourcing, logistics chain, supply chain analysis and strategy, supplier evaluation and selection. The adequate focus was also given on developing contract frameworks to effectively prepare & lead negotiations, inventory planning & management and developing performance management systems.

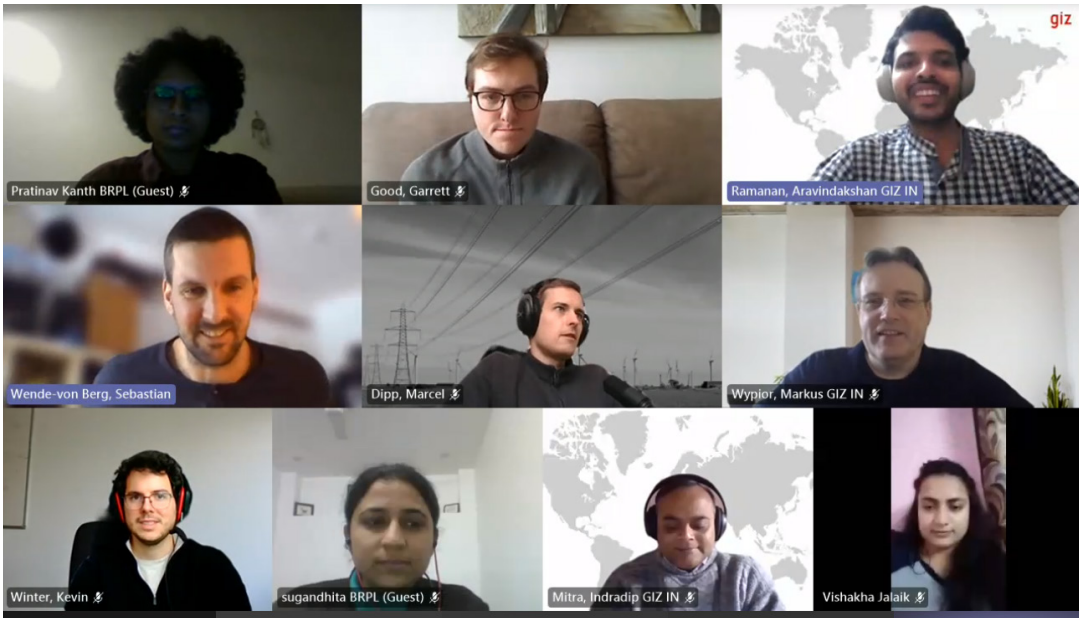
Intermediate Workshop on Project "Load forecasting and State estimation at LV grid"

27 - 29 January 2021 | Virtual

The workshop formed part of a series of activities with "Training and capacity building on load estimation and short-term residual load flow forecasting at LV and MV feeders along with approximate state estimation for Indian urban electricity distribution systems". These trainings are undertaken under the development cooperation project "Energy transitions with DISCOMs" within the framework of IGEN-GIZ. The project is implemented by a consortium of companies led by Fraunhofer IEE. The focus of the project is for the geographical area of Delhi with the utilities BRPL, BYPL and Tata Power as the primary stakeholders. The project objective is to develop an approach for estimating the voltages, power flows, etc in the distribution network with a low number of real-time measurements based on advanced ANN / Machine learning techniques. The necessity of the activity drives by the fact that currently there is a lack of adequate online measurement devices while there is an increase in penetration of Solar rooftop PV, battery energy storage systems, etc in the Indian distribution grid. Therefore, monitoring of the distribution network becomes extremely crucial to maintain stability. The workshop had four different sessions. In the first session, the methodology of the exercise and some results with generic data sets was presented to all the three Delhi DISCOMs. Subsequently, there were three individual sessions with Delhi DISCOMs where the results pertaining to their specific datasets were discussed. The individual sessions also demonstrated the process to train the machine learning models for different scenarios from the historical data set provided by the respective utilities. Detailed deliberations were held about the possible next steps.

This project was highly appreciated by the utilities as a key step towards the robust operation of the system in light of disruptive changes brought in by increased rooftop PV and e-mobility penetration.

For further information, please contact Mr. Markus Wypior markus.wypior(at)giz.de.



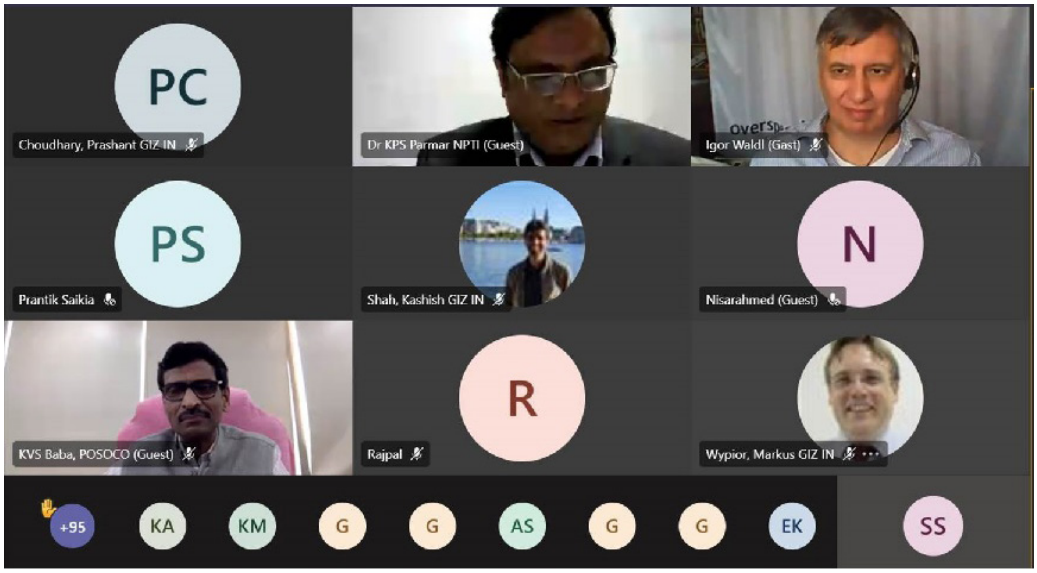
Inauguration of 4th online training program on Renewable Energy Grid Integration

3 December 2020 | Virtual

The inauguration of a three months online training program on Renewable Energy Grid Integration took place on 3rd December 2020. Due to the Covid-19 pandemic, the inauguration was organized on a virtual platform, MS Teams. This training program has been conducted under the aegis of Indo- German Energy Program, Green Energy Corridors Project implemented by GIZ on behalf of Government of Germany in collaboration with National Power Training Institute, Ministry of Power, Government of India.

The training program was inaugurated in the august presence of Mr. Raj Pal, Director General, NPTI, Mr KVS Baba, CMD, POSOCO, Mr. Markus Wypior, Dy. Programme Coordinator, Indo – German Energy Program, GIZ, Dr. Hans Peter Waldl, Managing Director, Overspeed GmbH, Dr Andre Bisevic, Fraunhofer IEE, Germany, and Dr Zakir Rather, IIT-Bombay, India.

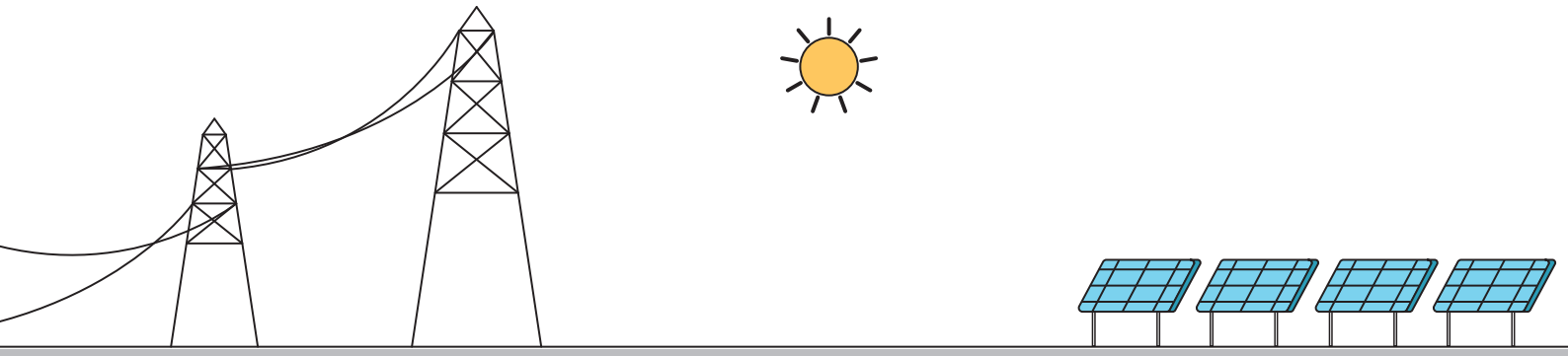
In his opening remarks, Mr. Wypior explained the need for an online training program considering the pandemic times and how the online forums and live Question and Answer sessions can help the participants to engage with the experts and gain knowledge about various learning subjects. Dr. Waldl discussed the benefits of flexible distance learning courses and how the thematic areas like forecasting of RE generation, operational and policy related learning subjects are going to facilitate Indian operators to understand their RE rich power system. Mr KVS Baba stressed on the need of such training courses to up-scale the skills of grid operators, executives, and engineers to accommodate the



ambitious 175 GW renewable capacities into the existing system. He also discussed the challenges of organizing the training courses in such testing times and encouraged the participants to take maximum advantage of this training program. Mr. Raj Pal extended his sincere support to facilitate the online training program and mentioned that NPTI is dedicated towards organizing such skill development courses in the power sector to keep up with the transitions in the Indian power system owing to ever increasing RE penetration. Dr Bisevic and Dr Rather introduced the contents of training program and various learning subjects. In the end, Mr Sunil Sharma, Technical Expert, GIZ proposed the vote of thanks.

Under this program, more than 135 executives working in various load despatch centres such as NLDC/ RLDCs/ SLDCs would undergo online training program from 3rd December 2020 to 28th February 2021. These online lecture sessions are pre-recorded, coupled with dedicated scripts and weekly question and answer sessions. The video lectures are prepared by renowned German and Indian experts who also designed the overall training course. The trained executives are expected to work in the renewable energy management centres in India.

For further information, please contact Mr. Sunil Kumar Sharma (sunil.sharma@giz.de).



Survey of Old Solar Water Pumps to Ascertain Asset Condition, Utilization and Policy Efficacy

October 2020 | Virtual

The Promotion of Solar Water Pumps (PSWP) programme is in the process of surveying and auditing 935 solar water pumps installed between 2015 and 2017 across the four states of Rajasthan, Uttar Pradesh, Tamil Nadu and Odisha to ascertain learnings on installed asset condition and implementation designs.

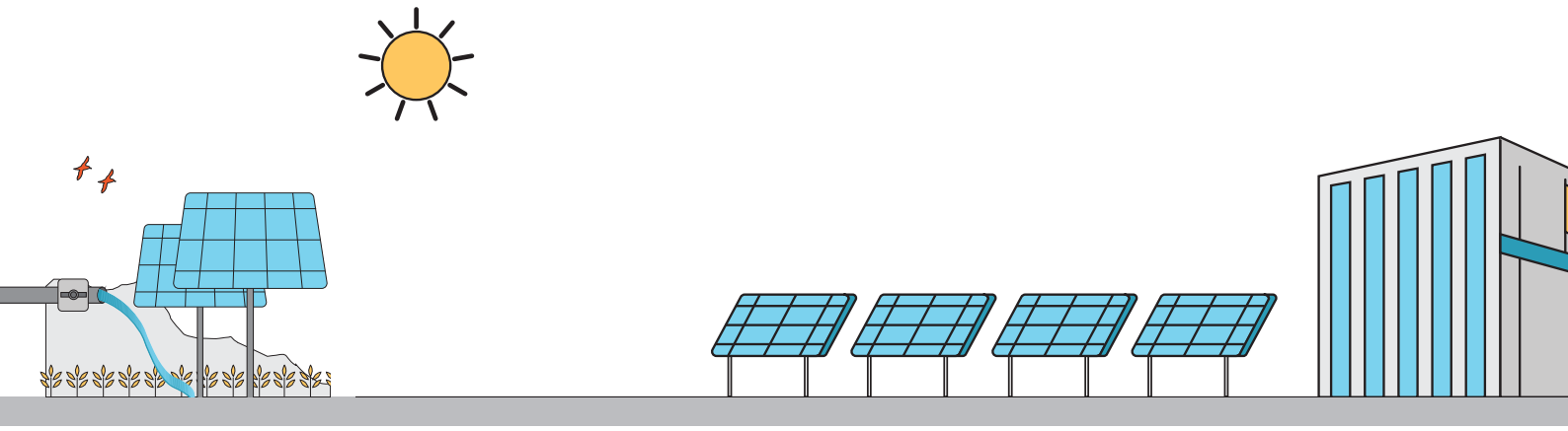
At present, 272,700 solar pumps are installed across the country as per the Ministry of New and Renewable Energy (as of December 2020), however there is limited clarity on the operational performance of these pumps, making it difficult to establish the actual impact of these heavily subsidized interventions on farming practices and farmer well-being.

The survey project, being implemented through consulting firms KPMG and Kabil Professional Services, looks to address this gap by collecting extensive on-ground data on pump condition, maintenance and utilization, as well as understand farmer feedback on the state scheme and the overall impact of the pump.

So far, over 50 per cent of targeted surveys has been completed with the support of relevant ministries and state nodal agencies, including 186 in Uttar Pradesh, 185 in Rajasthan and 110 in Odisha. The remaining surveys, 300 in Rajasthan and 154 in Tamil Nadu, are planned to be completed by mid-March.

An interim analysis of 360 farmer interviews brings to light some interesting observations. For instance, majority of these farmers find solar pumps easy to operate and maintain, but nearly 22% of them are not using it for irrigation purposes due to varied reasons. Significant scope of improvement is also observed in delivery of after sales services to farmers. While 51% of the surveyed pumps had experienced some sort of breakdown since installation, nearly half the issues took over 1 to 6 months to be resolved.

These indicative findings based on farmer feedback are planned to be analysed in a holistic manner, taking inputs from implementing agencies, vendors and other experts, to help come up with relevant recommendations that help Component B of the ambitious Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM KUSUM) scheme which targets an addition of 2 million off-grid pumps.



4 Quote of the Month from India and Germany

Quote of the Month from India

Smt. Nirmala Sitaraman,
Hon'ble Minister of Finance and Corporate Affairs, Govt. of India

"It is now proposed to launch a Hydrogen Energy Mission in 2021-22 for generating hydrogen from green power sources."

Quote of the Month from Germany

Shri Peter Altmaier,
Hon'ble Federal Minister for Economic Affairs and Energy, Govt. of Germany

"By setting itself ambitious expansion targets up to 2040, Germany is building further on its pioneering role in the field of offshore wind energy. The price of green electricity from offshore wind energy keeps falling, making offshore wind a key pillar in the German and European energy transition."

5 Energy Transition News

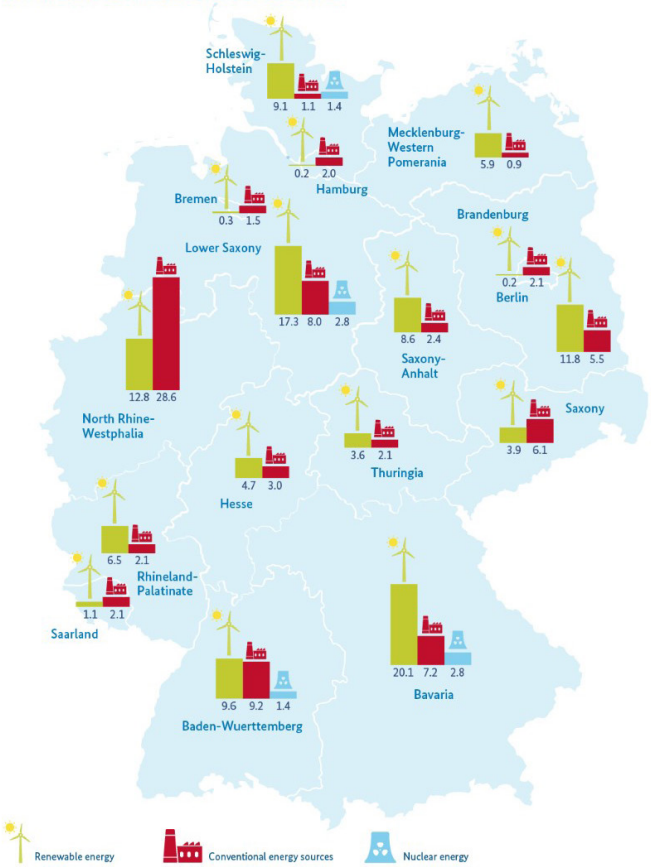
Status on Nuclear and Coal Phase-out in Germany

At the end of 2019, the highest installed power plant capacity based on Renewable Energy was found in Bavaria, with 20.1 gigawatts (GW). Solar plants accounted for more than 65% of this figure. Lower Saxony had the second-highest installed renewable power plant capacity, at 17.3 GW. Unlike in Bavaria, onshore wind turbines accounted for about 65% of the installed capacity of renewables in this Land. In contrast, North Rhine-Westphalia, which has a lignite mining region and former hard coal mining industry, was the front-runner in conventional power plants, which provided 28.6 GW of power plant capacity. Some 12.8 GW were, however, provided by renewables here as well.

In terms of total installed capacity per federal state, Mecklenburg-Western Pomerania (87%), Schleswig-Holstein (78%) and Saxony-Anhalt (78%) had the highest share of renewables. Mecklenburg-Western Pomerania had 5.9 GW of power installed plant capacity based on renewables, whereas conventional power plants only accounted for 0.9 GW. At the end of 2019, Schleswig-Holstein had 9.1 GW of installed renewable capacity. Conventional energy sources made up just 1.1 GW. In Saxony-Anhalt, 8.6 GW was available from renewables, while fossil energy sources made up 2.4 GW.

Distribution of power plant capacity among the individual *Länder* in 2019

Renewables dominated in 10 of 16 *Länder*



Preliminary figures for installed capacity of renewable energy, conventional energy sources and nuclear energy in 2019 in gigawatts, taking into account the shutdown of Philippsburg NPP at the end of 2019.

© Federal Ministry for Economic Affairs and Energy; Federal Network Agency (BNetzA) as at 10/2020

Nuclear energy: last nuclear power plants to go off-grid by the end of 2022

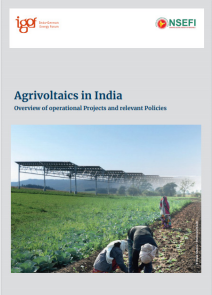
Schleswig-Holstein is one of a total of four federal states in which nuclear power is still used in electricity generation. In 2019, 1.4 GW was available here from nuclear power; in Lower Saxony and Bavaria, the figure was 2.8 GW. In Baden-Württemberg, one reactor producing 1.4 GW was still in operation after the shutdown of the Philippsburg nuclear power plant at the end of 2019. By the end of 2022, the bar for nuclear power in statistics graphs will drop to zero when the last German nuclear power plants are taken off the grid and their operating licences expire.

After the nuclear disaster in Fukushima in 2011, the Federal Government did some work on its energy concept and accelerated the phase-out of nuclear power. Since then, eleven nuclear power plants have been gradually taken off the grid. The remaining nuclear power plants are still allowed to generate precisely defined amounts of electricity under the control of the Bundesnetzagentur (Federal Network Agency) until they are decommissioned (For more information about the phase-out of nuclear power, please click here).

Coal phase-out: compensation for hard coal-fired power plants ensures a successful first round of auctions

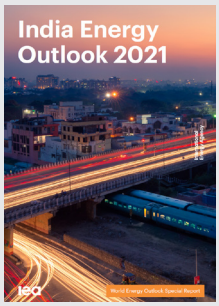
Similar to the declining use of nuclear, the share of fossil fuels will also continue to decline. This is because ending coal-fired power generation in Germany is already a done deal. Germany wants to phase out coal by 2038 at the latest and is following the recommendations of the Commission for Growth, Structural Change and Employment (KWSB). At the end of November 2020, the European Commission established key foundations for this process by approving a compensation programme for hard coal-fired power plants.

6 Publications



AgroPV in India - Overview of Operational Projects and Relevant Frameworks

Developed in collaboration between the National Solar Energy Federation of India (NSEFI) and IGEF-SO, this report provides a comprehensive overview of the current state of the Indian Agrophotovoltaics (AgroPV) sector. Apart from an in-depth investigation into operational plants, the report proposes policy measures to foster the uptake of the technology. The full report is available for download here.

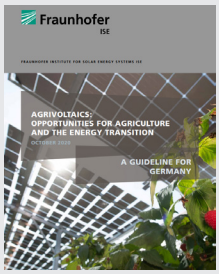


India Energy Outlook 2021

Main findings from the latest report are:

- Iron, steel, cement becoming the main drivers for coal demand in India.
- Cars and trucks remain the main drivers for oil demand growth.
- More than almost any other country in the world, India will face a huge increase in need for flexibility in its power system.
- Investments in the power sector would have to double for the next 10 years to achieve the goals set by Paris.
- In recent years energy has accounted for nearly 1/3 of India's total imports by value.
- By the late 2030s most of India's projected emissions come from new factories, trucks, cars and buildings that don't exist today.
- More information on the report here.

The report can be downloaded here.



Agrivoltaics - A Guideline (not only) for Germany Opportunities for Agriculture and the Energy Transition

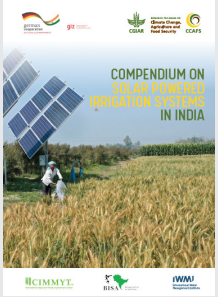
Recently, Fraunhofer ISE released their latest guideline report on Agrivoltaics. Agrivoltaics offers great opportunities for agriculture and climate protection. In their foreword, the two Federal Ministers Anja Karliczek and Julia Klöckner support the promising concept of combining agricultural production and renewable electricity generation on the same land.

The guideline provides information on the possibilities and advantages of agrivoltaics, offers an overview of its potential and the current state of technology, and presents practical advice for agriculture businesses, municipalities and companies.

Aside from more efficient land use, agrivoltaics can help reduce water consumption in agriculture, generate stable additional sources of income for farms, and make many farms more resilient against harvest losses. The early involvement of local citizens is a key criterion for success in the concrete implementation of agrivoltaics.

With energy production costs between 7 and 12 euro cents per kWh, agrivoltaics is already competitive with other renewable energy sources. In addition, the guideline highlights successful application examples and points out obstacles and challenges to the use of agrivoltaics in Germany. It also outlines various options for embedding agrivoltaics in the regulatory framework.

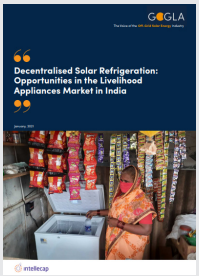
The full report is available for download here.



Compendium on Solar Powered Irrigation Systems in India

This compendium includes 16 case studies across India that describe different solar irrigation deployment models. Those models are either highly popular and represent a significant portion of the solar pumps used today, or they show innovations that have the potential to reach scale. This report captures the key technical, social, institutional and financial deployment approaches to enable a comparative analysis at the end.

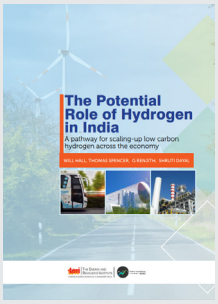
The compendium can be downloaded here.



Decentralised Solar Refrigeration: Opportunities in the Livelihood Appliances Market in India

This report is the outcome of a study carried out by Intellecap, supported by GOGLA. It aims to generate evidential information on the potential of off-grid solar refrigeration across key market segments (healthcare, households, micro-enterprises, farm-gate, and dairy) in India. It also maps the existing ecosystem of the off-grid solar refrigerator sector and provides recommendations to support market development of this sector.

The report can be downloaded here.



The Potential Role of Hydrogen in India

With the energy transition continuing at an unprecedented pace and scale, green hydrogen shows promise as the next "clean energy prize", offering an alternative to fossil fuels in the transition to a carbon-neutral economy. Based on extensive interactions with potential users, ranging from industry, the power sector, and transport, the report assesses the price competitiveness of hydrogen in a variety of applications, as well as the cost of production for green hydrogen. This report represents a first-of-its-kind, cross-sector assessment of how hydrogen technologies can support the transition to a zero-carbon energy system in India.

The report can be downloaded here.

Status quo Analysis of Various Segments of Electric Mobility and Low Carbon Passenger Road Transport in India

This study examines the Low-Carbon Road Transport (LCRT)/E- mobility development, accomplishments so far, supported by the policy, schemes, and regulatory interventions in India.

The report can be downloaded here.

O&M Best Practice Guidelines for Solar in India

SolarPower Europe (SPE), the National Solar Energy Federation of India (NSEFI) and IGEF-SO published "Operation & Maintenance (O&M) Best Practice Guidelines" for India's solar sector. It addresses the best practices for mainly large scale solar power plants in India. Based on the European standards, a task force adapted the regulations to the Indian context. German companies like PI Berlin and STEAG, along with the Physikalisch Technische Bundesanstalt (PTB) and KfW have given their valuable inputs. In total more than 40 Task Force member companies from SPE and NSEFI have contributed to this valuable product.

The report can be downloaded free of cost here.

Solar Heat for Industry in India

The study consists of 70 pages of description and analysis of the Indian Solar Heat for Industrial Processes (SHIP) market. It thus highlights the market niches and applications and heat demand in dairy, food and beverage, automotive, textile, chemical and pharmaceutical industries. It highlights the distribution of these industry clusters throughout the country.

The report can be downloaded here.

Clean Steel Partnership Roadmap

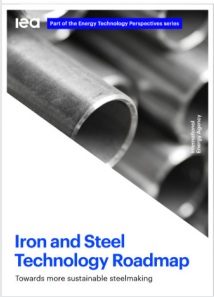
The European steel community is fully committed to the mitigation of greenhouse gas emissions and to helping to meet the objectives of the Paris Agreement and the EU's target of reducing domestic CO2 emissions by 80% to 95% by 2050 compared to 1990 levels. The partnership proposal represents an important step forward towards the demonstration of low-CO2 technologies in steelmaking and a future contribution to the meeting of the targets.

The full report is available for download here.

Industrial Innovation: Pathways to deep decarbonisation of Industry - Technology Analysis

Based on the Paris Agreement on climate change, the goal is to keep the global temperature rise below 2°C and to continue efforts to restrict the rise to 1.5°C above pre-industrial levels. In order to meet these targets, energy-intensive sectors will have to contribute substantial emissions reductions. Whether the EU's key industries can benefit and contribute to a carbon-neutral future is contingent on their capacity to adopt available technologies, and upon the ongoing development and commercialisation of emerging products and pioneering technologies. This report was prepared by ICF in collaboration with Fraunhofer ISI and DIW Berlin. Its aim is to describe the promising low-carbon technologies and product developments technologies and product developments that can lead to a profound decarbonisation of energy-intensive industrial sectors by 2050 and beyond.

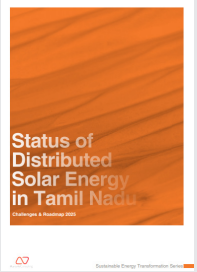
The full report is available for download here.



Iron and Steel Technology Roadmap - Part of Energy Technology Perspectives

This report explores the technologies and strategies necessary for the iron and steel sector to pursue a pathway compatible with the IEA's broader vision of a more sustainable energy sector. Considering both the challenges and the opportunities, it analyses the key technologies and processes that would enable substantial CO2 emission reductions in the sector. It also assesses the potential for resource efficiency, including increased reuse, recycling and demand reduction. The publication concludes with an outline of priority actions, policies and milestones for these stakeholders to accelerate progress towards zero emissions from the iron and steel sector.

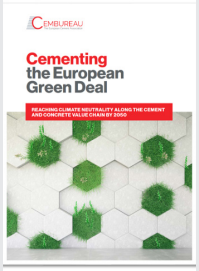
The full report can be downloaded here.



Status of Distributed Solar Energy In Tamil Nadu

This report presents the status of distributed solar energy generation in Tamil Nadu – as it relates to policy and regulations, operational challenges, solar PV financing, skill development and grid integration of solar energy. It identifies and elaborates on the challenges in each of these areas, and recommends a set of measures to the relevant stakeholders (the policy makers or the distribution utility).

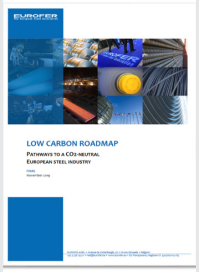
The report can be downloaded here.



Cementing the European Green Deal - Reaching Climate Neutrality along the Cement and Concrete value chain by 2050

The European cement industry has the capacity to change. This report outlines its path towards carbon neutrality along the entire value chain. It looks at how carbon emissions' reduction can be done at each step of the cement and concrete value chain in order to align our 2050 roadmap with the European Green Deal's objectives, and deliver carbon neutrality. Bold goals have been set and as an industry, it is ready to work hand in hand with its value chain, civil society and policy makers to ensure these are met. The transition to carbon neutrality will require efforts from industry and, on its turn, industry will need access to raw materials, renewable energy, and a facilitating regulatory framework that allows investments against reasonable returns.

The full report can be downloaded here.



Low Carbon Roadmap pathways to a CO2-Neutral European Steel Industry

The European steel industry is the most advanced of its kind in the world. As it is, Europe leads the way in environmental and climate performance. CO2 emissions and energy use in European steel production have been halved since 1960, and the sector has the ambition to further achieve cuts of between 80-95% by 2050, compared to 1990 levels. This transition will require significant investment in new technological development and deployment, in energy infrastructure, consumption and type, and will require access to high quality materials, such as iron ore and scrap. EUROFER has established a clear set of pathway scenarios that will deliver this essential change for the sector, ensuring that Europe will remain on track to fulfil its Paris Climate Accords requirements, whilst also making European steel fit for a clean, low-carbon future.

The full report can be downloaded here.

7 Upcoming Events

India SMART UTILITY Week (ISUW) 2021

2 - 5 March 2021 | Virtual

This international conference and exhibition on smart utilities for smart cities will be held virtually from 2 to 5 March 2021. India Smart Utility Week (ISUW) will bring together India's leading electricity, gas and water utilities, policymakers, regulators, investors and the world's top-notch smart energy experts and researchers to discuss trends, share best practices and showcase next-generation technologies and products in smart energy and smart cities domains. ISUW 2021 will include plenaries, keynotes, interactive workshops, high level roundtables and technical sessions on a variety of topics.

For further information please click here.

7th Berlin Energy Transition Dialogue

16 - 17 March 2021 | Virtual

At the Berlin Energy Transition Dialogue, high-level international decision makers come together to discuss the fundamental transition of the global energy sector and its impact in order to address climate change, prosperity and sustainable development. For participants, it provides an ideal opportunity to share in-depth knowledge, discuss innovative concepts and shape the political discourse. The 7th Berlin Energy Transition Dialogue will take place as a virtual conference on 16 and 17 March 2021.

For further information please click here. For registration click here.

RenewX

23 - 24 April 2021 | Hyderabad, India

The trade fair RenewX will provide a platform that brings together stakeholders from the renewable energy sector and will help set a growth agenda for the future. There will be multiple opportunities to network with key industry experts, showcase innovations by leading manufacturers and service providers and access sector trends, all under one roof at Hitex Exhibition Centre in Hyderabad from 23 to 24 April 2021.

For further information please click here.

Intersolar Europe

21 - 23 July 2021 | Munich, Germany

Intersolar Europe is the world's leading exhibition for the solar industry and takes place annually at the Messe München exhibition center in Munich, Germany. The event's exhibition and conference both focus on the areas of photovoltaics, solar thermal technologies, solar plants, as well as grid infrastructure and solutions for the integration of renewable energy. Intersolar Europe 2021 will take place between 21 and 23 July in Messe Munich.

For further information please click here.

Renewable Energy India Expo

15 - 17 September 2021 | Greater Noida, India

The 14th edition of REI Expo will take place at India Expo Center in Greater Noida from 15 to 17 September 2021. Both the exhibition and the conference provide an excellent opportunity to exchange ideas and technologies, gain insights into current global trends and get connected at networking events. Last year's event attracted more than 35,000 visitors, 700 exhibitors and almost 250 conference speakers. In case you are interested to participate in the German pavilion at REI Expo 2021 kindly get in touch with Ms. Shivani Chaturvedi (shivani@indo-german.com) from Indo-German Chamber of Commerce.

For further information please click here.

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 a 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 via knaack(at)bsw-solar.de.

Retired German energy experts offering their support to Indian institutions

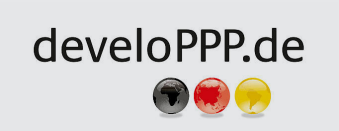
You are a fresh retired German engineer with experience in Energy Efficiency and already familiar with India's rich culture? Become part of the largest retired expert's database of the world, a group of more than 10 000 experts offering their German know-how free of cost to the world.

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. SES is the worldwide leading organization for voluntary assignments carried out by retired specialists and executives.

For further information please click here or contact Mrs. Sharon Mogose via sharon.mogose@indo-german.com.

Information about DeveloPPP



For more than 20 years, the German Federal Ministry for Economic Cooperation and Development (BMZ) has been using develoPPP.de to promote the involvement of the private sector wherever entrepreneurial opportunities and the need for development policy action meet. To this end, the BMZ provides financial and technical support to companies that want to become active in developing and emerging countries or already are. The company bears at least half of the total costs.

Interested companies cooperate with one of the two public partners that implement the program on behalf of the BMZ: DEG - Deutsche Investitions- und Entwicklungsgesellschaft GmbH or Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Those companies interested receive individual advice, benefit from regional market knowledge of the locations worldwide and gain access to local networks and political decision-makers.

The BMZ supports prospective companies in innovative projects and entrepreneurial investments in developing and emerging countries that have long-term benefits for the local population.

The projects cover a wide range of sectors and topics and range from training local skilled workers, piloting innovative technologies and demonstration plants, to securing value chains and improving ecological and social standards in production plants.

Four times a year, companies can submit their project ideas to DEG or GIZ in so-called idea competitions. The target group is companies with developmentally effective project ideas that go beyond investments in their core business. To be eligible for funding, companies must have an annual turnover of at least 800,000 EUR, employ no less than 8 people and have a minimum of 2 audited annual financial statements. The duration is up to 3 years.

For further information please click here.

All upcoming events in the next six months – Save the date!

India SMART UTILITY Week 2021
2 - 5 March 2021 | Virtual
http://www.isgw.in/

7th Berlin Energy Transition Dialogue
16 - 17 March 2021 | Virtual
BETD 2020 – Berlin Energy Transition Dialogue 2020 (energydialogue.berlin)

RenewX - Hitex
23 - 24 April 2021 | Hyderabad, India
https://www.renewx.in/

Intersolar Europe
21 - 23 July 2021 | Munich, Germany
https://www.intersolar.de/en/home

14th Renewable Energy India Expo 2021
15 - 17 September 2021 | New Delhi, India
https://www.renewableenergyindiaexpo.com/

8 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.

9 CONTACT INFORMATION

New Delhi ››

Indo-German Energy Forum Support Office
c/o Deutsche Gesellschaft für Internationale
Zusammenarbeit (GIZ) GmbH
1st Floor, B-5/2, Safdarjung Enclave
New Delhi – 110 029
India

E: communications@energyforum.in
T: +91 11 4949 5353
W: www.energyforum.in

Berlin ››

Indo-German Energy Forum Support Office
c/o Deutsche Gesellschaft für Internationale
Zusammenarbeit (GIZ) GmbH
Köthener Strasse 2
10963 Berlin
Germany

E: info@energyforum.in
T: +49 (0)30 338424-462
W: www.energyforum.in

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